Memorandum

To: Planning and Zoning Commission
From: Krysti Barksdale-Noble, Community Development Director
CC: Bart Olson, City Administrator
Brad Sanderson, EEI, City Engineer
Date: July 5, 2023
Subject: **PZC 2023-03 Bristol Ridge Solar Farm 106**
(Rezone, Special Use, Variance)

SUMMARY:

The applicant, Turning Point Energy, LLC, is requesting rezoning approval, special use authorization, and variance approval to construct a solar farm on the 42-acre parcel generally located east of Cannonball Trail and south of Galena Road within the Bristol Ridge Planned Unit Development. The petitioner is requesting to rezone the parcel from the R-2 Single-Family and R-3 Townhome PUD (Bristol Ridge) to the A-1 Agricultural District zoning, special use permit approval for a solar farm land use, and variance approval to decrease the minimum distance between the ground and the solar panels from ten (10) feet to a minimum height of two (2) feet. To rezone the property and change the land use on this parcel, the petitioner is seeking to amend the existing annexation agreement for the Bristol Ridge Development to replace the current adopted land use plan with their solar farm. This request will be heard at a separate public hearing in front of the Yorkville City Council and the rezoning will be contingent on the approval of that amendment.

At the May 10th Planning and Zoning Committee meeting's public hearing for this agenda item several members of the PZC commissioners and the public expressed concerns related to this proposal, specifically regarding current site drainage, future stormwater runoff, glare from the proposed panels, erosion control, proposed planting mix under the solar panels, and decommissioning plan cost estimates. The applicant has revised their plans and related documents to address these concerns in an effort to receive a favorable recommendation for rezoning, special use and variance approval.

REVISED PLANS/DOCUMENTS:

From the discussion at the May 10th meeting, the following direction was provided to the applicant for additional information

Site Plan

The location of the solar panels meets the front and rear yard setbacks for the A-1 District and the location of the solar panels meets the required setbacks in the side yards per the Freestanding Solar Energy System requirements. The nearest distance from the frontage along Cannonball Trail to the landscape buffer is approximately 100 feet, roughly 240 feet to the private access gate off of the access path, and just about 590 feet from the existing residence to the nearest solar array.

The petitioner is working with the City's landscaping consultant on finalizing the landscaping plans to ensure it meets the City's standards. At the May 2, 2023 Economic Development Committee, it was recommended that the 300-foot gap at the northwest corner of the property should be landscaped with the vegetative buffer. The petitioner has revised the Site Plan to extend the vegetative buffer along the frontage of Cannonball Trail to address this concern. A final landscape plan, reflecting the additional landscaping buffer in the northwest corner of the site to be approved by the City Engineer and landscaping consultant will be required as a condition of the special use approval.



The proposed site access is via a new 20-ft. wide gravel driveway proposed off Cannonball Trail. The path provides access to the equipment, however, no formal parking stalls are provided, as no buildings, employees are planned on the site except for the occasional mowing or maintenance visits, about 3-4 times per year. Gravel roads are not permitted for vehicle travel or parking; however, staff recommends the driveway to have the top 4" CA-6 compacted and the next 8" CA-1 compacted with a compacted subgrade. Staff feels this is sufficient based upon the limited amount of vehicular traffic and restricted access to the site but will defer to Kendall County's DOT permit requirements for connection to Cannonball Trail.

Landscape Plan

The vegetative buffer along the western and sections of the northern boundary of the parcel are providing eight (8) evergreen trees/shrubs and seven (7) large deciduous shrubs every one hundred (100) linear feet. These buffers are not required as they are not adjacent to a residential use but do add to the required amount of lot landscaping. These buffers have been provided for potential views from the nearby religious institution and Cannonball Trail. The enhanced vegetative buffer is facing the residential land use to the southwest and is providing ten (10) evergreen trees/shrubs, six (6) large deciduous shrubs, and three (3) ornamental trees every one hundred (100) linear feet. Additionally, a 2-year maintenance period for the establishment of the ground cover which will be conducted by the City Engineer should be required as a

condition of special use approval. Therefore, staff is adding this as a condition to the special use approval upon the committee's recommendation.

Stormwater Pollution Prevention Plan (SWPP)

The Planning and Zoning Commission also requested to review the Preliminary Stormwater Pollution Prevention Plan (SWPP) to ensure the concerns expressed by surrounding property owners at the public hearing would be adequately addressed. The applicant's plan, prepared and certified by Kimley Horn dated June 6, 2023, provides general site information about details related to the proposed soil disturbing activities during site preparation; construction sequencing and best management practice activities during the installation of the solar panels; soil stabilization (temporary and permanent seeding) and erosion and sediment control (silt fencing/filter sock/erosion control blanket) to prevent soil from leaving the site; and waste disposal. The City Engineer has reviewed the applicants Preliminary Stormwater Pollution Prevention Plan (SWPP) and had no comments related to the plan, per their letter dated July 5, 2023.

Topsoil/Native Plantings

The applicant has provided a letter stating that Illinois's regulations require solar projects to enter into an Agricultural Impact Mitigation Agreement (AIMA) with the Illinois Department of Agriculture. As part of the agreement the applicant must agree that any excavation be performed in a manner to preserve the topsoil and best efforts will be made to store the topsoil near the excavation site so that it will not become intermixed with subsoil materials. The applicant has stated they intend to use helical anchors that will be driven into the ground, similar to screw and pilings will not be excavated. No soils will be hauled off site and any excavated topsoil will be spread around the extraction point.

Additionally, the plan proposal prepared by the applicant's civil engineer states the vegetative groundcover will use over thirty (30) species, both grasses and forbs, native to Illinois. These include, among others, Little Bluestem (Schizachyrium scoparium), Side Oats Grama (Bouteloua curtipendula) and Prairie Dropseed (Sporobolus heterolepis).

Glare

The applicant has submitted an updated Solar Glare and Glint Analysis report, prepared by Kimley Horn (but not stamped), which concludes that there was no potential for glare identified throughout the entire project area after mitigating using panel specifications. Additionally, it is recommended that the panels be installed using the same specifications in the report, which includes a single-axis rotation, backtracking, 180 degrees tracking orientation, 5-degree panel tilt overnight, and smooth glass with anti-reflective coating. This is recommended to minimize the likelihood of future glare issues.

Decommission

An updated stamped licensed engineer's decommissioning plan with revised cost estimates has been provided by the applicant. To ensure compliance, the petitioner has provided a decommission plan and construction estimate of $287,059 for the removal of the solar farm and restoration and reseeding of the property. This estimate is derived from the RS Means Heavy Construction data 2023 and RSMeans City Cost Index (CCI) for Joliet. With the inclusion of a proposed 1.5% yearly inflation rate over 25 years ($129,448), the total estimate amount is $416,507.

Staff recommends an inflation rate of 3% over 25 years ($258,896) for a total decommission estimate of $545,955. A security guarantee of 120% of the petitioner's estimate for a total of $655,146.00, will be required in a form acceptable to the City Engineer as a condition of the special use approval.

In addition to the security guarantee, staff also recommends a blanket easement over the property to allow the City or its contractor to enter and remove the abandoned system in compliance with the City Code, as a condition of the special use approval.

ENGINEERING COMMENTS:

Comments prepared by Engineering Enterprises Inc. (EEI) dated March 13, 2023 and July 5, 2023 were provided to the petitioner. The work items listed in both of the review letters will need to be addressed and will become conditions for special use approval.

SPECIAL USE STANDARDS:

Section 10-4-9F of the City's Zoning Ordinance establishes standards for special use requests. No special use shall be recommended by the Planning and Zoning Commission unless said commission shall find that:

1. The establishment, maintenance or operation of the special use will not be unreasonably detrimental to or endanger the public health, safety, morals, comfort or general welfare.
2. The special use will not be injurious to the use and enjoyment of other property in the immediate vicinity for the purpose already permitted, nor substantially diminish and impair property values within the neighborhood in which it is to be located.
3. The establishment of the special use will not impede the normal and orderly development and improvement of surrounding property for uses permitted in the district.
4. Adequate utilities, access roads, drainage or other necessary facilities have been or are being provided.
5. Adequate measures have been or will be taken to provide ingress or egress so designed as to minimize traffic congestion in the public streets.
6. The proposed special use is not contrary to the objectives of the official comprehensive plan of the City as amended.

Additionally, Section 10-19-4C of the City's Zoning Ordinance establishes standards for special use requests regarding alternative energy systems. No special use shall be recommended by the Planning and Zoning Commission unless said commission shall find that:

1. The city council shall determine that the application has met all of the general requirements of this chapter.

2. The proposed energy system shall further the intent of this chapter and provide renewable energy to the property on which it is proposed.

3. The proposed alternative energy system is located in such a manner as to minimize intrusions on adjacent residential uses through siting on the lot, selection of appropriate equipment, and other applicable means.

4. The establishment for the proposed alternative energy system will not prevent the normal and orderly use, development, or improvement of the adjacent property for uses permitted in the district.

The applicant has provided written responses to these special use standards as part of their application and those responses were included into the public record during the public hearing at the May 10, 2023 Planning and Zoning Commission meeting.

REZONING STANDARDS:

Section 10-4-10-B of the City's Zoning Ordinance establishes criteria for findings of fact related to rezoning (map amendment) requests. When the purpose and affect is to change the zoning of a property and amend the City's Zoning Map, the Planning and Zoning Commission shall consider each of the following facts before rendering a decision on the request:

1. The existing uses and zoning of nearby property.

2. The extent to which the property values are diminished by the particular zoning restrictions.

3. The extent to which the destruction of the property values of plaintiff promotes the health, safety, morals or general welfare of the public.

4. The relative gain to the public as compared to the hardship imposed upon the individual property owner.

5. The suitability of the subject property for the zoned purpose.

6. The length of time the property has been vacant as zoned considered in the context of land development in the area in the vicinity of the subject property.

7. The community need for the proposed use.

8. The care to which the community has undertaken to plan its land use development.

The applicant has provided written responses to the rezoning standards as part of their application and those responses were included into the public record during the public hearing at the May 10, 2023 Planning and Zoning Commission meeting.

VARAITION STANDARDS:

Section 10-4-7 identifies six (6) standards that need to be met when approving a zoning variation. The petitioner has provided their responses to these standards within their attached application:

a. Because of the particular physical surroundings, shape or topographical conditions of the specific property involved, a particular hardship to the owner would result, as distinguished from a mere inconvenience, if the strict letter of the regulations were carried out.

b. The conditions upon which the petition for a variation is based are unique to the property for which the variation is sought and are not applicable, generally, to other property within the same zoning classification.

c. The alleged difficulty or hardship is caused by this title and has not been created by any person presently having an interest in the property.

d. The granting of the variation will not be detrimental to the public welfare or injurious to other property or improvements in the neighborhood in which the property is located.

e. The proposed variation will not impair an adequate supply of light and air to adjacent property, or substantially increase the congestion in the public streets, or increase the danger to the public safety, or substantially diminish or impair property values within the neighborhood.

f. The proposed variation is consistent with the official comprehensive plan and other development standards and policies of the City.

The applicant has provided written responses to the standards for variation as part of their application and those responses were included into the public record during the public hearing at the May 10, 2023 Planning and Zoning Commission meeting.

STAFF COMMENTS & RECOMMENDATIONS:

Staff is generally supportive of the rezoning, special use request, and variance requests. Should the City Council vote to approve this request, staff recommends the following conditions to the special use:

1. The maximum height of the solar panels for this land use will be fifteen (15) feet.

2. The installation of an eight (8) foot tall chain link fence with opaque slats surrounding the entire solar farm is required.

3. A final landscape plan, that includes additional landscaping buffer in the northwest corner of the site which currently shows a 300-foot gap in continuous buffering, shall be submitted as part of the final engineering submittal and be approved by the City Engineer and landscaping consultant.

4. A 2-year maintenance period for the establishment of the ground cover which will be inspected by the City Engineer is required.

5. A Knox box with keys provided to the City's building department and Bristol Kendall Fire District (BKFD).

6. A revised decommission estimate using an inflation rate of 3% over 25 years ($258,896) for a total of $$545,955.

7. A security guarantee of 120% of the petitioner's decommissioning estimate for a total of $655,146.00 in a form acceptable to the City Engineer.

8. The proposed gravel driveway will have the top 4" CA-6 compacted and the next 8" CA-1 compacted with a compacted subgrade and be subject to Kendall County's DOT permit requirements for connection to Cannonball Trail.

9. A blanket easement over the property to allow the City or its contractor to enter and remove the abandoned system in compliance with the City Code.

10. Adherence to all comments prepared by EEI, city engineering consultant, in letters dated March 13, 2023 and July 5, 2023.

PROPOSED MOTIONS:

SPECIAL USE

In consideration of testimony presented during a Public Hearing on May 10, 2023 and discussion of the findings of fact, the Planning and Zoning Commission recommends approval to the City Council a request for Special Use authorization to construct a freestanding solar energy system, or solar farm, contingent upon approval of annexation agreement amendment for the Bristol Ridge Development by the City Council, for a property generally located south of Galena Road and east of Cannonball Trail, subject to staff recommendations in a memo dated July 5, 2023 and further subject to… {insert any additional conditions of the Planning and Zoning Commission}…

REZONING

In consideration of testimony presented during a Public Hearing on May 10, 2023 and discussion of the findings of fact, the Planning and Zoning Commission recommends approval to the City Council a request for rezoning from R-2 Single-Family and R-3 Townhome PUD (Bristol Ridge) to A-1 Agricultural District for the purpose of constructing a freestanding solar energy system, or solar farm, contingent upon approval of annexation agreement amendment for the Bristol Ridge Development by the City Council, for a property generally located south of Galena Road and east of Cannonball Trail, subject to {insert any additional conditions of the Planning and Zoning Commission}…

VARIANCE

In consideration of testimony presented during a Public Hearing on May 10, 2023 and discussion of the findings of fact, the Planning and Zoning Commission recommends approval to the City Council a request for variance from Section 10-19-7-D of the Yorkville Municipal Code to reduce the minimum clearance between the lowest point of a freestanding solar panel and the surface on which the system is mounted from ten feet to two feet, contingent upon approval of annexation agreement amendment for the Bristol Ridge Development by the City Council, for a property generally located south of Galena Road and east of Cannonball Trail, subject to {insert any additional conditions of the Planning and Zoning Commission}…

ATTACHMENTS:

1) UPDATED Zoning Site Plan dated June 21, 2023, as prepared by Kimley Horn & Associates, Inc.
2) UPDATED Decommissioning Plan, as prepared by Turning Point Energy, LLC
3) UPDATED Solar Glare and Glint Analysis, dated June 2023, as prepared by Kimley Horn & Associates, Inc.
4) NEW Stormwater Pollution Prevention Plan (SWPPP), dated June 6, 2023, prepared by Kimley Horn & Associates, Inc.
5) NEW Bristol Ridge Solar Topsoil Letter, dated June 21, 2023, prepared by Turning Point Energy, LLC.
6) NEW Bristol Ridge Solar – Native Seed Mix Letter, dated June 23, 2023, prepared by Turning Point Energy, LLC.
7) NEW EEI, Inc., Review Comments dated July 5, 2023.
8) PZC Packet Materials from the May 10, 2023 Planning and Zoning Commission meeting.



NORTH

GRAPHIC SCALE IN FEET
0 50 100 200

LEGEND

ROAD LABEL	IL-251
PROJECT BOUNDARY	
PROPERTY LINE PER GIS	
RIGHT OF WAY PER GIS	R/W
SETBACK	
EX. OVERHEAD ELECTRIC	EX OHE
EX. GRAVEL/PAVEMENT	
EX. UTILITY POLE	
EX. RESIDENCE/STRUCTURE	
EX. FLOW (DIRECTION AND SLOPE)	XX%
PR. SECURITY FENCE	X
PR. PANEL LIMITS	
PR. UNDERGROUND ELECTRIC	UGE
PR. OVERHEAD ELECTRIC	OHE
PR. ACCESS ROAD	
PR. UTILITY POLE	
PR. EQUIPMENT PAD	
PR. SOLAR ARRAY	
EX. WELL	W
WELL BUFFER	
SOIL BOUNDARY	
PR. STAGING AREA	
PR. LANDSCAPE BUFFER	

EROSION CONTROL NOTES

1. FILE THE CONSTRUCTION STORMWATER GENERAL PERMIT (CSGP) WITH IDEM AT LEAST 48 HOURS PRIOR TO STARTING CONSTRUCTION.
2. INSTALL CONSTRUCTION ENTRANCE.
3. INSTALL SILT FENCE AND INLET PROTECTION AT INLETS.
4. POST NOI SIGN AT ENTRANCE.
5. POST ALL REQUIRED PERMITS / DRAWINGS.
6. DESIGNATE A PERSON TO BE RESPONSIBLE FOR SITE INSPECTIONS AFTER EACH RAINFALL AND A MINIMUM OF 1 TIME PER WEEK.
7. INSTALL STAGING AREA, FUELING STATION, MATERIAL STORAGE AREA, CONCRETE WASHOUT, AND PORT-O-LET.
8. STRIP TOPSOIL AND STOCKPILE.
9. STRIP TOPSOIL AND ANY OTHER ITEMS SHOWN TO BE DEMOLISHED.
10. ROUGH GRADE THE PROJECT SITE. SEED DISTURBED AREAS IMMEDIATELY FOLLOWING ROUGH GRADING AREAS THAT WILL NOT BE DISTURBED AGAIN SHOULD BE PERMANENTLY SEEDED. NO UN-VEGETATED AREAS SHALL BE LEFT EXPOSED FOR MORE THAN 7 DAYS. TEMPORARY OR PERMANENT STABILIZATION METHODS MUST BE INITIATED BY END OF THE SEVENTH DAY THAT AN AREA HAS BEEN IDLE AND COMPLETED WITHIN 14 DAYS.
11. INSTALL STORM SEWER.
12. INSTALL UNDERGROUND UTILITIES. EROSION CONTROL MEASURES SHALL BE INSTALLED AT NEW DRAIN INLET LOCATIONS IMMEDIATELY UPON INSTALLATION.
13. FINAL GRADE THE SITE.
14. INSTALLATION OPERATIONS. EROSION CONTROL MEASURES SHALL BE LEFT IN-PLACE UNTIL THE SITE IS STABILIZED.
15. REMOVE ALL TEMPORARY EROSION CONTROL MEASURES AT THE CONCLUSION OF THE PROJECT AS DIRECTED BY THE COUNTY AND THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT.
16. LEAVE PERMANENT EROSION CONTROL MEASURES IN PLACE.

NOTE: THE SEQUENCE OF CONSTRUCTION SHOWN ABOVE IS A GENERAL OVERVIEW AND IS INTENDED TO CONVEY THE GENERAL CONCEPTS OF THE EROSION CONTROL DESIGN AND SHOULD NOT BE RELIED UPON FOR CONSTRUCTION PURPOSES. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR DETAILED PHASING AND SEQUENCING AS NECESSARY TO CONSTRUCT THE PROPOSED IMPROVEMENTS AS DETAILED IN THESE PLANS. THE CONTRACTOR SHALL NOTIFY ENGINEER IN WRITING IMMEDIATELY PRIOR CONSTRUCTION IF ANY ADDITIONAL INFORMATION ON THE CONSTRUCTION SEQUENCE IS NECESSARY. CONTRACTOR IS SOLELY RESPONSIBLE FOR COMPLYING WITH THE REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION AND ALL OTHER APPLICABLE LAWS.

MANAGED TURF:

SITE MANAGER TO OBSERVE SITE IN THE SPRING, TWICE IN THE SUMMER, AND ONCE IN THE FALL. TO IDENTIFY GROWTH RATES, NOXIOUS WEEDS AND ESTABLISHMENT
- PROBLEMS. MOWING AND WEEDING MAY NEED TO OCCUR AT EACH OBSERVATION. IF PROBLEMS ARE NOT IDENTIFIED WITH EITHER HEIGHT OF VEGETATION OR QUANTITY OF WEEDS, NO ACTION SHOULD BE TAKEN. THE INITIAL THREE YEARS WILL REQUIRE MORE FREQUENT MAINTENANCE AND MONITORING TO PROVIDE NATIVE PLANT ESTABLISHMENT INSTEAD OF INVASIVE WEEDS. WITHIN FIRST TWO YEARS OF COMPLETION, THE SITE MANAGER SHALL CONDUCT A WEED CONTROL PROGRAM TO ELIMINATE NOXIOUS AND SCHOOL INVASIVE WEEDS. ALSO, DURING THIS TIME, MOWING SHOULD OCCUR AT LEAST TWICE PER YEAR TO ELIMINATE SHADING FROM AGRONOMIC, ANNUAL WEEDS. SITE MANAGER SHOULD PERFORM YEARLY INSPECTIONS WITH A LANDSCAPE MAINTENANCE PROFESSIONAL TO IDENTIFY WEED PROBLEMS AND TO DISCUSS A STRATEGY FOR MAINTENANCE FOR THE YEAR. ANNUALLY, AT THE START OF SPRING, SITE MANAGER SHALL MOW OR BURN THE SITE TO REMOVE ANY DEAD PLANT MATERIAL AND ANY REMAINING STANDING VEGETATION FROM THE PREVIOUS SEASONS. IF SITE MANAGER DETERMINES THE NEED TO REMOVE INVASIVE WEEDS WITH AN HERBICIDE, THE MOST EFFECTIVE METHOD IS DURING THE FALL WITH A DIRECT APPLICATION. SITE MANAGER SHOULD CONDUCT A THOROUGH WALK-THROUGH OF THE SITE TO FIND AND APPLY HERBICIDE

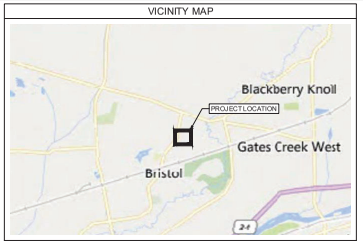
SILT FENCE:
- SILT FENCE SHALL BE LOCATED TO CAPTURE OVERLAND, LOW-VELOCITY SHEET FLOW. IT SHALL BE INSTALLED AT THE DOWNSTREAM LOCATION OF ALL SITE RUNOFF.

SILT FENCE ROCK OUTLET:
- SILT FENCE ROCK OUTLET PROVIDES STABILIZATION FOR LARGER FLOW EVENTS AND FILTERS THE SEDIMENT-LADEN WATER BEFORE RUNOFF LEAVES THE SITE.

EROSION CONTROL BLANKET:
- A RESILIENT SUSTAINABLE ROLLED EROSION CONTROL PRODUCT OF PROCESSED NATURAL OR POLYMER FIBERS MECHANICALLY, STRUCTURALLY, OR CHEMICALLY BOUND TOGETHER TO FORM A CONTINUOUS MATRIX TO PROVIDE EROSION CONTROL AND FACILITATE VEGETATION ESTABLISHMENT.

FILTER SOCK:
- SIMILAR TO SILT FENCE, FILTER SOCK IS DESIGNED TO RETAIN SEDIMENT-LADEN WATER TO ALLOW SETTLEMENT OF SUSPENDED SOILS BEFORE FILTERING THROUGH THE COMPOST MATERIAL FOR DISCHARGE DOWNSTREAM.

VICINITY MAP



SCALE 1" = 5000'

SITE DATA TABLE

PIN #	02-10-300-017
PROPERTY OWNER	DANIEL B LIGHT
SITE ADDRESS	1700 CANNONBALL TRAIL
LEGAL DESCRIPTION	41.83 AC TR LYG S ½ SEC 10-37-7, LYG E CTR/LN CANNONBALL TRL, CITY OF YORKVILLE
ZONING JURISDICTION	CITY OF YORKVILLE*
ZONING	PUD (UNDERLYING: R-2, R-3)
CURRENT LAND USE	FARMLAND WITHOUT BUILDINGS
PROPOSED USE	FREESTANDING SOLAR ENERGY SYSTEM
TOTAL PARCEL AREA	± 41.8 AC
PRELIMINARY DISTURBED AREA	± 34.5 AC
PRELIMINARY SOLAR AREA	± 25.6 AC
AGRICULTURAL ROW SETBACK	100'
AGRICULTURAL PROPERTY LINE SETBACK	50'
SOLAR SIDE YARD SETBACK	8'
SOLAR REAR YARD SETBACK	8'

*ZONING SITE PLAN IS BEING SUBMITTED FOR SPECIAL USE PERMIT TO CONSTRUCT/OPERATE A FREESTANDING SOLAR ENERGY SYSTEM

NOTES

1. THE PURPOSE OF THIS PLAN IS FOR SPECIAL USE PERMIT REVIEW AND APPROVAL BY KENDALL COUNTY TO CONSTRUCT A FREESTANDING SOLAR ENERGY SYSTEM.
2. THIS PLAN WAS PRODUCED UTILIZING GIS RESOURCES AND INFORMATION FROM MULTIPLE SOURCES, INCLUDING KENDALL COUNTY, CITY OF YORKVILLE, GOOGLE EARTH, AND USGS TOPOGRAPHIC INFORMATION.
3. SUBJECT PROPERTY DOES NOT LIE WITHIN A SPECIAL FLOOD HAZARD AS SHOWN ON THE FLOOD INSURANCE RATE MAP (COMMUNITY PANEL 17093C0035H) PUBLISHED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA).
4. THE LOCATIONS OF PROPOSED IMPROVEMENTS, INCLUDING BUT NOT LIMITED TO: FENCING, SOLAR ARRAY RACKING, INVERTER/TRANSFORMER PADS, OVERHEAD POLES AND LINES, ETC., SHOWN ARE APPROXIMATE AND ARE SUBJECT TO MODIFICATION DUE TO SITE CONDITIONS, ADDITIONAL PERMITTING REQUIREMENTS, EQUIPMENT SPECIFICATIONS, AND/OR OTHER CONSTRAINTS DURING FINAL ENGINEERING.
5. PROJECT AREA, INCLUDING CONSTRUCTION STAGING AREAS, WILL BE CLEARED AND GRUBBED AS NECESSARY, RETAINING PRE-DEVELOPMENT DRAINAGE PATTERNS TO THE BEST EXTENT POSSIBLE. CONSTRUCTION STAGING AND AREAS SUBJECT TO RUTTING DURING CONSTRUCTION WILL BE TEMPORARILY STABILIZED WITH GRAVEL. SOIL CONDITIONS AND EQUIPMENT LOADS WILL DETERMINE FINAL DESIGN.
6. ALL DIMENSIONS SHOWN ARE AT 90 DEGREES UNLESS OTHERWISE NOTED.
7. CONTRACTOR SHALL CALL AT LEAST 72 HOURS PRIOR TO BEGINNING CONSTRUCTION OR EXCAVATION TO HAVE EXISTING UTILITIES LOCATED. ADDITIONALLY, CONTRACTOR SHALL CONTACT ANY LOCAL UTILITIES THAT PROVIDE THEIR OWN LOCATOR SERVICES.
8. CONTRACTOR SHALL MAINTAIN ACCESS AND UTILITY SERVICES TO ANY REMAINING BUILDING(S) OR ADJACENT BUILDING(S) THROUGHOUT THE DEMOLITION AND CONSTRUCTION PHASES. EXISTING IMPROVEMENTS DAMAGED DURING CONSTRUCTION SHALL BE REPLACED/RESTORED TO THE SATISFACTION OF THE OWNER BY THE CONTRACTOR RESPONSIBLE FOR THE DAMAGE.
9. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE TO PROVIDE SIGNS, BARRICADES, WARNING LIGHTS, GUARD RAILS, AND EMPLOY FLAGGERS AS NECESSARY WHEN CONSTRUCTION ENDANGERS EITHER VEHICULAR OR PEDESTRIAN TRAFFIC. THESE DEVICES SHALL REMAIN IN PLACE UNTIL THE TRAFFIC MAY PROCEED NORMALLY AGAIN.
10. SITE WILL HAVE NO DEDICATIONS FOR OPEN SPACE, NATURAL AREA, HISTORIC BUILDING(S)/STRUCTURE(S), OR STORMWATER MANAGEMENT FACILITIES.
11. SITE WILL NOT INCLUDE WATER SOURCE OR SEWAGE DISPOSAL. APPROXIMATE LOCATION OF EXISTING WATER WELL LOCATIONS SHOWN PER THE ILLINOIS WATER WELL INTERACTIVE MAP ONLINE.
12. STORMWATER MANAGEMENT FACILITIES TO BE PROVIDED AS REQUIRED BY COUNTY AND/OR NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMITTING. REQUIREMENTS TO BE DETERMINED DURING FINAL ENGINEERING.
13. THE MAXIMUM HEIGHTS OF FREESTANDING SOLAR ENERGY SYSTEMS SHALL BE SUBJECT TO SPECIAL USE CONDITIONS.
14. THE MINIMUM CLEARANCE BETWEEN THE LOWEST POINT OF THE SYSTEM AND THE SURFACE ON WHICH THE SYSTEM IS MOUNTED IS 10 FT.
15. SOLAR PANELS WILL BE DESIGNED WITH ANTI-REFLECTIVE COATING TO MINIMIZE GLARE.
16. COLLECTION LINES WITHIN THE SOLAR FARM WILL BE LOCATED AND MAINTAINED UNDERGROUND.
17. THERE SHALL BE NO EXTERIOR LIGHTING.
18. SETBACKS SHOWN ON THIS PLAN ARE BASED ON YORKVILLE CODE OF ORDINANCES, SECTION 10-19-7 AND 10-9-5.
19. ALL NECESSARY PERMITS FOR SOIL EROSION CONTROL AND DRIVEWAY CONSTRUCTION WILL BE OBTAINED AS PART OF FINAL ENGINEERING AND PRIOR TO CONSTRUCTION
20. ALL UTILITY EQUIPMENT (METERS, TRANSFORMERS, ETC.) SHALL BE SCREENED WITH APPROPRIATE PLANTINGS IF LOCATED ON THE GROUND (PER CHAPTER 17 – FENCING AND SCREENING, SECTION 10-17-3 OF THE CITY OF YORKVILLE ORDINANCE)

SOILS DATA TABLE

MAP UNIT SYMBOL	MAP UNIT NAME	HYDROLOGIC SOIL GROUP
206A	THORP SILT LOAM, 0 TO 2 PERCENT SLOPES	C/D
325B	DRESDEN SILT LOAM, 0 TO 2 PERCENT SLOPES	B
369A	WAUPECAN SILT LOAM, 0 TO 2 PERCENT SLOPES	B
325A	DRESDEN SILT LOAM, 2 TO 4 PERCENT SLOPES	B
149A	BRENTON SILT LOAM, 0 TO 2 PERCENT SLOPES	B/D

No.	REVISIONS	DATE
1	REVISED PER CITY COMMENTS	04/13/2023
0	ZONING SITE PLAN	08/01/2022

TurningPoint Energy

Kimley»Horn

© 2022 KIMLEY-HORN AND ASSOCIATES, INC.

570 LAKE COOK RD SUITE 200
DEERFIELD, IL 60015
WWW.KIMLEY-HORN.COM

KHA PROJECT 268173009
DATE 04/13/2023
SCALE AS SHOWN
DESIGNED BY SAF
DRAWN BY SAF
CHECKED BY APK

TPE IL KE106, LLC

ZONING SITE PLAN

KENDALL COUNTY, IL

SHEET NUMBER
EX-1

Drawing name: \\Kimley-Horn\WK_DIV\CHS_LEV\268173009_Turning Point Energy_KE106\3 Design\CAD\Exhibits\Zoning Site Plan\KE106_Zoning Site Plan.dwg 1 OF 1 Jun 23, 2023 12:19pm by alessandra.tartaglia
This document, together with the concepts and designs presented herein, as an instrument of service, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization and adaptation by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.

KE106 Solar Facility Decommissioning Plan

1.0 Facility Description

TPE KE106, LLC Solar Photovoltaic Facility is a 5 MW AC solar farm proposed at 1700 Cannonball Trail, Bristol IL, 60512 in Kendall County (the "Facility"). The Facility is to be constructed on approximately 36 acres located primarily on 42 acres of farmland without buildings. The purpose of the Facility is the generation of electricity. The Project will be interconnected to the Commonwealth Edison ('ComEd') electric distribution grid near the west of the site, along Cannonball Trail.

The Facility will be a ground-mounted solar array. The solar panels will be mounted on steel and aluminum structures consisting of posts, beams, rails, and bracing. Vertical steel posts will be driven into the ground to a depth of approximately eight feet to anchor the structures. The solar panels will be connected to the inverters mounted on the racking structure via copper and aluminum wire. The inverters will connect to electric panels, transformers, and then switchgear at the array location via underground wire. Output from the Facility will be connected overhead to the existing utility distribution lines.

The estimated useful Facility lifetime is 35 years or more. The following list is a summary of the site features:

- 5 MW Solar arrays consisting of silicone solar panels
- Driven post steel and aluminum racking system
- 8' Agricultural style security fence surrounding the array perimeter.
- 1 Slab on grade concrete pads for electrical equipment
- Copper and aluminum wire
- Underground conduit at the array location
- Overhead poles and wires from the array location to utility poles.
- Gravel access roads
- Miscellaneous electrical equipment

2.0 Project Decommission and Recycling

The Facility consists of numerous materials that can be resold or recycled for significant scrap value, including steel, aluminum, glass, copper, and plastics. (Often, current market salvage values of a Facility exceed estimated decommissioning and site restoration expenses.) The Facility has an anticipated operational life of 35 years or longer if properly maintained. At the end of operational life of the Facility, the Facility will be safely dismantled using conventional construction equipment, rather than being demolished or otherwise disposed of.

2.1 Temporary Erosion Control

Temporary erosion and sedimentation control best management practices will be used during the decommissioning phase of the Facility. Control features will be regularly inspected during the decommissioning phase and removed at the end at the process. All decommissioning activities will conform with local and state regulations. Demolition debris shall be placed in temporary onsite storage area(s) pending final transportation and/or recycling according to the procedures listed below.

2.2 Permits and Approvals

It is anticipated a NPDES Permit from the Illinois Environmental Protection Agency (IEPA) and a SWPPP will be required. The proposed development area of the site does not contain waters of the United States. Mottled Sculpin (Cottus bairdii) may be within the vicinity of the proposed area, but the IDNR has evaluated the site and concluded adverse effects are unlikely; therefore consultation under I7 III. Adm. Code Part 1075 is terminated. Appropriate applications for permits will be submitted and approved prior to decommission activities.

2.3 Material Removal Process

The decommission process will consist of the following general steps:

2.3.1 Facility shall be disconnected safely from the power grid and all equipment shall be switched to off position.

2.3.2 PV modules shall be disconnected, packaged, and returned to manufacturer or appropriate facility for recycling, or resold for other project use.

2.3.3 Above and underground cabling shall be removed and sent to an appropriate recycling facility or sold for salvage value.

2.3.4 Inverters will be disconnected from racking and shipped intact to an approved electrical equipment recycler or appropriately disposed of.

2.3.5 Racking materials shall be dismantled, removed, and recycled off-site at an approved recycler, sold for scrap value, or appropriately disposed of.

2.3.6 Fencing will be dismantled, removed, and recycled off-site at an approved recycler, sold for scrap value, or appropriately disposed of.

2.3.7 Grade slabs will be broken and removed and appropriately disposed of in compliance with local and state regulations.

2.3.8 All remaining electrical and support equipment will be dismantled, decontaminated (if appropriate) and recycled, sold for scrap value, or disposed of.

2.4 PV Module Removal and Recycling

Solar photovoltaic modules used in the Facility are manufactured within regulatory requirements for toxicity based on Toxicity Characteristic Leaching Procedure (TCLP). The solar panels are not considered as hazardous waste. The panels used in the Facility will contain silicon, glass, and aluminum, which have value for recycling. Solar panels have a warranty of 20 – 25 years and useful life of 35 – 50 years or longer. The most realistic outcome for solar modules is selling them for re use in other generation projects. Modules will be sold for re use or dismantled and packaged per manufacturer or approved recyclers specifications and shipped to an approved off-site approved recycler. Per the Health and Safety Impacts of Solar Photovoltaics White Paper by North Carolina State University, section 1.2.3 Panel End-of-Life Management, modules can be recycled at the time of decommissioning.

2.5 Electric Wire Removal

Electric wire made from copper or aluminum has scrap value for recycling. DC wiring can be removed manually from the panels to the inverter. Underground wire in the array of the array will be pulled and removed from the ground. Overhead cabling for the interconnection will be removed from poles. All wire will be sent to an approved recycling facility or sold for scrap value.

2.6 Electrical Equipment Removal

Inverters, panels, transformers, switchgear, and other electrical equipment will be dismantled, packaged, and removed from the site per manufacture's specifications for removal, decontamination, disposal or recycling. Any dielectric fluids present in transformer, or other electric equipment will be removed, packaged, and sent to an approved waste facility.

2.7 Racking and Fencing removal

All Racking and fencing material will be broken down into manageable units and removed from facility and sent to an approved recycler or sold for scrap value. All racking posts driven into the ground will be pulled and removed.

2.8 Concrete Slab Removal

Concrete slabs used as equipment pads will be broken and removed and appropriately disposed of in compliance with local and state regulations. Clean concrete will be crushed and disposed of off-site and or recycled and reused either on or off-site.

2.9 Roads

Gravel from on-site access roads shall be removed and recycled. Once the gravel is removed, the soil below the access roads shall be scarified a depth of 18-inches and blended as noted in the Site Restoration section below.

2.10 Landscaping

Unless requested in writing to remain in place by the landowner, all vegetative landscaping and screening installed as part of the Project will be removed. Any weed control equipment used during the project, including weed-control fabrics or other ground covers shall be removed. Landscape areas will be restored as noted in the Site Restoration section below.

2.11 Site Restoration

Once removal of all Project equipment and landscaping is complete, all areas of the project site that are unvegetated or where vegetation was disturbed/removed as part of decommissioning shall be restored by the applicant. Restoration shall consist of applying additional topsoil, seed, and necessary fertilizer to ensure that adequate vegetation is established throughout the project site. Areas that exhibit compaction and/or rutting shall be scarified a depth of 18-inches prior to placement of topsoil and seed. The existence of drainage tile lines or underground utilities may necessitate less scarification depth. The Applicant is responsible for promptly repairing damage to drain tiles and other drainage systems that result from decommissioning.

2.12 Final Site Walkthrough

A final site walkthrough will be conducted to remove debris and/or trash generated within the site during the decommissioning process and will include removal and proper disposal of any debris that may have been wind-blown to areas outside the immediate footprint of the Facility being removed.

3.0 Decommissioning Terms

The Facility shall be decommissioned within 12 months of the end of the Facility's operational life, but outside of the winter season.

Per the requirements of the Illinois Department of Agriculture (IDOA), an Agricultural Impact Mitigation Agreement (AIMA) must be signed by the Facility owner and filed with the County Board (or local AHJ). The IDOA prepared the AIMA to help preserve the integrity of Agricultural Land that is impacted by the Construction and Decommission of a Commercial Solar Energy Facility. Per the AIMA, all solar panels shall be removed from the property and the land at completion of the decommissioning phase as described in this document, and expiration of site lease, the land will be returned to the owner in substantially the existing condition as of the date hereof.

4.0 Decommissioning Cost Estimate

Kimley-Horn prepared the attached Decommissioning Estimate utilizing Industry Standard prices in 2023. Removal costs were determined using RS Means Cost Data. Removal costs include materials, contractor installation/demolition, and mobilization and demobilization.

5.0 Attachments

- Decommission Cost Estimate

Project Name: TPE IL KE106, LLC
Project Location: Yorkville
Decommissioning Estimate Pro Forma w/o Salvage

Kimley»Horn

The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs. LS = Lump Sum, HR = Hours, EA = Each, LF = Linear Feet.

Item	Quantity	Unit	Unit Price	Total Price
Mobilization	1	LS		$13,560
SWPPP, Erosion Control Measures	36	Ac	$670.00	$24,120
Seeding	2.0	Ac	$2,372.97	$4,746
Tilling 6" topsoil/scarifying access road and rough grading existing soil	1	Ac	$16,198.91	$16,199
Remove and Recyle Chainlink Fence, 8' High	4,779	LF	$5.72	$27,336
Remove Power Pole	6	EA	$763.43	$4,581
Removal and Recycle AC Cables	178	LF	$31.87	$5,673
Removal and Recycle DC Cables	146,332	LF	$0.30	$43,900
Backfill AC and DC trenches	89,615	LF	$0.37	$33,157
Remove and Recycle Inverters	1	EA	$7,830.23	$7,830
Removed and Recycle Photovoltaic Modules	14,222	EA	$5.36	$76,230
Remove and Recycle Piles (10' W6x7 piles @ 25' OC assumed)	2,397	EA	$5.00	$11,985
Remove and Recycle Support Assemblies	385,809	LB	$0.04	$15,432
			Subtotal:	$287,059
			Inflation (1.5%/year):	$129,448
			Total:	$416,507

Notes:

1. Equipment rental rates and labor productivity and unit rates were derived from RSMeans Online (Heavy Construction, 2023 data).

2. Labor, material, and equipment rates are based on the RSMeans City Cost Index (CCI) for Joliet.

3. For PV Module Removal/Recycle labor and equipment costs are computed at present values.

4. Quantities were recorded on 06/06/2023.

LICENSED PROFESSIONAL ENGINEER
Jason C. Cooper
062-066282
STATE OF ILLINOIS

Date of Expiration: 11-30-23

Solar Glare and Glint Analysis Report

for

KE106 Solar

Bristol, IL

June 2023

KHA Project # 268173009.3

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Kimley»Horn

Introduction

KE106 Solar is a proposed solar array located in Bristol, Illinois between the cities of Bristol and Blackberry Knolls. On behalf of KE106 Solar, Kimley-Horn performed a Glint and Glare Analysis to identify any potential impacts on three nearby roadways and 24 residences surrounding the site. Specifically, this analysis considered impact on motorists and residences along Galena Rd, Cannonball Trail, and Kennedy Rd. Since no airports were within a five-mile radius of the site, no airport operations were considered.

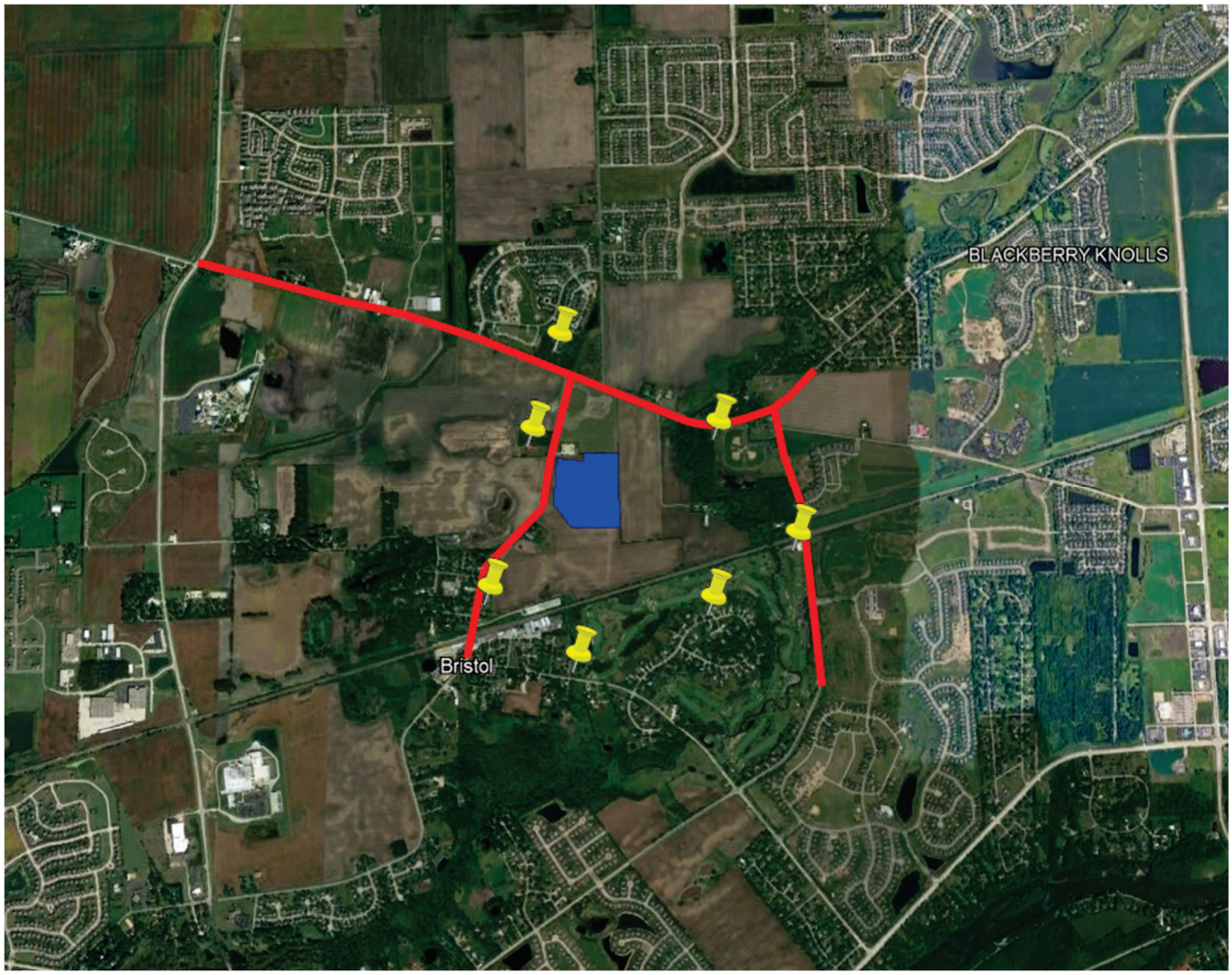


Figure 1: Overall Site Plan and Receptors

Receptors & Methodology

The analysis is based on the current site configuration as of June 2023. All PV arrays were modeled at their respective elevations on each structure to identify all possible glare for single axis tracking with backtracking. All PV arrays were modeled using assumed finish grade slopes below ten percent in any direction which must be specified when modeling the backtracking method. Three route receptors were modeled to see if portions of the existing roadway network could have potential

glare. See Appendix A for detailed parameters. All receptors analyzed are listed below including route receptors and residences.

Receptors	Location	Description
Galena Rd	Rural Road North of Project	Analyzed in the area shown in red in Figure 1.
Cannonball Trail	Rural Road West of Project	Analyzed in the area shown in red in Figure 1.
Kennedy Rd	Rural Road East of Project	Analyzed in the area shown in red in Figure 1.
24 Observation Points	Located around the site	Simulated homes on all sides of the site at a height of 15’

Table 1: Receptor Descriptions

Kimley Horn performed the glare analysis using the ForgeSolar Glare Gauge software tool. If glare is found for any receptor, the retinal irradiance (brightness) and subtended angle (size divided by distance) of the glare source are calculated through this tool. If glare is found for any of the receptors, the annual predicted glare occurrence and the daily duration of the glare are calculated. Using retinal irradiance and subtended angle, ocular hazards ranging from temporary after-image to retinal burn can be predicted. “green” grade glare indicates a low potential for after-image, “yellow” grade glare indicates the potential for after-image exists, and “red” grade glare indicates the potential for retinal damage. Glare that is beyond 50 degrees left or right from a driver’s line-of-sight is not considered a safety hazard.

The amount of light reflected by a surface, increase as the sunlight’s angle of incidence at the surface increases as illustrated in Figure 2. The red angle of incidence yields 50% light reflected while the blue angle of incidence yields only 2% of light reflected. Both scenarios were observed in the analysis, leading to mitigation measures implemented to eliminate the glare. Also, the facility’s panels will incorporate and utilize anti-glare technology and anti-reflective coatings, reduce glint, and glare to levels that meet or exceed industry standards.

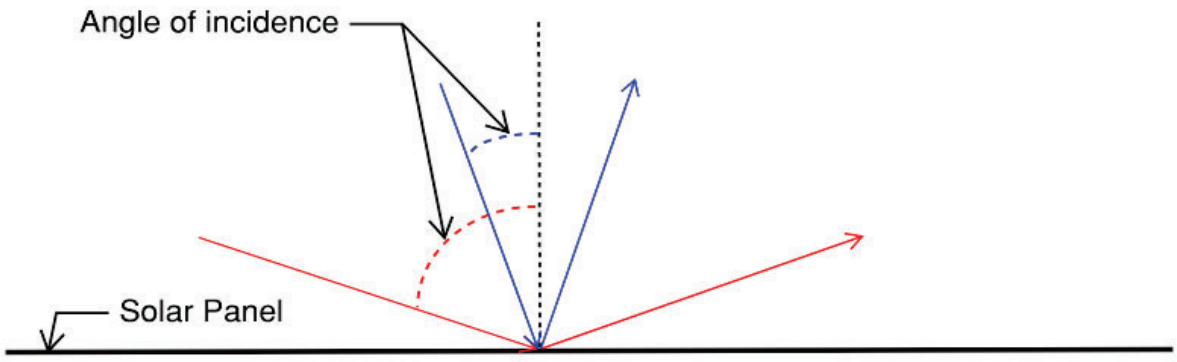


Figure 2: Reflected Light and Angle of Incidence (illustration only) on a panel

Analysis Results

The project was analyzed with the following panel specifications, single-axis rotation, backtracking, 180 degrees tracking orientation, 5-degree panel tilt overnight, and smooth glass with anti-reflective coating. The specifics listed above are common for single-axis tracking panel systems located in the northern hemisphere. Multiple analyses were performed after the initial findings to gather a better understanding for the mitigation options. The first analysis with panels lying flat (0 degrees) overnight resulted in up to an hour of glare per day throughout the site to most of the receptors which could be dangerous to nearby motorists and a nuisance to nearby residences. Further iterations were ran adjusting both backtracking and the resting angle of the panels until the final scenario was determined. The final model scenario resulted in no glare for all receptors.

Receptor	Hazard Level	Minutes (per year)
All Receptors	Green	0
	Yellow	0
	Red	0

Table 2: Total Yearly Glare Hazard for Route Receptors

Conclusion

In Summary, there was no glare identified throughout the entire Project site after mitigating using panel specifications. It is recommended that the panels be installed using the same specifications noted in this analysis to minimize the likelihood for future mitigation requirements. If glare is identified due to the proposed site, additional glare analyses should be performed to determine mitigation options.

APPENDIX A

ForgeSolar Glare Analysis Report

FORGESOLAR GLARE ANALYSIS

Project: **KE106**

Proposed ground mounted solar site located in Bristol, Illinois

Site configuration: **KE106**

Site description: Proposed Solar Panel site located in Bristol, Illinois

Created 30 May, 2023
Updated 30 May, 2023
Time-step 1 minute
Timezone offset UTC-6
Minimum sun altitude 0.0 deg
DNI peaks at 1,000.0 W/m^2
Category 1 MW to 5 MW
Site ID 91818.16154

Ocular transmission coefficient 0.5
Pupil diameter 0.002 m
Eye focal length 0.017 m
Sun subtended angle 9.3 mrad
PV analysis methodology V2



Summary of Results No glare predicted

PV Array	Tilt	Orient	Annual Green Glare		Annual Yellow Glare		Energy
	°	°	min	hr	min	hr	kWh
PV array 1	SA tracking	SA tracking	0	0.0	0	0.0	19,340.0

Total glare received by each receptor; may include duplicate times of glare from multiple reflective surfaces.

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Route 1	0	0.0	0	0.0
Route 2	0	0.0	0	0.0
Route 3	0	0.0	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
OP 20	0	0.0	0	0.0
OP 21	0	0.0	0	0.0
OP 22	0	0.0	0	0.0
OP 23	0	0.0	0	0.0
OP 24	0	0.0	0	0.0

Component Data

PV Arrays

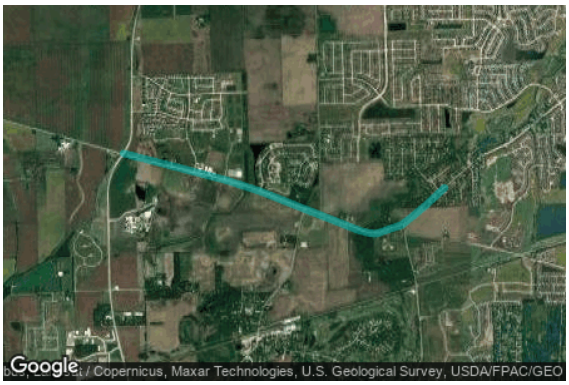
Name: PV array 1
Axis tracking: Single-axis rotation
Backtracking: Shade
Tracking axis orientation: 180.0°
Max tracking angle: 60.0°
Resting angle: 5.0°
Ground Coverage Ratio: 0.5
Rated power: 7.5 kW
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	41.695759	-88.418534	650.31	5.00	655.31
2	41.692426	-88.418470	652.53	5.00	657.53
3	41.692378	-88.421989	652.30	5.00	657.30
4	41.695318	-88.422021	651.66	5.00	656.66
5	41.695366	-88.420401	653.31	5.00	658.31
6	41.695691	-88.420423	653.78	5.00	658.78

Route Receptors

Name: Route 1
Path type: Two-way
Observer view angle: 50.0°



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	41.705479	-88.446370	648.59	5.00	653.59
2	41.702787	-88.432552	656.03	5.00	661.03
3	41.701698	-88.428003	653.42	5.00	658.42
4	41.697597	-88.414098	648.55	5.00	653.55
5	41.697340	-88.412811	650.34	5.00	655.34
6	41.697276	-88.411781	650.63	5.00	655.63
7	41.698173	-88.408262	649.98	5.00	654.98
8	41.699135	-88.406631	651.10	5.00	656.10
9	41.700224	-88.404914	653.63	5.00	658.63
10	41.701954	-88.402425	654.89	5.00	659.89

Name: Route 2
Path type: Two-way
Observer view angle: 50.0°



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	41.698228	-88.408028	650.75	5.00	655.75
2	41.691829	-88.406147	654.40	5.00	659.40
3	41.684691	-88.405407	651.57	5.00	656.57

Name: Route 3
Path type: Two-way
Observer view angle: 50.0°



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	41.699726	-88.421491	654.79	5.00	659.79
2	41.697515	-88.422285	649.72	5.00	654.72
3	41.694295	-88.423165	653.41	5.00	658.41
4	41.693445	-88.423337	653.42	5.00	658.42
5	41.692708	-88.423916	651.65	5.00	656.65
6	41.690524	-88.426336	652.46	5.00	657.46
7	41.690091	-88.426830	651.60	5.00	656.60
8	41.689578	-88.427173	651.29	5.00	656.29
9	41.689154	-88.427377	651.21	5.00	656.21
10	41.686833	-88.427901	645.44	5.00	650.44
11	41.685672	-88.428073	641.45	5.00	646.45

Discrete Observation Point Receptors

Name	ID	Latitude (°)	Longitude (°)	Elevation (ft)	Height (ft)
OP 1	1	41.700932	-88.422182	657.54	15.00
OP 2	2	41.698812	-88.416327	655.69	15.00
OP 3	3	41.698632	-88.414943	651.78	15.00
OP 4	4	41.696138	-88.410528	649.33	15.00
OP 5	5	41.693097	-88.413342	651.67	15.00
OP 6	6	41.692597	-88.412597	648.92	15.00
OP 7	7	41.691270	-88.406592	649.49	15.00
OP 8	8	41.687777	-88.413809	646.95	15.00
OP 9	9	41.687521	-88.414061	647.82	15.00
OP 10	10	41.686972	-88.414684	647.48	15.00
OP 11	11	41.688301	-88.411563	649.67	15.00
OP 12	12	41.688186	-88.412033	649.15	15.00
OP 13	13	41.688413	-88.411102	649.87	15.00
OP 14	14	41.684823	-88.417582	648.05	15.00
OP 15	15	41.685304	-88.421173	641.73	15.00
OP 16	16	41.688254	-88.423818	645.41	15.00
OP 17	17	41.687777	-88.422986	648.41	15.00
OP 18	18	41.687762	-88.427398	648.13	15.00
OP 19	19	41.688136	-88.427299	650.38	15.00
OP 20	20	41.688336	-88.427280	650.50	15.00
OP 21	21	41.688497	-88.427251	650.93	15.00
OP 22	22	41.696180	-88.423846	653.29	15.00
OP 23	23	41.696036	-88.421094	651.27	15.00
OP 24	24	41.692207	-88.423862	654.74	15.00

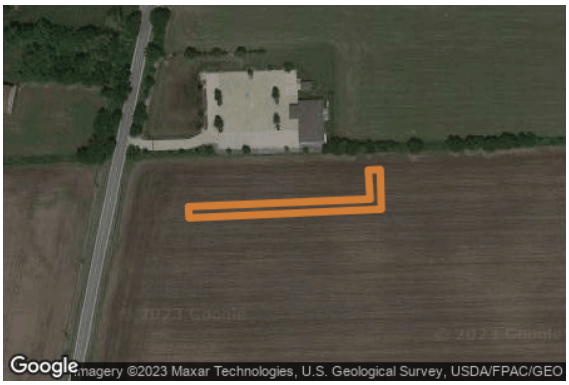
Obstruction Components

Name: Obstruction 1
Top height: 6.0 ft



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	41.692377	-88.422086	652.13
2	41.693631	-88.422407	651.17
3	41.693611	-88.422525	650.84
4	41.692353	-88.422190	652.04
5	41.692377	-88.422086	652.13

Name: Obstruction 2
Top height: 6.0 ft



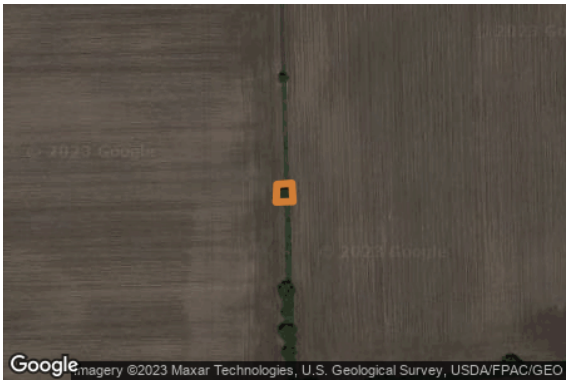
Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	41.695701	-88.420503	653.59
2	41.695448	-88.420493	653.39
3	41.695392	-88.422139	651.70
4	41.695464	-88.422145	651.67
5	41.695512	-88.420589	653.32
6	41.695697	-88.420605	653.28
7	41.695701	-88.420503	653.59

Name: Obstruction 3
Top height: 30.0 ft



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	41.692153	-88.418283	653.02
2	41.691636	-88.418262	652.52
3	41.691640	-88.418106	653.42
4	41.692173	-88.418128	652.93
5	41.692153	-88.418283	653.02

Name: Obstruction 4
Top height: 30.0 ft



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	41.692774	-88.418267	650.38
2	41.692782	-88.418139	649.62
3	41.692665	-88.418128	650.27
4	41.692661	-88.418273	650.94
5	41.692774	-88.418267	650.38

Name: Obstruction 5
Top height: 30.0 ft



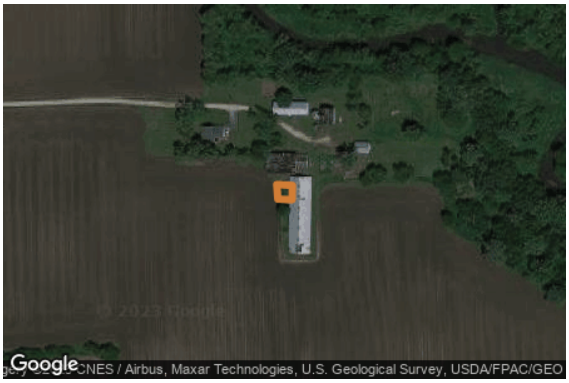
Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	41.693043	-88.413651	651.29
2	41.693041	-88.413464	651.53
3	41.693010	-88.413350	651.73
4	41.692965	-88.413302	651.43
5	41.692906	-88.413446	651.12
6	41.692911	-88.413668	651.33
7	41.693043	-88.413651	651.29

Name: Obstruction 6
Top height: 30.0 ft



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	41.693260	-88.413654	651.19
2	41.693123	-88.413652	651.11
3	41.693071	-88.413619	651.26
4	41.693081	-88.413518	651.43
5	41.693157	-88.413519	651.04
6	41.693161	-88.413427	651.39
7	41.693274	-88.413436	651.23
8	41.693260	-88.413654	651.19

Name: Obstruction 7
Top height: 30.0 ft



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	41.692769	-88.412807	649.27
2	41.692763	-88.412673	649.52
3	41.692671	-88.412676	649.03
4	41.692675	-88.412798	649.09
5	41.692769	-88.412807	649.27

Name: Obstruction 8
Top height: 30.0 ft



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	41.692637	-88.412797	649.02
2	41.692635	-88.412696	649.02
3	41.692563	-88.412699	648.84
4	41.692566	-88.412798	648.87
5	41.692637	-88.412797	649.02

Name: Obstruction 9
Top height: 30.0 ft



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	41.688540	-88.420685	646.77
2	41.688403	-88.420631	645.70
3	41.689757	-88.414822	646.49
4	41.689835	-88.414830	648.47
5	41.688515	-88.420664	646.03

Glare Analysis Results

Summary of Results No glare predicted

PV Array	Tilt	Orient	Annual Green Glare		Annual Yellow Glare		Energy
	°	°	min	hr	min	hr	kWh
PV array 1	SA tracking	SA tracking	0	0.0	0	0.0	19,340.0

Total glare received by each receptor; may include duplicate times of glare from multiple reflective surfaces.

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Route 1	0	0.0	0	0.0
Route 2	0	0.0	0	0.0
Route 3	0	0.0	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
OP 20	0	0.0	0	0.0
OP 21	0	0.0	0	0.0
OP 22	0	0.0	0	0.0
OP 23	0	0.0	0	0.0
OP 24	0	0.0	0	0.0

PV: PV array 1 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Route 1	0	0.0	0	0.0
Route 2	0	0.0	0	0.0
Route 3	0	0.0	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
OP 20	0	0.0	0	0.0
OP 21	0	0.0	0	0.0
OP 22	0	0.0	0	0.0
OP 23	0	0.0	0	0.0
OP 24	0	0.0	0	0.0

PV array 1 and Route: Route 1

No glare found

PV array 1 and Route: Route 2

No glare found

PV array 1 and Route: Route 3

No glare found

PV array 1 and OP 1

No glare found

PV array 1 and OP 2

No glare found

PV array 1 and OP 3

No glare found

PV array 1 and OP 4

No glare found

PV array 1 and OP 5

No glare found

PV array 1 and OP 6

No glare found

PV array 1 and OP 7

No glare found

PV array 1 and OP 8

No glare found

PV array 1 and OP 9

No glare found

PV array 1 and OP 10

No glare found

PV array 1 and OP 11

No glare found

PV array 1 and OP 12

No glare found

PV array 1 and OP 13

No glare found

PV array 1 and OP 14

No glare found

PV array 1 and OP 15

No glare found

PV array 1 and OP 16

No glare found

PV array 1 and OP 17

No glare found

PV array 1 and OP 18

No glare found

PV array 1 and OP 19

No glare found

PV array 1 and OP 20

No glare found

PV array 1 and OP 21

No glare found

PV array 1 and OP 22

No glare found

PV array 1 and OP 23

No glare found

PV array 1 and OP 24

No glare found

Assumptions

"Green" glare is glare with low potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
"Yellow" glare is glare with potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.
The algorithm does not rigorously represent the detailed geometry of a system; detailed features such as gaps between modules, variable height of the PV array, and support structures may impact actual glare results. However, we have validated our models against several systems, including a PV array causing glare to the air-traffic control tower at Manchester-Boston Regional Airport and several sites in Albuquerque, and the tool accurately predicted the occurrence and intensity of glare at different times and days of the year.
Several V1 calculations utilize the PV array centroid, rather than the actual glare spot location, due to algorithm limitations. This may affect results for large PV footprints. Additional analyses of array sub-sections can provide additional information on expected glare. This primarily affects V1 analyses of path receptors.
Random number computations are utilized by various steps of the annual hazard analysis algorithm. Predicted minutes of glare can vary between runs as a result. This limitation primarily affects analyses of Observation Point receptors, including ATCTs. Note that the SGHAT/ ForgeSolar methodology has always relied on an analytical, qualitative approach to accurately determine the overall hazard (i.e. green vs. yellow) of expected glare on an annual basis.
The analysis does not automatically consider obstacles (either man-made or natural) between the observation points and the prescribed solar installation that may obstruct observed glare, such as trees, hills, buildings, etc.
The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Additional analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on related limitations.)
The variable direct normal irradiance (DNI) feature (if selected) scales the user-prescribed peak DNI using a typical clear-day irradiance profile. This profile has a lower DNI in the mornings and evenings and a maximum at solar noon. The scaling uses a clear-day irradiance profile based on a normalized time relative to sunrise, solar noon, and sunset, which are prescribed by a sun-position algorithm and the latitude and longitude obtained from Google maps. The actual DNI on any given day can be affected by cloud cover, atmospheric attenuation, and other environmental factors.
The ocular hazard predicted by the tool depends on a number of environmental, optical, and human factors, which can be uncertain. We provide input fields and typical ranges of values for these factors so that the user can vary these parameters to see if they have an impact on the results. The speed of SGHAT allows expedited sensitivity and parametric analyses.
The system output calculation is a DNI-based approximation that assumes clear, sunny skies year-round. It should not be used in place of more rigorous modeling methods.
Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid based on aggregated research data. Actual ocular impact outcomes encompass a continuous, not discrete, spectrum.
Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
Refer to the Help page at **www.forgesolar.com/help/** for assumptions and limitations not listed here.

Default glare analysis parameters and observer eye characteristics (for reference only):

- Analysis time interval: 1 minute
- Ocular transmission coefficient: 0.5
- Pupil diameter: 0.002 meters
- Eye focal length: 0.017 meters
- Sun subtended angle: 9.3 milliradians

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STORMWATER POLLUTION PREVENTION PLAN

TPE, IL KE 106, LLC

1700 Cannonball Trail

Yorkville (Kendall County), IL 60506

Prepared by:
Kimley-Horn and Associates, Inc.
570 Lake Cook Road, Suite 200
Deerfield, IL 60015
Contact: Jason Cooper

Prepared on: June 6, 2023

Kimley»Horn

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ATTACHMENTS

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Attachment 2 – Owner's Certification Form

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Attachment 5 – Location Map

Attachment 6 – USGS Map

Attachment 7 – NRCS Soil Report

Attachment 8 – BMP Installation Log

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1. STORMWATER POLLUTION PREVENTION PLAN

The responsible party for the implementation, maintenance and inspection of all measures described in this Storm Water Pollution Prevention Plan is:

(Contractor Operator and/or Responsible Authority) **(Date)**

(Contractor Company Name)

(Contractors Address) **(Telephone)**

Project Name and location information:	TPE IL KE 106 Solar 1700 Cannonball Trail Yorkville (Kendall County), IL 60506

2. SITE DESCRIPTION

2.1. Project Description

The proposed development is approximately 42 acres and is located at 1700 Cannonball Trail in Yorkville (Kendall County), IL. The project site will include solar panels, inverters, transformers, and other mechanical equipment as well as perimeter security fencing, gates, and an access road.

2.2. Existing Soils

NRCS classifies the site soils as Brenton silt loam; 0 to 2 percent slopes (149A), Thorp silt loam; 0 to 2 percent slopes (206A), Dresden silt loam; 0 to 2 percent (325A) and 2 to 4 percent slopes (325B), and Waupecan silt loam; 0 to 2 percent slopes (369A). The hydrological soil group associated with the soils is C/D. Refer to **Attachment 7** for the NRCS Soil Map.

2.3. Existing Site Description

The existing site is currently used for agricultural purposes.

2.4. Adjacent Areas

The site is bound to the northwest by residential conservation property, to the north, east and south by agricultural fields, and to the west by Cannonball Trail.

2.5. Project Name and Location:

TPE IL KE 106 Solar

1700 Cannonball Trail

Yorkville (Kendall County), IL 60506

2.6. Owner Name and Location:

TPE, IL KE 106, LLC.

3720 S. Dahlia St.

Denver, CO 80237

3. GENERAL SOIL DISTURBING ACTIVITIES

Clearing and grubbing will occur first. Additional excavation and backfill for site access roads and electrical foundation pads, minor grading and topsoil spreading will be necessary.

4. CONSTRUCTION SEQUENCE

1. Install stabilized construction entrance
2. Prepare temporary parking and storage areas, upon implementation and installation of the following areas: trailer, parking, lay down, porta-potty, wheel wash, concrete washout, fuel and material storage containers, solid waste containers, etc. Denote them on the site maps immediately and note any changes in the locations as they occur throughout the construction process.
3. Install silt fence, silt fence rock outlets, filter sock or approved equivalent erosion control BMP's.
4. Clear/grub the site, as necessary. Temporarily seed disturbed areas, throughout construction, that will be inactive for fourteen (14) days or more or as required by the general permit.
5. Stabilization of all exposed soil areas must be initiated immediately to limit soil erosion but in no case completed later than fourteen (14) days after the construction activity in that portion of the site has temporarily or permanently ceased.
6. Begin grading and constructing access roads, pile driving, racking installations, solar module placement, fencing, utility pole and overhead wires, and utility trenching.
7. Provide permanent seeding/stabilization per the landscape plan.
8. All stockpiles are to be removed as part of the permanent stabilization of the site.
9. Remove all temporary erosion and sediment control devices (only after site is fully stabilized and approved by the county).

Note: The sequence of construction shown above is a general overview and is intended to convey the general concepts of the erosion control design and should not be relied upon for construction purposes. The contractor is solely responsible for detailed phasing and construction sequencing necessary to construct the proposed improvements included in these plans. The contractor shall notify engineer in writing immediately, prior to and/or during construction if any additional information on the construction sequence is necessary. Contractor is solely responsible for complying with the Authority Having Jurisdiction and all other applicable laws.

5. CONSTRUCTION PHASE BEST MANAGEMENT PRACTICES

During the construction phase, the General Contractor shall implement the following measures:

Silt fence/filter sock will be installed at the perimeter of the site to prevent soil runoff onto surrounding properties, as needed.

Stormwater sediment controls will be implemented at the inlets and outlets for the proposed stormwater conveyance system.

Appropriate sediment control measures will be implemented for construction vehicle traffic, including a stabilized construction entrance and concrete washout.

Materials resulting from the clearing and grubbing, or excavation operations shall be stockpiled up slope from adequate sedimentation controls. Fast-germinating temporary seed shall be installed in areas where there will be no construction for longer than 14

days. This includes any temporary soil stockpiles. Materials removed to an off-site location shall be protected with appropriate controls and properly permitted.

The general contractor shall designate areas for equipment cleaning, maintenance, and repair areas shall be protected by a temporary perimeter berm.

Use of detergents for large scale washing is prohibited (i.e., vehicles, buildings, pavement surfaces, etc.).

5. Chemicals, paints, solvents, fertilizers, and other toxic materials must be stored in weatherproof containers. Except during application, the contents must be kept in trucks
6. or within storage facilities. Runoff containing such material must be collected removed from the site, treated, and disposed at an approved solid waste or chemical disposal
7. facility.

6. SOIL STABILIZATION

The purpose of soil stabilization is to prevent soil from leaving the site. In the natural condition, soil is stabilized by native vegetation. The primary technique to be used at this project for stabilizing site soil will be to provide a protective cover of turf grass or gravel access road.

1. Temporary Seeding – Within 7 days after construction activity ceases on any particular area, all disturbed ground where there will be construction longer than 14 days must be seeded with fast-germinating temporary seed or protected with mulch.

2. Permanent Seeding – All areas at final grade must be seeded within 14 days after completion of the major construction activity. Except for small level spots, seeded areas should generally be protected with mulch.

7. EROSION AND SEDIMENT CONTROLS

1. *Silt Fence* – Silt fence is a synthetic permeable mesh fabric typically incorporating wooden support stakes at intervals sufficient to support the fence and water and sediment retained by the fence. Silt fence is also available with a wire mesh backing. The fence is designed to retain sediment-laden water to allow settlement of suspended soils before filtering through the mesh fabric for discharge downstream. Silt fence shall
2. be located to capture overland, low-velocity sheet flow. It shall be installed at the downstream location of all site runoff. Silt fence has the capacity to handle 0.25 acre per 100 feet of silt fence length.

3. *Filter Sock* – Filter sock is a sock filled with biodegradable compost material that is locked in place with wooden stakes downslope of the filter sock. Similar to silt fence, filter sock is designed to retain sediment-laden water to allow settlement of suspended soils before filtering through the compost material for discharge downstream.

Construction Entrance/Exit – All access points from the public street into the construction site shall include a construction entrance/exit composed of coarse stone to the dimensions shown on the Construction Drawings. The rough texture of the stone helps to remove clumps of soil adhering to construction vehicle tires through the action of

vibration and jarring over the rough surface and the friction of the stone matrix against soils attached to vehicle tires.

Concrete Washout Area – The concrete washout area is used to contain concrete and liquids when the concrete mixers and trucks are rinsed out after delivery. It is an onsite designated cleaning area. The washout facility consolidates solids for easier disposal and prevents runoff of liquids.

4. *Erosion Control Blanket* - A temporary degradable rolled erosion control product composed of processed natural or polymer fibers mechanically, structurally, or chemically bound together to form a continuous matrix to provide erosion control and facilitate vegetation establishment.

5.

8. WASTE DISPOSAL

8.1. Erosion and Sediment Materials

Soils that build up in silt fencing and silt dikes shall be spread on site and allowed to dry. The paved streets adjacent to the site entrance shall be swept as needed to remove mud, dirt, or rock tracked from the site. Dump trucks hauling material from the site shall be covered with a tarpaulin.

8.2. Construction Waste Materials

All construction waste materials shall be collected and stored in a securely lidded metal dumpster rented from a licensed solid waste management company. The dumpster shall meet county and state solid waste management regulations. The dumpster shall be emptied as often as necessary in a lawful manner. The Owner shall instruct all personnel on the correct procedures for disposing of waste. Notices stating the policy shall be posted on site. No solid materials are allowed to be discharged from the site via stormwater.

8.3. Hazardous Waste

All hazardous waste materials shall be disposed of in the manner specified by local and state regulations or by the manufacturer. The Owner shall instruct site personnel on these practices and the policy shall be posted on site.

8.4. Sanitary Waste

All personnel involved with construction activities must comply with state and local sanitary or septic system regulations. Temporary sanitary facilities will be provided at the site throughout the construction phase. They must be utilized by all construction personnel and will be serviced by a commercial operator.

9. MAINTENANCE PLAN

These inspection and maintenance practices shall be used to maintain erosion and sediment controls:

All control measures shall be inspected at least once per week and within 24 hours following a rainfall event of 0.25 inches or greater.

If measures are in need of repair, appropriate remedies shall be initiated immediately.

1. Silt fences shall be inspected for sediment build up, break through, and to see if they are functional.
2. Sediment shall be removed from the devices when the sediment has reached 1/3 the
3. height of each.
4. Stabilized construction entrances/exits shall be checked for sediment clogging the rock at the entrance/exit.
5. Streets shall be checked for sediment tracking due to vehicles.
6. Inspections shall evaluate disturbed areas and areas used for storing materials that are
7. exposed to rainfall for evidence of, or potential for, pollutants entering the drainage system or discharging from the site. If necessary, the materials must be covered or original covers must be repaired or supplemented. Also, protective berms must be constructed, if needed, in order to contain runoff from material storage areas.
8. Grassed areas shall be inspected to confirm that a healthy stand of grass is maintained. The site has achieved final stabilization once all areas are covered with access gravel road or have stand of grass with at least 70 percent density. Areas must be watered,
9. fertilized, and reseeded as needed to achieve this requirement.

All discharge points must be inspected to determine whether erosion control measures are effective in preventing significant impacts to receiving waters.

10. MATERIALS MANAGEMENT PRACTICES

10.1. Guidelines

The following are the material management practices that shall be used to reduce the risk of spills or other accidental exposure of materials and substances to stormwater runoff.

The following good housekeeping practices shall be followed onsite during the construction project:

1. An effort shall be made to store only enough products to do the job.
2. All materials stored onsite shall be stored in a neat, orderly manner in their appropriate containers and, if possible, under a roof or other enclosure.
3. Products shall be kept in their original containers with the original manufacturer's label.
4. Substances shall not be mixed with one another unless recommended by the manufacturer.

5. Whenever possible, all of a product shall be used up before disposing of the container.
6. Manufacturers' recommendations for proper use and disposal shall be followed.
7. The site superintendent shall inspect daily to ensure proper use and disposal of materials onsite.

These practices are used to reduce the risks associated with the products described below.

10.2. Petroleum Products and Fuels

All onsite vehicles shall be monitored for leaks and receive regular preventative maintenance. Petroleum products shall be stored in sealed containers according to local and state regulations.

10.3. Paints

All containers shall be tightly sealed and stored when not in use. Excess paint shall not be discharged to the stormwater drainage, but shall comply with local and state regulations.

10.4. Fertilizers

If needed, fertilizers shall be applied in the minimum amounts required. Storage shall be in a closed shed or trailer. Partially opened bags shall be stored in sealable plastic bins.

10.5. Concrete Trucks

Concrete trucks shall not be allowed to wash out or discharge surplus concrete or drain wash water on the site.

These practices are used to reduce the risks associated with spill management:

1. Manufacturers' recommended methods for spill cleanup shall be clearly posted and site personnel shall be made aware of the procedures and the location of the information and cleanup supplies.
2. Materials and equipment necessary for spill cleanup shall be kept in the material storage area onsite. Equipment and materials may include, but are not limited to, brooms, dust pans, mops, rags, gloves, goggles, kitty litter, sand, and plastic and metal trash containers specifically for this purpose.
3. All spills shall be cleaned up immediately after discovery.
4. The spill area shall be kept well ventilated and personnel shall wear appropriate protective clothing to prevent injury from contact with hazardous substance.
5. Spills of toxic or hazardous materials shall be reported to the appropriate authorities.
6. The spill prevention plan shall be adjusted to include measures to prevent the spill from reoccurring.
7. Site personnel shall be designated by the site superintendent to be responsible for spill cleanup. These personnel shall receive training specific to the responsibility.

11. INSPECTIONS

Qualified personnel shall inspect disturbed areas of the construction site that have not been finally stabilized, structural control measures, and locations where vehicles enter or exit the site at least once every seven calendar days and within 24 hours of the end of a storm that is 0.25 inches or greater or equivalent snowfall. Qualified personnel means a person knowledgeable in the principles and practice of erosion and sediment controls, such as a licensed professional engineer or other knowledgeable person who possesses the skills to assess conditions at the construction site that could impact stormwater quality and to assess the effectiveness of any sediment and erosion control measures selected to control the quality of stormwater discharges from the construction activities.

Disturbed areas and areas used for storage of materials that are exposed to precipitation shall be inspected for evidence of, or the potential for, pollutants entering the drainage system. Erosion and sediment control measures identified in the plan shall be observed to ensure that they are operating correctly. Where discharge locations or points are accessible, they shall be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to receiving waters. Locations where vehicles enter or exit shall be inspected for evidence of off-site sediment tracking.

Based on the results of the inspection, the description of potential pollutant sources identified in this plan and pollution prevention measures identified shall be revised as appropriate as soon as practicable after such inspection. Such modifications shall provide for timely implementation of any changes to the plan within 7 calendar days following inspection.

A report summarizing the scope of the inspection, name(s) and qualifications of personnel making the inspection, the date(s) of the inspection, major observations relating to the implementation of the stormwater pollution prevention plan, and the actions taken shall be made and retained as part of the stormwater pollution prevention plan for at least three years from the date that the permit coverage expires or is terminated.

The permittee shall complete and submit within 5 days an “Incidence of Noncompliance” (ION) report for any violation of the stormwater pollution prevention plan observed during an inspection conducted, including those not required by the plan. Submission shall be on forms provided by the Agency and include specific information on the cause of noncompliance, actions which were taken to prevent any further causes of noncompliance, and a statement detailing any environmental impact which may have resulted from the noncompliance. All reports of the noncompliance shall be signed by a responsible authority and mailed to the Agency at the address provided on the ION form.

12. FINAL MAINTENANCE

The contractor shall maintain the erosion and sediment control measures identified on this plan until the site is stabilized to assure continued performance of their intended function.

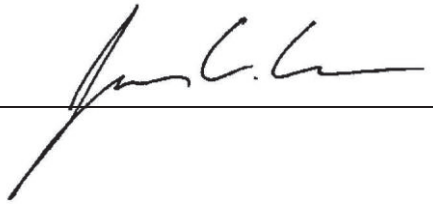
All temporary erosion and sediment control BMPs will be removed within 30 days after final site stabilization is achieved or after the temporary BMPS are no longer needed. Trapped sediment will be removed and stabilized onsite. Disturbed soil areas resulting from removal of BMPs or vegetation will be permanently stabilized as soon as possible.

When a site has been finally stabilized and all stormwater discharges from construction sites that are authorized by this permit are eliminated, the permittee shall submit a completed “Notice of Termination” (NOT). For the purposes of this plan, elimination of stormwater discharges associated with construction activity means that all disturbed soils at the site have been finally stabilized and temporary erosion and sediment control measures have been removed or will be removed at an appropriate time, or that all stormwater discharges associated with construction activity from the site that are authorized by a NPDES general permit have otherwise been eliminated. The NOT shall be signed by a responsible authority and mailed to the Agency at the address provided on the form.

Attachment 1 – SWPPP Preparation Certification Form

SWPPP Preparer's Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.



Signature 3/30/23 Date

Name:	Jason Cooper
Title:	Project Manager
Company Name:	Kimley-Horn and Associates, Inc.
Address:	570 Lake Cook Road, Suite 200
City, State:	Deerfield, IL 60015
Phone Number:	630-487-3449

Attachment 2 – Owner's Certification Form

Owner's Certification

(to be duplicated and signed by the owner)

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature Date

Name: _____

Title: _____

Company Name: _____

Address: _____

City, State: _____

Phone Number: _____

Attachment 3 – Contractor's Certification Form

Contractor's Certification

(to be duplicated and signed by each contractor or subcontractor)

This SWPPP must clearly identify, for each measure identified within the SWPPP, the contractor(s) or subcontractor(s) that will implement each measure. All contractor(s) and subcontractor(s) identified in the SWPPP must sign the following certification:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature Date

Name: _____

Title: _____

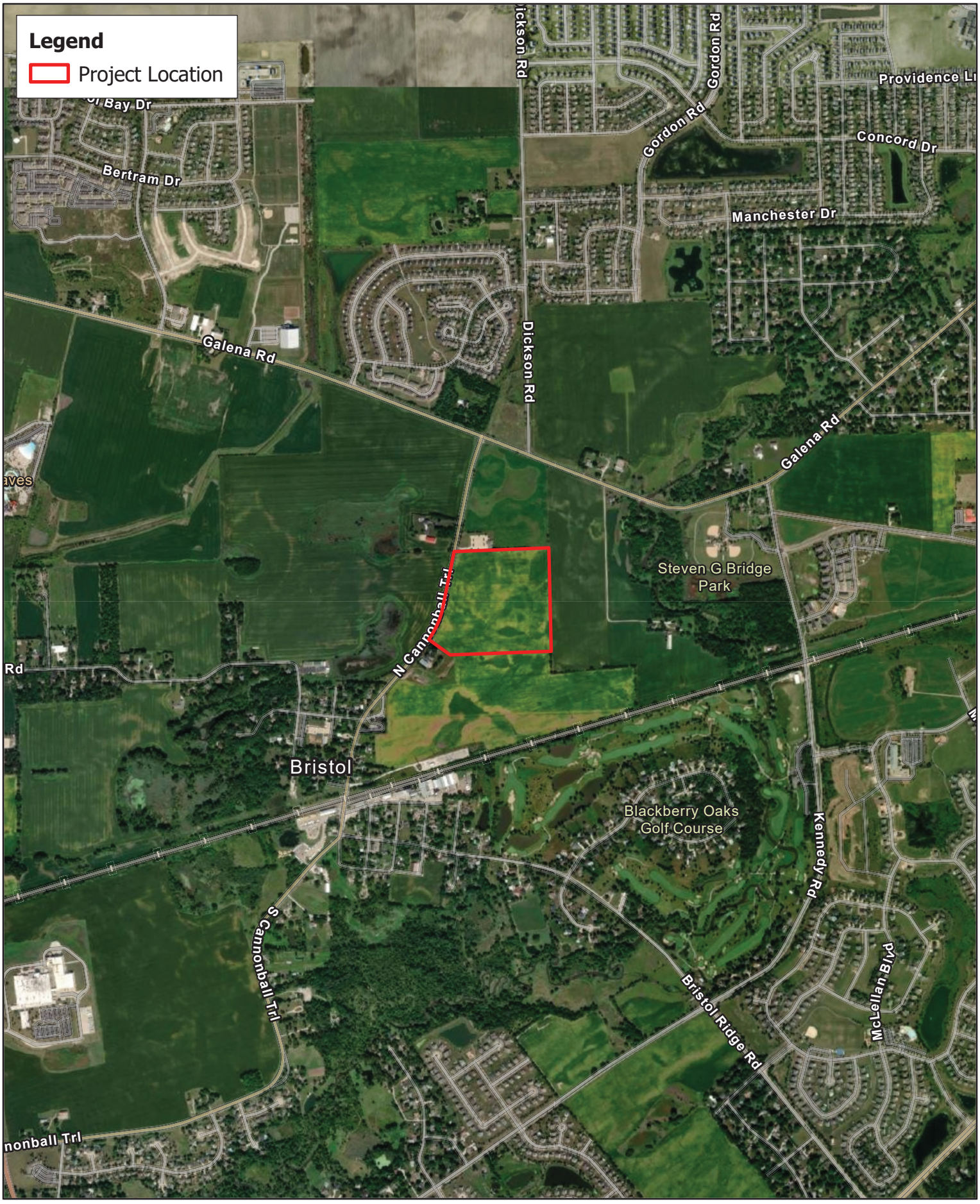
Company Name: _____

Address: _____

City, State: _____

Phone Number: _____

Attachment 4 – Aerial Map



Kimley»Horn

0 0.15 0.3 Miles

N

Attachment 4 - Aerial Map
34 Cannonball Trail, Bristol,
Kendall County, IL

Attachment 5 – Location Map



Kimley»Horn

0 0.25 0.5 Miles

N

Attachment 5 - Location Map
34 Cannonball Trail, Bristol,
Kendall County, IL

Attachment 6 – USGS Map

USGS science for a changing world

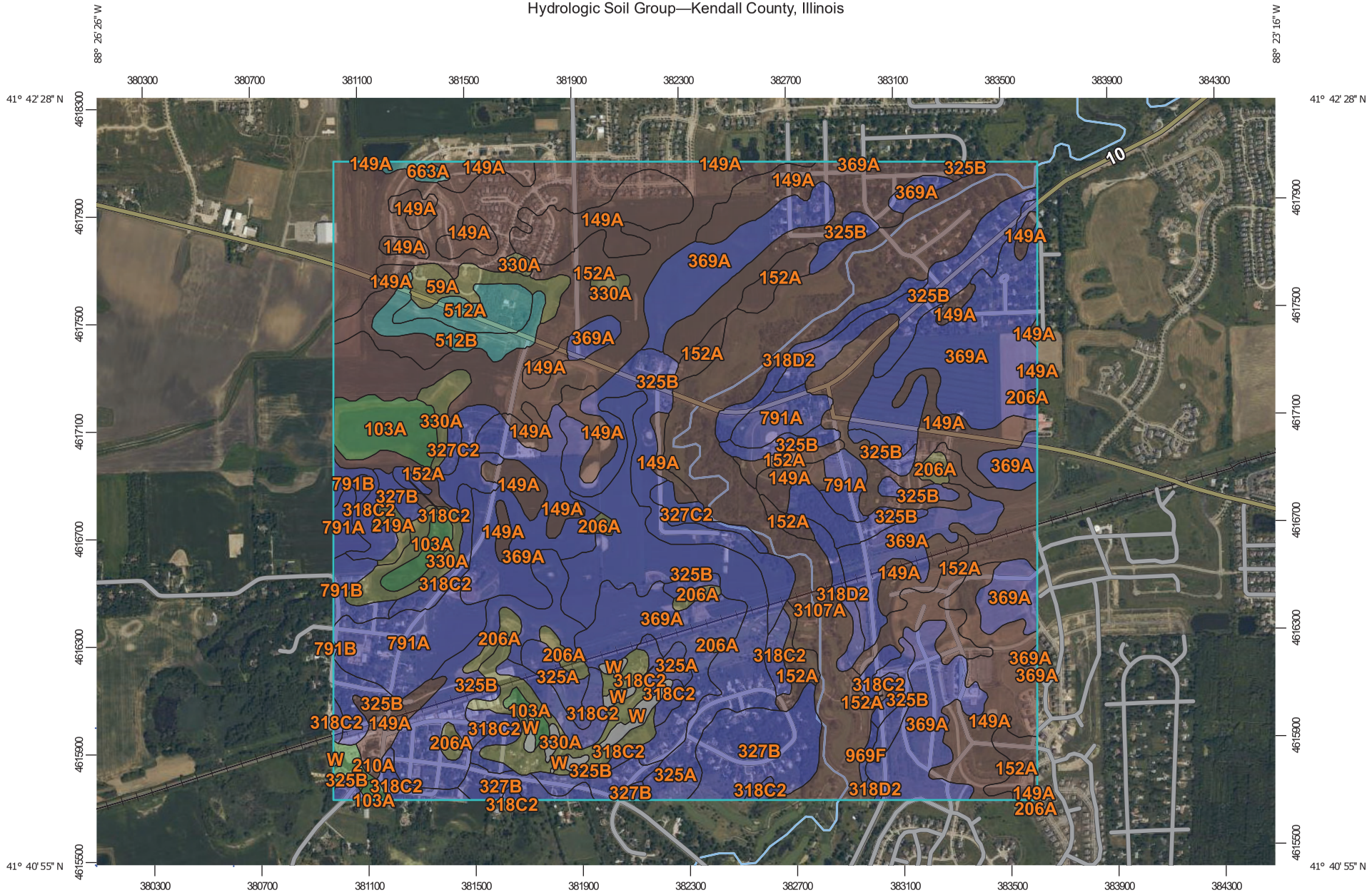
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U.S. GEOLOGICAL SURVEY

The National Map US Topo

YORKVILLE QUADRANGLE
ILLINOIS
7.5-MINUTE SERIES


Legend
Project Location
SUGAR GROVE
AURORA
MONTGOMERY
OSWEGO
Bristol
YORKVILLE
PLANO
Big Rock Creek
Blackberry Creek
Fox River
Waubonsee Community College
Yorkville Police Department
Yorkville Public Library
Yorkville Community Unit School District 115
Yorkville Police Department
Yorkville Fire Protection District
Yorkville Fire Protection District
Yorkville Fire Protection District

Attachment 7 – NRCS Soil Report



Map Scale: 1:20,100 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 250 500 1000 1500

Feet
0 500 1000 2000 3000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 16N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Lines

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Points

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Kendall County, Illinois
Survey Area Data: Version 18, Aug 31, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Aug 3, 2019—Aug 24, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
59A	Lisbon silt loam, 0 to 2 percent slopes	C/D	13.6	0.9%
103A	Houghton muck, 0 to 2 percent slopes	A/D	31.3	2.0%
149A	Brenton silt loam, 0 to 2 percent slopes	B/D	257.7	16.6%
152A	Drummer silty clay loam, 0 to 2 percent slopes	B/D	232.1	15.0%
206A	Thorp silt loam, 0 to 2 percent slopes	C/D	17.0	1.1%
210A	Lena muck, 0 to 2 percent slopes	A/D	3.7	0.2%
219A	Millbrook silt loam, 0 to 2 percent slopes	C/D	4.0	0.3%
318C2	Lorenzo loam, 4 to 6 percent slopes, eroded	B	62.0	4.0%
318D2	Lorenzo loam, 6 to 12 percent slopes, eroded	B	17.5	1.1%
325A	Dresden silt loam, 0 to 2 percent slopes	B	83.9	5.4%
325B	Dresden silt loam, 2 to 4 percent slopes	B	184.0	11.9%
327B	Fox silt loam, 2 to 4 percent slopes	B	49.1	3.2%
327C2	Fox silt loam, 4 to 6 percent slopes, eroded	B	9.0	0.6%
330A	Peotone silty clay loam, 0 to 2 percent slopes	C/D	49.7	3.2%
369A	Waupecan silt loam, 0 to 2 percent slopes	B	273.3	17.7%
512A	Danabrook silt loam, 0 to 2 percent slopes	C	14.8	1.0%
512B	Danabrook silt loam, 2 to 5 percent slopes	C	14.4	0.9%
663A	Clare silt loam, 0 to 2 percent slopes	C	3.3	0.2%
791A	Rush silt loam, 0 to 2 percent slopes	B	58.9	3.8%
791B	Rush silt loam, 2 to 4 percent slopes	B	10.1	0.7%

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
969F	Casco-Rodman complex, 20 to 30 percent slopes	B	1.5	0.1%
3107A	Sawmill silty clay loam, heavy till plain, 0 to 2 percent slopes, frequently flooded	B/D	147.4	9.5%
W	Water		9.7	0.6%
Totals for Area of Interest			**1,548.1**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Attachment 8 – BMP Installation Log

BMP INSTALLATION LOG

Project: TPE IL KE 106 Solar, LLC

Location: 1700 Cannonball Trail
Yorkville (Kendall County), IL

BMP Name	Date Installed	Description of BMP Installed	Responsible Party

Attachment 9 – Amendment Log

AMENDMENT LOG

Project: TPE IL KE 106 Solar, LLC

Location: 1700 Cannonball Trail
Yorkville (Kendall County), IL

Amendment No.	Date	Description of Amendment

TurningPoint Energy
development - advisory - investment

TPE IL KE105, LLC
TPE IL KE106, LLC
3720 S. Dahlia St
Denver, CO 80237

June 21, 2023

Jason Engberg
Senior Planner
United City of Yorkville
651 Prairie Pointe Drive
Yorkville, Illinois 60560

Dear Mr. Engberg,

Re: Topsoil at Solar Sites.

The Legislation signed by Governor Pritzker on January 27, requires solar projects to enter into an Agricultural Impact Mitigation Agreement (AIMA) With the Illinois Department of Agriculture (IDOA). The AIMA form, provided by IDOA, includes the following language: "Any excavation shall be performed in a manner to preserve topsoil. Best Efforts shall be made to store the topsoil near the excavation site in such manner that it will not become intermixed with subsoil materials." We interpret this to mean that the topsoil must remain near, or adjacent to the location from which it is excavated.

We intend to use helical anchors that are driven into the ground like screws; pilings will not be excavated. Soils will NOT be removed or hauled off-site. Any excavated topsoil will be spread around the point of extraction.

Should you have any questions or require any additional information, please contact me by phone at 303.618.9570. or via email at sosborn@tpoint-e.com. Further, any official written correspondence regarding the application and/or payments may be delivered to me at the TPE Dahlia St. address shown above.

Thank you,



J. Scott Osborn
Director of Project Development

TurningPoint Energy
development - advisory - investment

TPE IL KE105, LLC
TPE IL KE106, LLC
3720 S. Dahlia St
Denver, CO 80237

June 23, 2023

Krysti Barksdale-Noble
Community Development Director
United City of Yorkville
651 Prairie Pointe Drive
Yorkville, Illinois 60560

Dear Ms. Barksdale-Noble,

Re: Native Seed Mixes

Please see the attached Memorandum from our civil engineer, Kimley Horn confirming that the proposed vegetative groundcover will use species native to Illinois.

Should you have any questions or require any additional information, please contact me by phone at 303.618.9570. or via email at sosborn@tpoint-e.com. Further, any official written correspondence regarding the application and/or payments may be delivered to me at the TPE Dahlia St. address shown above.

Thank you,

J. Scott Osborn
Director of Project Development

June 22, 2023

Attn: Scott Osborn, Director of Project Development
TurningPoint Energy
Denver, Colorado

RE: ***TPE KE105 & KE106, Yorkville, Illinois***
Native Vegetation Memorandum

Dear Scott,

This memo provided by Kimley-Horn verifies that the proposed vegetative groundcover for KE105 and KE106 will be native to the State of Illinois.

The Preliminary Landscape Plans, dated April 13th, 2023, provide a list of over 30 species of groundcover vegetation, both grasses and forbs. The following list is a selection of some of the most abundant species by percentage in the seed mix compositions:

- Schizachyrium Scoparium, native in many prairies and grasslands throughout most of the US.
- Bouteloua curtipendula, native through South-Central Canada and the US down to Mexico.
- Sporobolus heterolepis, native to dry prairies throughout the US.
- Elymus canadensis, native through most of Canada and the US.
- Echinacea purpurea, native to prairies through the Midwest and Southern US.
- Dalea purpurea, native to prairies through the Midwest and Southern US.
- Coreopsis lanceolata, native to prairies, meadows, and pastures throughout the US.
- Rudbeckia hirta, native to prairies and grasslands throughout most of Canada and the US.
- Spiraea alba, native to wet meadows and prairies through South-Central Canada and the Midwest US.
- Allium cernuum, native through Canada and the US down to Mexico.
- Geranium maculatum, native to woodlands and meadows through Canada and the US.

Sincerely,

Chris Wilson, PLA
Kimley-Horn
Phone: 630-487-3442
Email: chris.wilson@kimley-horn.com

July 5, 2023

Ms. Krysti Barksdale-Noble
Community Development Director
United City of Yorkville
800 Game Farm Road
Yorkville, IL 60560

Re: Bristol Ridge Solar Farm 106
Annexation, Rezoning, Variance, & Special Use Request – 2nd Submittal
United City of Yorkville

Dear Krysti:

We have reviewed the following items for the above referenced project:

- Zoning Site Plan dated April 13, 2023, and prepared by Kimley-Horn
- Stormwater Pollution Prevention Plan dated June 6, 2023, and prepared by Kimley-Horn
- Decommissioning Report
- Other Supporting Documentation

Our review of these plans and reports are to generally determine their compliance with local ordinances and whether the improvements will conform to existing local systems and equipment. This review and our comments do not relieve the designer from his duties to conform to all required codes, regulations, and acceptable standards of engineering practice. Engineering Enterprises, Inc.'s review is not intended as an in-depth quality assurance review, we cannot and do not assume responsibility for design errors or omissions in the plans. As such, we offer the following comments:

General

1. The following permits may be required during final engineering and should be provided to the City when obtained. The City and EEI should be copied on all correspondence with the agencies.
    - IEPA NPDES General Construction Permit is required. The Notice of Intent must be filed with IEPA 30 days prior to start of construction.
    - Stormwater permit application in accordance with the Yorkville Storm Water Management Ordinance (Kendall Countywide Ordinance). Since the project is a non-residential development on more than 3 acres it must meet the stormwater detention requirements per the Stormwater Ordinance.
    - Kendall County DOT permit for connection to Cannonball Trail
2. The development department should comment on the fence materials.
3. The development department should comment on the gravel driveway.

4. The following will need to be submitted with Final Engineering Plans:

- Truck turning exhibits for delivery and emergency vehicles
- Photometric plan
- Landscape plan
- Stormwater Management Report
- Drain Tile Survey
- Engineer's Estimate of Probable Costs that includes all public improvements within the ROW including utility connections and all soil erosion and sediment control items. This cost estimate will be used to determine the construction guarantee amount. In addition, a cost estimate needs to be provided for all site improvements which will be used to calculate the building permit fees.
- See the attached Checklist for additional information needed at final engineering.

Decommissioning Cost Estimate

2. The cost estimate should utilize a higher rate of inflation based on current economic conditions.

3. A note specifying the years used for the lifetime of the project should be added when calculating the inflation costs.

If you have any questions or require additional information, please contact our office.

Respectfully Submitted,

ENGINEERING ENTERPRISES, INC.

Bradley P. Sanderson, P.E.
Chief Operating Officer / President

BPS/tnp/pgw2

pc: Mr. Bart Olson, City Administrator (via email)
Ms. Erin Willrett, Assistant City Administrator (via email)
Mr. Eric Dhuse, Director of Public Works (via email)
Mr. Pete Ratos, Building Department (via email)
Ms. Dee Weinert, Admin Assistant (via email)
Ms. Jori Behland, City Clerk (via email)
Mr. Scott Osborn, TPE(via email)
TNP, PGW2, EEI (Via e-mail)

March 23, 2023

UNITED CITY OF YORKVILLE

GENERAL CHECKLIST FOR COMMERCIAL SITE PLANS/SINGLE LOT DEVELOPMENTS

(EXTERNAL USE ONLY)

- Professional engineer signature and seal on drawings and calculations
- Location map and address, J.U.L.I.E. note included on plans
- Benchmarks based on NAVD 88 datum
- Existing utilities and topography to be provided
  - ✓ Existing elevations and contours shown at 1' intervals
- Compliance with subdivision grading plan (if applicable) and/or provide proposed grading plan
  - ✓ Proposed elevations and contours at 1' intervals
  - ✓ Indicate building top of foundation (2 ft. above H.W.L.)
  - ✓ Storm water drainage - safe outlet available and adequate conveyance provided
- Flood plain or flood way requirements to be addressed, if necessary
- Stormwater management
  - ✓ Per Kendall County/Yorkville stormwater management ordinance
  - ✓ Apply for storm water permit, if necessary
- Provide stormwater pollution prevention (SWPP) plan
  - ✓ Apply for NOI permit, if necessary
  - ✓ Note that receipt of NPDES permit required prior to construction
- Provide typical pavement sections
- Pavement markings and signage
- Entrance detail
- Handicap ramp detail (use IDOT standard)
- Show water service and include City standard details and notes
- Show sanitary service with inspection manhole and include YBSD standard notes
- Apply for appropriate IEPA permits – water and sanitary, if necessary
- Provide easements, if necessary
- Provide landscape plan
- Provide photometric plan
- Compliance with zoning code
- Performance guarantee for public improvements
- Overall cost estimate for all site improvements – for building permit fees

Memorandum

To: Planning and Zoning Commission
From: Jason Engberg, Senior Planner
CC: Bart Olson, City Administrator
Krysti Barksdale-Noble, Community Development Director
Date: May 3, 2023
Subject: **PZC 2023-03 Bristol Ridge Solar Farm 106**
(Rezone, Special Use, Variance)

SUMMARY:

The applicant, Turning Point Energy, LLC, is requesting rezoning approval, special use authorization, and variance approval to construct a solar farm on the 42-acre parcel generally located east of Cannonball Trail and south of Galena Road within the Bristol Ridge Planned Unit Development. The petitioner is requesting to rezone the parcel from the R-2 Single-Family and R-3 Townhome PUD (Bristol Ridge) to the A-1 Agricultural District zoning, special use permit approval for a solar farm land use, and variance approval to decrease the minimum distance between the ground and the solar panels from ten (10) feet to a minimum height of two (2) feet. To rezone the property and change the land use on this parcel, the petitioner is seeking to amend the existing annexation agreement for the Bristol Ridge Development to replace the current adopted land use plan with their solar farm. This request will be heard at a separate public hearing in front of the Yorkville City Council and the rezoning will be contingent on the approval of that amendment.

LOCATION & BACKGROUND:

The 42-acre property is located in the northeastern part of Yorkville just north of unincorporated Bristol along Cannonball Trail. The property is the northern portion of the existing Bristol Ridge Development which was established in 2006 for residential detached and attached housing units. The current land use of the property is agricultural farmland.



Bristol Ridge Solar Farm 106 Location

United City of Yorkville, Illinois
March 29, 2023

ZONING:

The subject property is currently zoned for R-2 Single-Family dwellings and R-3 Townhome dwellings as part of a Planned Unit Development per Ordinance 2006-126. The petitioner is seeking to rezone the property to the A-1 Agricultural District. The following are the current immediate surrounding zoning and land uses:

	Zoning	Land Use
North	B-3 General Business District (Bristol Bay) B-4 Commercial Recreation District (Kendall County)	Religious Institution Farmland
South	R-2 Single-Family Traditional Residence District (Bristol Ridge) R-3 Multi-Family Attached Residence District (Bristol Ridge)	Farmland
East	A-1 Agricultural District (Kendall County)	Farmland
West	R-2 One Family Residential District (Kendall County) R-2 Single-Family Traditional Residence District (Bristol Ridge) R-3 Multi-Family Attached Residence District (Bristol Ridge)	Residential Use Farmland

The proposed use is defined in the Yorkville Zoning Ordinance as a Solar Farm which is a special use within the A-1 Agricultural District. This requires the use to abide by the A-1 Agricultural District regulations as well as the Alternative Energy System regulations in the City's Zoning Ordinance.

ALTERNATIVE ENERGY SYSTEMS REGULATIONS:

Section 10-19: Alternative Energy Systems establishes regulations for this type of use and the proposed solar farm will be required to meet the setback standards for the A-1 Agricultural District as well as the provisions under the Freestanding Solar Energy Systems regulations.

Setbacks

Table 10.07.01 of Chapter 7 in the City's Zoning Ordinance provides dimensions and bulk regulations for the A-1 Agricultural District. Section 10-19-7-C of the Zoning Ordinance states that freestanding solar energy systems shall not be located within the required front yard or corner side yard. Additionally, Section 10-19-7-B of the Zoning Ordinance states that all parts of any freestanding solar energy system shall be set back 8 feet from interior side and rear property lines.

The following table illustrates the minimum required yard setbacks for solar systems based upon the A-1 Agricultural District regulations and the Freestanding Solar Energy System requirements and the proposed setbacks per the submitted site plan (attached):

	Minimum Requirement	Proposed Setback
Front	100 feet	>100 feet
Side (North)	8 feet	>50 feet
Side (South)	8 feet	28 feet
Rear	None	41 feet

The location of the solar panels meets the front and rear yard setbacks for the A-1 District and the location of the solar panels meets the required setbacks in the side yards per the Freestanding Solar Energy System requirements. Staff is requiring the petitioner to illustrate the exact setback in the front and side yard prior to any public hearing.



Height

The petitioner has submitted a narrative stating that the height of the entire panel on the stand will not exceed fifteen (15) feet in height. Section 10-19-7-F states the maximum height will be stipulated as a special use condition. Staff is not opposed to this overall height as the location of the panels and their distance from all existing land uses should not cause a nuisance to any neighboring property. The viewsheds provided by the petitioner illustrate this point. <u>The maximum height of fifteen (15) feet will be set as a condition of the special use approval as stated in the zoning ordinance.</u>

Clearance

Section 10-19-7-D states the minimum clearance between the lowest point of the system and the surface on which the system is mounted is ten feet (10'). The petitioner is requesting a variance to this regulation to reduce the clearance to two (2) feet. The petitioner has provided the reasoning behind this request as the maintenance on the panels at the 10-foot height would be cumbersome, the visibility of the panels would increase as they would be significantly taller, and the wind loads generated at a greater height could damage the cells. Staff supports the variance request as the regulation has been an issue with previous requests for ground mounted solar panels and is not an industry standard. This regulation is being removed in the Unified Development Ordinance which is currently being drafted by the City.

Fencing
The petitioner is proposing to construct an eight (8) foot "agricultural style" fence around the entire solar field which will be accessible through gates with Knox Boxes for emergency access. Section 10-7-2 does not state any regulations regarding fencing within the A-1 Agricultural District. Therefore, the proposed fencing does meet the minimum requirements. While it meets the standards of the A-1 District, staff is recommending that the petitioner provide an eight (8) foot chain link fence with opaque slats as opposed to the agricultural fence. This will provide more security for the solar farm and the slats will provide better screening to all surrounding land uses. Therefore, the installation of an eight (8) foot tall chain link fence with opaque slats surrounding the entire solar farm will be set as a condition of the special use approval.

Glare
Section 10-19-7-E states solar panels shall be placed such that concentrated solar radiation or glare shall not be directed onto nearby properties or roadways. The petitioner has submitted a glare study and analysis which concludes that there was no potential for glint or glare identified by the analysis. Additionally, the panels will be buffered by landscaping in areas that could be seen by adjacent property owners or roadways. The petitioner has also provided a viewshed from angles around the solar farm which illustrate how far away the panels will be from the public right-of-way.

Signage
Section 19-4-F states that "No commercial signage or attention getting device is permitted on any alternative energy system. One (1) sign shall be permitted to indicate the emergency contact information of the property owner or operator. Said sign shall not exceed two (2) square feet in size." The submitted narrative states a warning sign shall be provided at the facility entrance and along the perimeter fence including the facilities 911 address and a 24-hour emergency contact number. The petitioner is aware of the size requirement and will comply with the regulation.

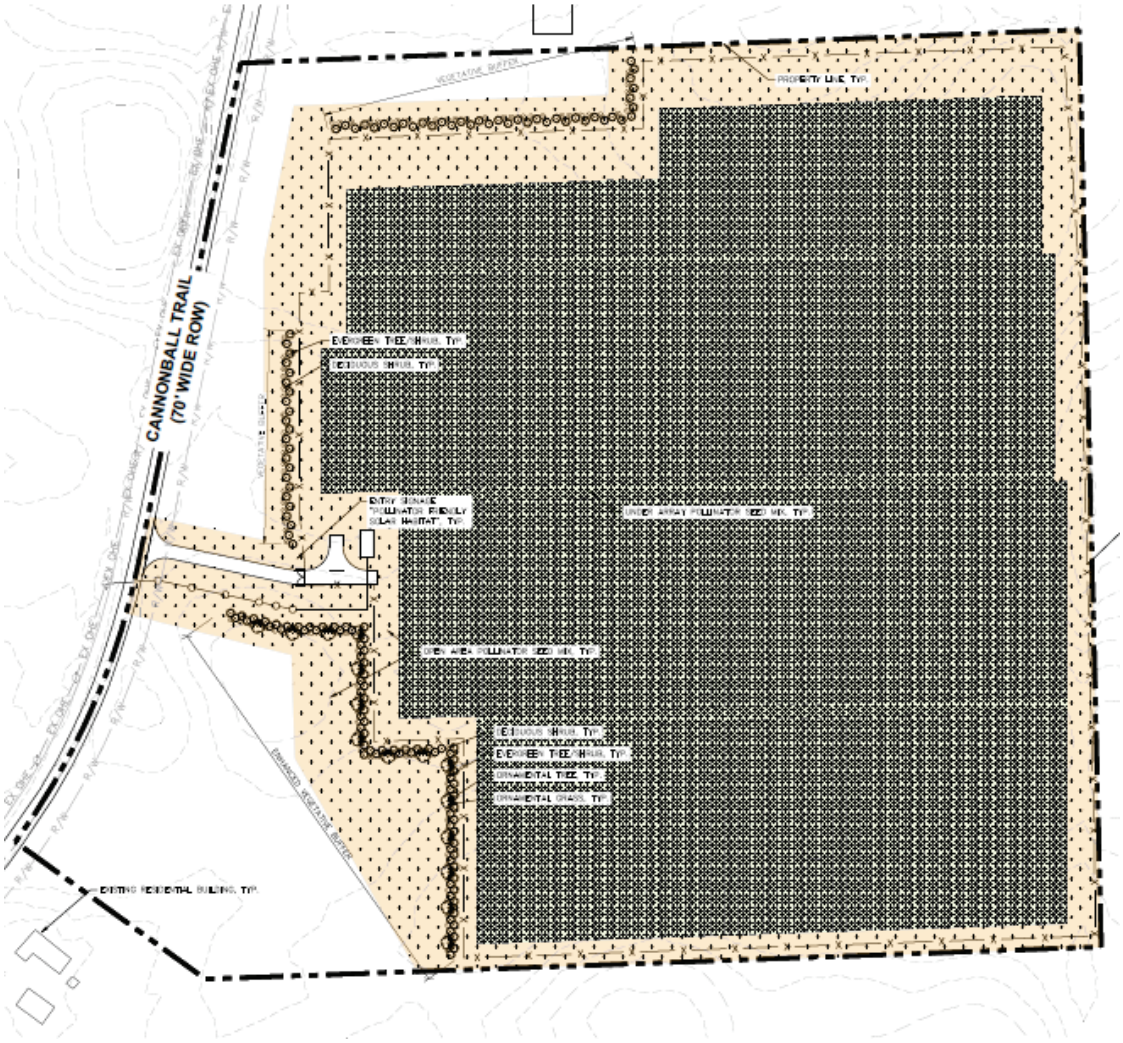
Utility Service Provider
Section 10-19-4-G states that evidence that the electric utility service provider that serves the proposed site has been notified of the owner's intent to install an interconnected customer owned electricity generator. ComEd has been notified of this project and an interconnection plan has been submitted to them and has been provided by the petitioner.

Decommission
Section 10-19-9-A-3 states prior to permit issuance, the owner shall sign an acknowledgement that said owner will be responsible for any and all enforcement costs and remediation costs resulting from any violations of that chapter. The costs include, but are not limited to, removal of system, property restoration upon removal of the system, city legal expenses and hearing costs associated with violations of that chapter. Additionally, Section 10-19-4-E states all alternative energy systems inactive or inoperable for a period of 12 continuous months shall be deemed abandoned and the owner is required to repair or remove the system from the property at the owner's expense within 90 days of notice from the City.

To ensure compliance, the petitioner has provided a decommission plan and construction estimate of $266,782.62 in total for the removal of the solar farm and restoration and reseeding of the property. This estimate is derived from the RS Means Heavy Site estimating manual using 2022 dollars.

Staff recommends a security guarantee of 120% of the petitioner's estimate for a total of $320,139.14 with an inflation rate of 3% in a form acceptable to the City Engineer as a condition of the special use approval.

In addition to the security guarantee, staff also recommends a blanket easement over the property to allow the City or its contractor to enter and remove the abandoned system in compliance with the City Code, as a condition of the special use approval.



Landscape Plan

The petitioner has taken into account the potential impacts the development may have on neighboring properties. Therefore, the petitioner has identified areas that face or are adjacent to the commercial and residential uses, to the west and northwest respectively, and they are providing a vegetative buffer and enhance vegetative buffer to help alleviate any negative visual impacts.

The petitioner has identified areas that face Cannonball Trail and the religious institution to the north and are providing a vegetative buffer. Additionally, the petitioner has identified areas that face the residential use to the southwest and have provided an enhanced vegetative buffer.

The vegetative buffer along the western and sections of the northern boundary of the parcel are providing eight (8) evergreen trees/shrubs and seven (7) large deciduous shrubs every one-hundred (100) linear feet. These buffers are not required as they are not adjacent to a residential use but do add to the required amount of lot landscaping. These buffers have been provided for potential views from the nearby religious institution and Cannonball Trail. The enhanced vegetative buffer is facing the residential land use to the southwest and is providing ten (10) evergreen trees/shrubs, six (6) large deciduous shrubs, and three (3) ornamental trees every one-hundred (100) linear feet.

The petitioner is working with the City's landscaping consultant on finalizing the landscaping plans to ensure it meets the City's standards. At the May 2, 2023 Economic Development Committee, it was recommended that the 300-foot gap at the northwest corner of the property should be landscaped with the vegetative buffer. The petitioner agreed to extend the vegetative buffer along this portion of land as it faces Cannonball Trail. A final landscape plan, including the additional landscaping buffer in the northwest

corner of the site which currently shows a 300-foot gap in continuous buffering to be approved by the City Engineer and landscaping consultant will be required as a condition of the special use approval.

Additionally, the Economic Development Committee recommended that a 2-year maintenance period for the establishment of the ground cover which will be conducted by the City Engineer should be required as a condition of special use approval. Therefore, staff is adding this as a condition to the special use approval upon the committee's recommendation.

ENGINEERING COMMENTS:

Comments prepared by Engineering Enterprises Inc. (EEI) dated March 13, 2023 were provided to the petitioner. The petitioner's project engineer, Kimley-Horn provided a response to these comments on March 21, 2023. The work items listed in the review letter will need to be addressed and will become conditions for special use approval.

COMPREHENSIVE PLAN:

The subject property's future land use is classified as "Estate Conservation/Residential" which is intended to provide flexibility for residential design in areas of Yorkville that can accommodate low-density detached single-family housing but also include sensitive environmental and scenic features that should be retained and enhanced. The most typical form of development within this land use will be detached single family homes on large lots.

In 2016 this future land use designation was also use as a "holding" designation for future development. The 10-year horizon of the plan saw these areas outside of the core not developing within that timeframe. Any development in these areas should be reviewed on a case-by-case basis since it was not anticipated to develop within the plan's lifespan. The utilization of this property for a solar farm is a suitable land use at this time. The current annexation amendment for a residential neighborhood will expire in 2026 and the lack of development and utilities in this area means it is unlikely to be developed into a more intense use. Additionally, the solar farm is temporary in nature as it currently is being proposed for a 20-year lease.

SPECIAL USE STANDARDS:

Section 10-4-9F of the City's Zoning Ordinance establishes standards for special use requests. No special use shall be recommended by the Planning and Zoning Commission unless said commission shall find that:

1. The establishment, maintenance or operation of the special use will not be unreasonably detrimental to or endanger the public health, safety, morals, comfort or general welfare.
2. The special use will not be injurious to the use and enjoyment of other property in the immediate vicinity for the purpose already permitted, nor substantially diminish and impair property values within the neighborhood in which it is to be located.
3. The establishment of the special use will not impede the normal and orderly development and improvement of surrounding property for uses permitted in the district.
4. Adequate utilities, access roads, drainage or other necessary facilities have been or are being provided.
5. Adequate measures have been or will be taken to provide ingress or egress so designed as to minimize traffic congestion in the public streets.
6. The proposed special use is not contrary to the objectives of the official comprehensive plan of the City as amended.

Additionally, Section 10-19-4C of the City's Zoning Ordinance establishes standards for special use requests regarding alternative energy systems. No special use shall be recommended by the Planning and Zoning Commission unless said commission shall find that:

1. The city council shall determine that the application has met all of the general requirements of this chapter.

2. The proposed energy system shall further the intent of this chapter and provide renewable energy to the property on which it is proposed.

3. The proposed alternative energy system is located in such a manner as to minimize intrusions on adjacent residential uses through siting on the lot, selection of appropriate equipment, and other applicable means.

4. The establishment for the proposed alternative energy system will not prevent the normal and orderly use, development, or improvement of the adjacent property for uses permitted in the district.

The applicant has provided written responses to these special use standards as part of their application and requests inclusion of those responses into the public record during the public hearing at the Planning and Zoning Commission meeting.

REZONING STANDARDS:

Section 10-4-10-B of the City's Zoning Ordinance establishes criteria for findings of fact related to rezoning (map amendment) requests. When the purpose and affect is to change the zoning of a property and amend the City's Zoning Map, the Planning and Zoning Commission shall consider each of the following facts before rendering a decision on the request:

1. The existing uses and zoning of nearby property.

2. The extent to which the property values are diminished by the particular zoning restrictions.

3. The extent to which the destruction of the property values of plaintiff promotes the health, safety, morals or general welfare of the public.

4. The relative gain to the public as compared to the hardship imposed upon the individual property owner.

5. The suitability of the subject property for the zoned purpose.

6. The length of time the property has been vacant as zoned considered in the context of land development in the area in the vicinity of the subject property.

7. The community need for the proposed use.

8. The care to which the community has undertaken to plan its land use development.

The petitioner has provided written responses to these findings as part of their application and requests inclusion of those responses into the public record at the Planning and Zoning Commission meeting.

VARAITION STANDARDS:

Section 10-4-7 identifies six (6) standards that need to be met when approving a zoning variation. The petitioner has provided their responses to these standards within their attached application:

a. Because of the particular physical surroundings, shape or topographical conditions of the specific property involved, a particular hardship to the owner would result, as distinguished from a mere inconvenience, if the strict letter of the regulations were carried out.

b. The conditions upon which the petition for a variation is based are unique to the property for which the variation is sought and are not applicable, generally, to other property within the same zoning classification.

c. The alleged difficulty or hardship is caused by this title and has not been created by any person presently having an interest in the property.

d. The granting of the variation will not be detrimental to the public welfare or injurious to other property or improvements in the neighborhood in which the property is located.

e. The proposed variation will not impair an adequate supply of light and air to adjacent property, or substantially increase the congestion in the public streets, or increase the danger to the public safety, or substantially diminish or impair property values within the neighborhood.

f. The proposed variation is consistent with the official comprehensive plan and other development standards and policies of the City.

The petitioner has provided written responses to these variance standards as part of their application and requests inclusion of those responses into the public record during the public hearing at the Planning and Zoning Commission meeting.

STAFF COMMENTS & RECOMMENDATIONS:

Staff is generally supportive of the rezoning, special use request, and variance requests. Should the City Council vote to approve this request, staff recommends the following conditions to the special use:

1. The maximum height of the solar panels for this land use will be fifteen (15) feet.

2. The installation of an eight (8) foot tall chain link fence with opaque slats surrounding the entire solar farm is required.

3. A final landscape plan, that includes additional landscaping buffer in the northwest corner of the site which currently shows a 300-foot gap in continuous buffering, shall be submitted as part of the final engineering submittal and be approved by the City Engineer and landscaping consultant.

4. A 2-year maintenance period for the establishment of the ground cover which will be inspected by the City Engineer is required.

5. A Knox box with keys provided to the City's building department and Bristol Kendall Fire District (BKFD).

6. A security guarantee in the amount of $320,139.14 with a 3% annual inflation rate and in a form acceptable to the City Engineer.

7. A blanket easement over the property to allow the City or its contractor to enter and remove the abandoned system in compliance with the City Code.

8. Adherence to all comments prepared by EEI, city engineering consultant, in a letter dated March 13, 2023.

PROPOSED MOTIONS:

SPECIAL USE

In consideration of testimony presented during a Public Hearing on May 10, 2023 and discussion of the findings of fact, the Planning and Zoning Commission recommends approval to the City Council a request for Special Use authorization to construct a freestanding solar energy system, or solar farm, contingent upon approval of annexation agreement amendment for the Bristol Ridge Development by the City Council, for a property generally located south of Galena Road and east of Cannonball Trail, subject to staff recommendations in a memo dated May 3, 2023 and further subject to… {insert any additional conditions of the Planning and Zoning Commission}…

REZONING

In consideration of testimony presented during a Public Hearing on May 10, 2023 and discussion of the findings of fact, the Planning and Zoning Commission recommends approval to the City Council a request for rezoning from R-2 Single-Family and R-3 Townhome PUD (Bristol Ridge) to A-1 Agricultural District for the purpose of constructing a freestanding solar energy system, or solar farm, contingent upon approval of annexation agreement amendment for the Bristol Ridge Development by the City Council, for a property generally located south of Galena Road and east of Cannonball Trail, subject to {insert any additional conditions of the Planning and Zoning Commission}…

VARIANCE

In consideration of testimony presented during a Public Hearing on May 10, 2023 and discussion of the findings of fact, the Planning and Zoning Commission recommends approval to the City Council a request for variance from Section 10-19-7-D of the Yorkville Municipal Code to reduce the minimum clearance between the lowest point of a freestanding solar panel and the surface on which the system is mounted from ten feet to two feet, contingent upon approval of annexation agreement amendment for the Bristol Ridge Development by the City Council, for a property generally located south of Galena Road and east of Cannonball Trail, subject to {insert any additional conditions of the Planning and Zoning Commission}…

ATTACHMENTS:

1) Project Narrative, as prepared by Turning Point Energy, LLC
2) Zoning Site Plan, as prepared by Kimley Horn & Associates, Inc.
3) Development Applications
4) Decommissioning Plan, as prepared by Turning Point Energy, LLC
5) Wetland Delineation, as prepared by Kimley Horn & Associates, Inc.
6) Environmental Constraints Memorandum, as prepared by Kimley Horn & Associates, Inc.
7) Title Insurance, as prepared by Borrego Solar Systems, Inc.
8) Decommissioning Estimate, as prepared by New Leaf Energy
9) Illinois Department of Natural Resources EcoCAT Termination Report, as prepared by IDNR
10) Illinois Historic Preservation Agency Report, as prepared by Kimley Horn & Associates, Inc.
11) NRI Application & Report, as prepared by Kendall County Soil & Water Conservation District
12) Manufacturer's Specifications
13) Operations and Maintenance Plan, as prepared by Turning Point Energy, LLC
14) Transportation and Access Plan, as prepared by Kimley Horn & Associates, LLC
15) Interconnection Agreement
16) Glare Study and FAA Notice Criteria Filing, as prepared by Turning Point Energy, LLC
17) Containment and Water Studies
18) Viewshed, as prepared by Turning Point Energy, LLC

19) FEMA Firm Map
20) Property Impact Study, as prepared by Cohn Reznick
21) Plan Council Memorandum – March 17, 2023
22) EEI Comments – March 13, 2023
23) Kimley Horn Response – March 21, 2023
24) Hey and Associates Comments – April 4, 2023

Proposed 5-Megawatt AC Ground-Mount Community Solar Facility

The United City of Yorkville
Kendall County, IL

TPE IL KE106, LLC
c/o TurningPoint Energy, LLC
3720 South Dahlia Street
Denver, CO 80237

February 9, 2023

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- G – SHPO Concurrence
- H – NRI Application & Report
- I – Manufacturer's Specifications
- J – Operations and Maintenance Plan
- K – Transportation and Access Plan
- L – Interconnection Agreement
- M – Glare Study and F.A.A. Notice Criteria Filing
- N – Contaminant and Water Studies
- O – Viewshed
- P – FEMA FIRM Map
- Q – Property Impact Study

1.0 INTRODUCTION

1.1 Project Overview

TurningPoint Energy, LLC d/b/a TPE Development through its affiliated entity TPE IL KE106, LLC (the "Applicant") proposes the development of a 5-megawatt AC solar photovoltaic system on a single parcel of land located east of Cannonball Trail and south of Galena Road, Yorkville, IL 60512 (the "Project"). The Project will consist of a single axis tracking ground-mounted solar array, associated electrical equipment, an access driveway and fence covering approximately 28 acres of the 42-acre parcel (ID 02-10-300-017). The Project intends to participate in the Illinois Adjustable Block Community Solar Program and will power the equivalent of approximately 1,050[1] homes. Community Solar allows residents of Illinois to purchase locally generated clean electricity at a discount to current electric rates without having to install panels on their roof.

The Project's host parcel is in the R-2 (Single family traditional) and R-3 (Multi-family attached residence) zoning district and is included in the "Bristol Ridge" Planned Unit Development. To comply with the landowner's requirements, Applicant has submitted separate applications requesting (1) to Amend the Annexation Agreement (Yorkville Ordinance 2006-126) to allow for the withdrawal of the parcel from the Bristol Ridge Planned Unit Development, and (2) Rezone the parcel from R-2 and R-3 to A-1 zoning in which solar is allowable under Special Use. The Applicant has included requests in the Agreement Amendment and Rezoning applications to make the rezoning contingent upon the issuance of a building permit for construction for the Project. The City of Yorkville's Zoning Ordinance ("Ordinance") allows for the construction and operation of Solar Farms by Special Use Permit in A-1 Zoning Districts (consideration of the SUP application requires the re-zoning request to be approved first). All setbacks prescribed in the Yorkville Zoning Ordinance will be complied with to ensure a sufficient buffer is maintained between the panels and neighboring property lines and rights-of-way. Additional plantings have been proposed in areas near residential parcels to screen the array from neighboring residences.

The City's solar ordinance (10-19-7-D) requires a minimum height of 10 feet (10') above the surface. This height will make the panels highly visible from the neighboring roads and parcels. Applicant further requests a Variance lowering this minimum height to two feet (2') above the surface. The decreased height will reduce both visibility and construction impact by reducing anchoring and foundation requirements.

If approved, the Project will bring significant and consistent benefits to the City of Yorkville and the community surrounding the Project. The Project will create approximately 50-75 jobs during the 4 to 6-month construction period, generating property tax revenue of approximately $840,000 over 30 years. Unlike nearly all other forms of development (residential, commercial, or industrial), the community will benefit from the significant economic benefits mentioned above without stressing community infrastructure – no new children in schools, no use of water and sewer systems, extremely limited use of roads, and little to no need for police or fire departments.

[1]Calculation based on data provided by U.S. Energy Information Administration (EIA): https://www.eia.gov/consumption/residential/reports/2009/state_briefs/pdf/IL.pdf and https://www.eia.gov/electricity/sales_revenue_price/pdf/table5_a.pd

1.2 About TurningPoint Energy

Formed in 2014, TPE is a privately held, independent company transforming our energy future by creating freedom to choose a smarter, cleaner, more flexible way forward through community solar. As a privately held and independent company, TPE customizes projects to the unique needs of each client. Our team has financed and/or built over 2 Gigawatts (GW) of the solar projects operating in the U.S. today. Since 2017, TPE has focused these services on the expanding community solar market in states including Illinois, Maine, Maryland, Delaware, Pennsylvania, Texas, and Rhode Island. TPE's development and investment portfolio now includes over 169MW of community solar projects in construction or operation, with an additional 840MW in solar projects under development .

TPE is a "triple bottom line" company; we believe that our business should create financial, environmental, and community value in every project we create. Our intent is to be long-term community members. Upon successful permitting and utility interconnection, TPE typically makes donations to local charities and non-profits doing good work in the communities in which we work.

2.0 SITE LOCATION & EXISTING CONDITIONS

TPE, in coordination with its engineering consultant, Kimley-Horn, has prepared and compiled information from many sources to form the basis of design for the proposed Project. A summary of existing conditions and the design elements that avoid and or minimize impact to the environment and surrounding community is presented below.

2.1 Existing Conditions

The proposed Project is located on approximately 54 acres of land in northern Kendall County in the City of Yorkville. The site generally flows south and southeast, and any water eventually discharges to Blackberry Creek. It is presently an empty field having been harvested of soybeans in the Fall. Per the Natural Resources Conservation Services, the onsite soils consist of type B/D, C/D, and B silt loam.

2.2 Natural Resources and Consultations with State and Federal Authorities

2.2.1 Natural Resource Inventory ("NRI")

Kimley-Horn submitted the Natural Resource Inventory (NRI) packet on July 29, 2022 to the Kendall County Soil and Water Conservation District ("SWCD"). The NRI report was finalized on August 9, 2022. A copy of the report is included as **Appendix H**. The report notes a Land Evaluation (LE) score of 93 out of 100, giving it a high rating for agricultural use. However, the SWCD acknowledges that the report in no way indicates that a certain land use is not possible. See **Appendix N** for the beneficial effects of a solar farm.

2.2.2 Wetlands and Floodplain

The Project will be designed to avoid impacts to USACE jurisdictional waters. A Level 1 Wetland Delineation has been completed and no potential wetlands were identified within the Project Area. Please see **Appendix D** for additional information.

Per FEMA FIRM Map Panel 17093C0035H, the development is in Zone X, which is considered an area of minimal flood hazard. Refer to **Appendix P** for a copy of the FEMA FIRM Map.

2.2.3 U.S. Fish & Wildlife Service ("USFWS")

The Project will be designed such that no federally listed species will be significantly impacted. Solar projects typically impose only minimal impacts on wildlife species. The Project's potential to impact federally protected species was evaluated as part of an Environmental Constraint Memorandum, which is included as **Appendix E**. The assessment indicated that five federally listed species should be considered in an effects analysis for the Project, including the federally endangered Indiana bat (*Myotis sodalis*), the federally threatened northern long-eared bat (*Myotis septentrionalis*), the federally endangered rusty patched bumble bee (*Bombas affinis),* the federally threatened eastern prairie fringed orchid (*Platanthera leucophaea*), and the federal candidate monarch butterfly (*Danaus plexippus*). Prior to construction, consultation with the USFWS will occur to confirm a "No Effect" determination.

2.2.4 Illinois Department of Natural Resources (IDNR) State Ecological Review

The Applicant consulted with IDNR for potential impacts to state threatened or endangered species. This consultation is conducted pursuant to IDNR's Ecological Compliance Assessment Tool ("EcoCAT"). The Applicant submitted an EcoCAT review request to IDNR in July 2022. The review found that the Mottled Sculpin (*Cottus bairdii*) may be in the vicinity of the Project. After further consultation, the review concluded that adverse effects are unlikely and, therefore, the consultation was terminated by IDNR. This termination aligns with 17 Ill. Adm. Code Part 1075 Refer to **Appendix F** for a copy of the IDNR EcoCAT.

2.2.5 Illinois State Historic Preservation Office

Under the Illinois State Agency Historic Resources Protection Act, the State Historic Preservation Office ("SHPO") division at IDNR is responsible for studying possible Project effects on archaeological and/or architectural (cultural) resources. Agencies requiring SHPO evaluation concurrent with their review include the Illinois Environmental Protection Agency ("IEPA"), IDNR, and the USACE. According to the Illinois SHPO database, no surveys, archeological sites, or historic buildings are listed on or within 0.5 mile of the site. The Applicant submitted a SHPO Project Review Form on July 22, 2022, for agency review. A response letter has not yet been received. Once the SHPO's findings become available, they will be provided to the County, and it will be included as **Appendix G**. The SHPO Project Review form has been included as part of this package.

2.2.6 Illinois Department of Agriculture (IDOA)

The Illinois Renewable Energy Facilities Agricultural Impact Mitigation Act (505 ILCS 147/1 et seq.) requires the owner of a commercial solar energy facility to have an Agricultural Impact Mitigation Agreement (AIMA) in place within 45 days prior to the commencement of Project construction. The intent of the AIMA is to preserve and/or restore the integrity of affected agricultural land during construction and decommissioning activities. The Project will enter into an AIMA with the Illinois Department of Agriculture in advance of 45 days before construction commencing.

2.3 Community Outreach & Benefits

TPE likes to proactively engage the communities in which we work early in the process to determine what questions and concerns potential neighbors might have and give us adequate time to educate and address them prior to the public process.

We typically place calls, send letters and door knock on adjacent properties to our planned solar site as well as meet with local officials.

Community Solar projects such as KE106 enable residents to receive power savings from signing up to participate in a community scale solar project without installing solar on their rooftops.

In 2018, the State of Illinois enacted a statute that imposes a standardized, state assessment of a fair cash value for solar energy projects covering both the improvements and the land. As a result, once constructed this Project will pay property taxes of approximately $840,000 over 30 years split between Kendall County, Bristol Township, the United City of Yorkville, and applicable school, fire, and other taxing authorities.

The Project will create approximately 50-75 jobs during the approximate 4 to 6-month construction process. A regional operations and maintenance firm will service the facility over its working life cycle.

Unlike nearly all other forms of development (residential, commercial, or industrial), the community will benefit from the significant economic benefits mentioned above without stressing community infrastructure – no new children in schools, no use of water and sewer systems, limited use of roads, and little to no need for police or fire departments.

3.0 PERFORMANCE STANDARDS AND SOLAR PROJECT DESIGN

3.1 Project Description & Design Standards

The Project will consist of a ground-mounted solar array constructed in the central area of the Project site. The solar array will consist of solar panels attached to single axis trackers structures attached to driven steel pier foundations or ground screw foundations, depending on the subsurface composition. An Illinois licensed engineer will certify the foundation and design of the solar racking system is suitable to meet local soil and climate conditions.

The Project will be constructed by a licensed Engineering, Procurement, and Construction (“EPC”) Contractor. The design and construction process will comply with all national, state and local applicable building, electrical and fire codes, as well as the National Electrical Code (“NEC”). The EPC Contractor shall also possess all professional and trade licenses required by the state and local authorities.

The EPC Contractor will create and maintain a health and safety manual in accordance with OSHA requirements which establishes appropriate rules and procedures concerning workplace safety.

Noise from construction activities will be in accordance with all applicable federal, state, and local regulations.

The inverters and transformers will be located on one or more concrete pads or piles. All power and communication lines within the solar array and to the point of interconnection will be buried

underground. Utility poles at the point of interconnection will be above ground. The Project footprint area covers approximately 28 acres. Specifications for solar panels, inverters, and racking system proposed for the Project are included as **Appendix I**.

The panels will have a maximum height of 15 feet and the array will be surrounded by an 8-foot-high fence for safety and security purposes. Entry into the fenced areas will be through gates with Knox Boxes for emergency access.

The Project design and planning process focused on minimizing any potential impacts to the surrounding neighborhood. The Project will produce electricity without requiring any combustion of materials; as a result, the community solar array will not cause or emit odors, dust, gas, smoke, or fumes. In addition, the Project will have very few moving parts and will generate electricity primarily in a passive manner – collecting the sun's rays and converting energy associated with the rays into electricity – so the Project will not produce vibrations, none of which would impact surrounding properties. The array is designed to meet all required setbacks from neighboring residential and religious properties in compliance with the Ordinance and incorporates vegetative screening that will grow over time for the benefit of nearby parcels, as outlined in **Section 3.8**. A warning sign shall be provided at the facility entrance and along the perimeter fence including the facilities 911 address and a 24-hour emergency contact number. No outdoor storage is planned for the Project at this time. In the event outdoor storage is needed, the Project will apply for the necessary approvals for the contemplated storage.

The scope of work includes but is not limited to:

- Construction of 20-ft wide gravel access roads
- Construction of project equipment pads
- Construction of a temporary staging areas
- Installation of solar panels and associated support equipment and structures
- Installation of buried and overhead collector lines

3.2 Noise

The Project will operate in accordance with City Ordinance, Title 4, Chapter 4, Section 5 (4.4.5). Solar panels themselves do not produce any noise. The only components in the array that generate noise are the inverters and transformers. The inverters have been purposely located away from the nearest residential abutters. The final inverter pad design will ensure that any noise emitting components will be oriented towards the interior of the Project and directed away from neighboring parcels. The inverters are rated at 65 dBA at 1 meter as indicated in the manufacturer's specification sheet in **Appendix I**. Sound waves diminish with distance in accordance with mathematical principles of sound level drop. Extrapolating the manufacturer's sound data at one meter and projecting to neighboring property lines shows that a sound level of less than 50dBA is anticipated at the property line located approximately 100 feet away. The Project will comply with any sound limitations imposed by the Illinois Pollution Control Board during operations.

3.3 Vibration

There will be no vibrations generated by the solar panels or racking during the operating period of the Project. There may be de minimis vibrations produced by the inverter, but any such vibrations will not

extend to surrounding properties. The Project's comprehensive maintenance plan includes routine inspections to assess and correct any malfunctioning equipment.

3.4 Air pollution including (a) Visual emissions, (b) Particulate matter emissions; (c) Fugitive particulate matter emissions; (d) Odorous matter; (e) Airborne toxic matter

The Project will not emit air pollution of any kind. It will in fact provide a net environmental carbon benefit. According to the EPA Clean Energy Equivalencies Calculator the Project will avoid the environmental equivalent of 8,235 metric tons of carbon annually, which is comparable to:

- Carbon sequestered by 9,745 acres of forest
- 926,622 gallons of gasoline consumed each year
- 1,774 gasoline-powered passenger vehicles removed from our streets

A commitment to wildlife-sensitive building and management practices during and after construction will allow for increased local biodiversity. TPE proposes to use pollinator friendly ground cover underneath the Project and native plantings around the perimeter. Clover and grass species that promote the establishment and long-term health of bee populations will give bee and small mammal populations a new pollinator friendly habitat. The Project will not use any pesticides for vegetation management.

3.5 Toxic substances

There are no toxic substances in the panels. The Project will incorporate Tier 1 silicon-based PV panels, which have been analyzed as follows by North Carolina State University:

> Well over 80% (by weight) of the content of a PV panel is the tempered glass front and the aluminum frame, both of which are common building materials. Most of the remaining portion are common plastics, including polyethylene terephthalate in the backsheet, EVA encapsulation of the PV cells, polyphenyl ether in the junction box, and polyethylene insulation on the wire leads. The active, working components of the system are the silicon photovoltaic cells, the small electrical leads connecting them together, and to the wires coming out of the back of the panel. The electricity generating and conducting components makeup less than 5% of the weight of most panels. The PV cell itself is nearly 100% silicon, and silicon is the second most common element in the Earth's crust. The silicon for PV cells is obtained by high-temperature processing of quartz sand (SiO2) that removes its oxygen molecules. The refined silicon is converted to a PV cell by adding extremely small amounts of boron and phosphorus, both of which are common and of very low toxicity.

Please see **Appendix N** for the full report.

3.6 Fire and explosive hazards

The solar panels and racking, which comprise the majority of the Project's equipment, are not flammable. Tempered glass offers protection from heat and the elements, and the panels are designed to absorb heat as solar energy. From a study by North Carolina State University:

> …Concern over solar fire hazards should be limited because only a small portion of materials in the panels are flammable, and those components cannot self-support a significant fire. Flammable components of PV panels include the thin layers of polymer encapsulates surrounding the PV cells, polymer back sheets (framed panels only), plastic junction boxes on rear of panel, and insulation on wiring. The rest of the panel is composed of non-flammable components, notably including one or two layers of protective glass that make up over three quarters of the panel's weight.

Please see **Appendix N** for the full report.

3.7 Glare and heat

As explained in the fire and explosive hazards **Section 3.6**, there is no heat generated by the Project.

A glare study was performed by TPE using ForgeSolar software to assess the possible effects of reflectivity created by the Project. ForgeSolar software incorporates GlareGauge, the leading solar glare analysis tool which meets Federal Aviation Administration ("FAA") standards and is used globally for glare analysis. It is based on the Solar Glare Hazard Analysis Tool licensed from Sandia National Laboratories.

A model of the Project was input into the software along with (3) Route Receptors along roadways in vicinity of the site with another Route Receptor for the railroad south of the project area. Height was assessed at 5 feet above ground to emulate passengers in cars. Further, (24) Observation Receptors were modeled at specific dwellings located around the perimeter of the solar array. Heights were modeled at 15 feet above ground to emulate residents on the second floor of dwellings and evaluate the worst-case glare impact (single story dwellings will have lower glare).

A direct line of sight between the Project and the designated Route Receptors and Observation Receptors is required to produce any discernible glint/glare. The presence of existing or proposed vegetation between the receptor and the Project will prevent any potential glint/glare from the Project's panels.

The model assumes the sun is shining 100% of the time it is above the horizon (during laylight hours). That is, it does not account for cloudy or overcast conditions when the sun is not shining. The results, therefore, are the maximum (theoretical) expected glint and glare during any single year. Existing topography is taken into account in the simulation based on LIDAR ("Light Detection and Ranging") data. Existing and planned vegetation are not considered in the simulation. The model assumes zero vegetation screening the Project; this must be considered when interpreting the study results.

To reduce glare in the east and west directions during low sun periods, a 5-degree tracker resting angle was implemented during these times; this eliminates the main source of glare for solar projects. This lower angle will position the panels in a near flat position; they will face upwards and not reflect light from the rising or setting sun towards nearby buildings, cars, or trains.

Based on the above inputs/assumptions, some potential for glint or glare was identified in the analysis at any of the Route Receptors and neighboring Observation Receptors. While excluded from the analysis, existing and planned vegetation will further shield the view of the project from nearby properties, roadways, and railroad. The current and planned vegetative screening is expected to mitigate the any potential glint or glare. Additional measures such as adjusting panel tilt during the affected hours and days may be enacted should any glare issues not be resolved by planting.

Please see **Appendix M** for a more detailed analysis of the Forge Solar results and a copy of the ForgeSolar Assessment.

3.8 Setback Compliance, Landscape & Buffering Plan

The Project proposes to conform with all applicable City setbacks from neighboring properties and public rights-of-way. The western side of the array where the closest residential neighbors are located will incorporate a vegetated buffer. This buffer will consist of two staggered rows of naturalized or native evergreen shrub spaced 28 feet apart on center (from the center of one plant to the center of the next plant). In front of these rows will be a third row consisting of native deciduous shrubs that obscure any gaps, replaced by an understory tree every 100 ft. The buffer area in between these plantings and the road will be seeded with a native pollinator friendly seed mix and areas underneath the solar arrays will be stabilized with a low-height, pollinator-friendly mix. Both pollinator seed mixes are intended to provide food and shelter for wildlife and will attract a variety of pollinators and songbirds. The seed mix will provide an attractive display of color from spring to fall and will provide nectar and food for pollinators and their larva. A final landscape plan will be designed by a landscape architect in accordance with the Ordinance prior to issuance of a Building Permit.

3.9 Viewshed

TPE conducted a viewshed analysis and prepared photo simulations of the proposed site from nearby public roads and residential property owners. The model is used to provide a mock-up of what portion of the solar array may or may not be visible. The viewshed analysis was conducted from the closest residential neighbors and from Cannonball Trail depicting the viewshed at the time of landscape planting as outlined in **Section 3.8**, and after 5 years of growth. The viewshed analysis combines a digital model of the terrain, derived from online Google earth terrain data, and incorporates the height and position of Project components, existing vegetation and proposed new plantings and the eye-level of a theoretical observer into input data for a computer model. The model provides a view between the Project and the modeled observer. These viewsheds have been included in **Appendix O**.

3.10 FAA Filing

TPE used an online "Notice Criteria Tool" provided by the Federal Aviation Administration (FAA) to determine if the additional filings were needed. The tool determined that the Notice Criteria were exceeded. A "Notice of Proposed Construction or Alteration – Off Airport" was submitted to the FAA on July 11, 2022. A "Determination of No Hazard to Air Navigation" was issued by the FAA. on August 12, 2022. Submittal of FAA from 7460-2 "Notice of Actual Construction or Alteration" is required at the time of Project construction. Please See **Appendix M** for a copy of the FAA Determination of No Hazard to Air Navigation.

3.11 Safety and Security

The solar arrays will be enclosed by an 8-foot-high security fence and locked gates, as required by the Ordinance and the National Electrical Code (NEC). Emergency access to the fenced areas will be through Knox-Boxes to provide the required 24-hour access. The gravel drives have been designed to allow emergency vehicle access, including fire trucks.

Emergency responders will be provided with the key/code for the Knox-Boxes.

3.12 Interconnection

The proposed Project will interconnect to an existing 12.5 kV ComEd feeder on the distribution system, which connects to the substation that is approximately 1/3 mile south of the project site. The utility will install approximately 150 feet of overhead powerline on 5 poles with metering, disconnect, and recloser equipment. The applicant is currently in the Facilities Study phase of the electrical interconnection process. A copy of the redacted Interconnection Agreement for the Project is included as **Appendix L.**

3.13 Operation and Maintenance

The Operation and Maintenance Plan including a comprehensive vegetative management plan for the Project is included as **Appendix J**. Preventive maintenance will be conducted on a schedule based on manufacturer's recommendations and industry best practices and standards of care. Regular maintenance will include vegetation control, fence inspection and physical inspection of all system components. A mowing schedule shall be established based on the plant species in the seed mix that is properly timed to balance avoiding the disturbance of wildlife and native pollinator-friendly vegetation with the need to avoid the establishment of weeds. Vegetation underneath and between the solar panels will be well maintained in the defined lease area to keep vegetation below the low edge of the solar panels at maximum tilt angle. Mowing and weed trimming schedules will be adjusted from time to time to allow for flexibility based on rainfall and vegetation growth. Chemical control shall be used in accordance with Illinois noxious weed regulations. The Project will be monitored continuously for system failures via a Supervisory Control and Data Acquisition (SCADA) system. Qualified and insured technicians will be dispatched to address any system failures, including inverter, transformer, or tracker motor malfunctions.

3.14 Decommissioning Plan

The Decommissioning Plan for the Project is included as **Appendix C** and includes removal of all structures (including equipment, fencing and roads) and foundations, restoration of soil and vegetation. The decommissioning plan shall be accompanied by a decommissioning bond to provide certainty to the City that the financial resources will be available to fully decommission the site. At the end of operational life of the Project, the Project will be safely dismantled using conventional construction equipment. The Project consists of numerous materials that can be resold or recycled for significant scrap value, including steel, aluminum, glass, copper, and plastics. The solar panels are not considered hazardous waste. The panels used in the Project will contain silicon, glass, and aluminum, which have value for recycling. Often, current market salvage values of a Project exceed estimated decommissioning and site restoration expenses.

The site will be restored and reclaimed to approximately the pre-construction condition in conformance with the site lease agreement and the Agricultural Impact Mitigation Agreement (AIMA). It is assumed that the site will be returned to agricultural use after decommissioning, and appropriate measures will be implemented to achieve said use.

3.15 Itemized Cost Estimate

Below is a table summarizing the anticipated cost estimate for the Project. These numbers are approximate and exclude contingency and interconnection.

Cost Category	$/W	$
Solar Modules	0.360	$ 2,700,000
Inverters	0.045	$ 337,500
Racking	0.120	$ 900,000
EPC	0.500	$ 3,750,000
D&E	0.015	$ 112,500
GC & Overhead	0.050	$ 375,000
Subtotal	**1.090**	**$ 8,175,000**

4.0 APPROVAL CRITERIA

4.1 Special Use Required Findings of Facts (Section 10-4-9, Zoning Code)

a) The establishment, maintenance, or operation of the special use will not be unreasonably detrimental to or endanger the public health, safety, morals, comfort, or general welfare.

The property is located in a portion of Yorkville with low population density and will not be detrimental to or endanger the public health, safety, morals, comfort, or general welfare to the community. Solar components do not have any moving parts and can be disposed of in a non-hazardous landfill. Numerous studies have shown them not to have a negative environmental impact. Please refer to ***Appendix N*** *for a copy of these studies. Also, please refer to IDNR's response to the Project's EcoCAT submission.*

The Project will comply with all local, state, and federal regulations and will be always operated in a safe manner. In addition, the Project will promote the general welfare of Yorkville by supplying new jobs, new tax revenue and will be a source of generation of sustainable, clean, pollution-free renewable electricity. Also, the community will benefit from the significant economic benefit without stressing community infrastructure – no new children in schools, no use of water and sewer systems, limited use of roads, little to no need for police or fire departments.

b) The special use will not be injurious to the use and enjoyment of other property in the immediate vicinity for the purposes already permitted, nor substantially diminish and impair property values within the neighborhood.

As mentioned previously, the property is located in a portion of Yorkville with low population density. The Project will fully comply with all setbacks as specified in the Yorkville Ordinance 10.19.17(b) will fully comply with all performance standards listed in the Yorkville Zoning Code 10.19.4 and 10.19.9 and the Special Use Permit, as well as the noise limits imposed in the

Ordinance 4.4.5. The Project will also include a landscape buffer to the portion of the Project adjacent to residences to reduce the visual impact on neighbors who live nearby.

Moreover, as indicated by the property value impact study, the existence of the Project will have no impact on neighboring property values, and therefore will not substantially diminish or impair property values within the neighborhood of the Project. The CohnReznick General Impact Study Report indicates that solar facilities located in similar areas, with similar land uses, do not appear to cause any negative impacts to adjacent real estate, based on a review of academic studies, CohnReznick's own paired sales data, and interviews with County Assessors and other Market Participants. The report details how solar facilities are generally harmonious with surrounding uses as they do not generate any odor, emit any air pollution, and overall, provide a net environmental benefit.

c) The establishment of the special use will not impede the normal and orderly development and improvement of the surrounding property for uses permitted in the district.

The Project will have little to no impact on neighboring properties or the future development of the community. The Project does not generate any odor, or emit any air pollution and, in fact, provides a net environmental benefit. There will be no tree clearing. In converting the property from a farm field to a solar facility, pesticides will not be utilized unless mandated by state or local laws for the control of noxious weeds.

The setback will be planted with a double row of evergreens coordinated with a licensed landscape architect, and the balance of the buffer will include native and pollinator-friendly species. Upon construction completion, traffic to the solar facility will be required only a few times a year to conduct maintenance. With low impacts of solar farms, the community should see no obstructions to future development.

d) Adequate utilities, access roads, drainage or other necessary facilities have been or are being provided.

The Project will have adequate utility interconnections. The completion of the system impact study by ComEd provides assurance that the electrical capacity is available to host the Project and the proposed substation for electrical interconnection is located directly across the street. The Project does not require water or sewer facilities to operate. The Project will also build all roads and entrances necessary to access its facilities. A drain tile survey will be completed prior to construction and foundation design will work around or reroute any identified drain tiles to ensure proper drainage. The Project will also be designed in a manner that will not materially modify existing water drainage patterns around its facilities.

Moreover, the replacement of row crops with a pollinator seed mix is actually a net positive for stormwater. According to the Minnesota Rural Water Association, solar installations with native pollinator-friendly ground cover achieve positive impacts similar to soil conservation projects, which reduce soil erosion, reduce soil quality degradation, and improve water quality. This report is included in ***Appendix N.*** *The Project will be designed to account for all existing features,*

environmental features, the Yorkville Solar Ordinance, and the Kendall County Natural Resources Inventory findings. Please refer to ***Appendix B*** *for the Zoning Site Plan.*

e) Adequate measures have been or will be taken to provide ingress and egress so designed as to minimize traffic congestion in the public streets.

The Project will be designed to include all roads and road entrances necessary to provide adequate ingress and egress to its facilities. Construction traffic will include approximately 25 work trucks per day. Considering the low number of work trucks visiting the project site over the construction phase, traffic patterns in the vicinity of the Project will not be impacted. The Project will have minimal traffic upon completion of construction. Landscape maintenance and maintenance to the Project components are anticipated to occur only a few times a year. Existing traffic patterns will not be impacted in the post-construction phase.

f) The proposed special use is not contrary to the objectives of the official comprehensive plan of the city as amended.

The City's 2016 Comprehensive Plan references The Chicago Metropolitan Agency for Planning's (CMAP) "GO TO 2040" comprehensive regional plan. "GO TO 2040" recommends communities consider solar energy for environmental sustainability and for potential economic improvements.

Solar Farms are a good addition to the neighborhood (quiet, low maintenance, low traffic volume, environmentally safe) and provide sources of renewable energy that is important to a residential area and the community. Although it is a long-term use, a solar facility is not permanent. At the end of the Project's life the location will be reclaimed and restored as close as possible to its current state. At that time, the landowner may be amenable to other, more-public uses.

The parcel is currently included in the City's 2016 Comprehensive Plan Undeveloped Residential Zoning Area Capacity that will not be needed for up to 89 years (Table 2.17, Residential Built-Out Projections).

APPENDIX A – APPLICATION FORMS

United City of Yorkville
800 Game Farm Road
Yorkville, Illinois, 60560
Telephone: 630-553-4350
Fax: 630-553-7575
Website: www.yorkville.il.us

APPLICATION FOR AGREEMENT AMENDMENT

DATE: 02/03/2023	PZC NUMBER:	DEVELOPMENT NAME: TPE IL KE106, LLC

PETITIONER INFORMATION

NAME: Scott Osborn	COMPANY: TPE IL KE106, LLC
MAILING ADDRESS: 3720 S Dahlia St	
CITY, STATE, ZIP: Denver, CO 80237	TELEPHONE: ◉ BUSINESS ○ HOME (303) 618-9570
EMAIL: sosborn@tpoint-e.com	FAX:

PROPERTY INFORMATION

NAME OF HOLDER OF LEGAL TITLE: Daniel B. Light

IF LEGAL TITLE IS HELD BY A LAND TRUST, LIST THE NAMES OF ALL HOLDERS OF ANY BENEFICIAL INTEREST THEREIN:

PROPERTY STREET ADDRESS: 1700 Cannonball Trail

DESCRIPTION OF PROPERTY'S PHYSICAL LOCATION:

East of Cannonball Trail, North of BNSF Rail line and Oak Street, south of Galena Rd, and west of Blackberry Creek and Kennedy Road

CURRENT ZONING CLASSIFICATION: PUD (underlying: R2, R3)

LIST ALL GOVERNMENTAL ENTITIES OR AGENCIES REQUIRED TO RECEIVE NOTICE UNDER ILLINOIS LAW:

ZONING AND LAND USE OF SURROUNDING PROPERTIES

NORTH: B4, PUD (R2, R3)

EAST: A1

SOUTH: A1-SU, PUD (R2, R3)

WEST: PUD (R2, R3)

KENDALL COUNTY PARCEL IDENTIFICATION NUMBER(S)

02-10-300-017			

United City of Yorkville
800 Game Farm Road
Yorkville, Illinois, 60560
Telephone: 630-553-4350
Fax: 630-553-7575
Website: www.yorkville.il.us

APPLICATION FOR AGREEMENT AMENDMENT

PROPERTY INFORMATION

NAME OF AGREEMENT: Ordinance 2006-126 Authorizing Execution of Annexation Agreement of the Bristol Ridge Subdivision

DATE OF RECORDING: February 22, 2007 / May 15, 2007

SUMMARIZE THE ITEMS TO BE AMENDED FROM THE EXISTING AGREEMENT:

Petitioner seeks to withdraw the Kendall County Parcel identified above from the Bristol Ridge Annexation Agreement and Bristol Ridge Planned Unit Development. Petitioner will further seek to rezone this parcel to Agricultural District Use in which, solar energy development is allowable as a Special Use.

This withdrawal is requested to avoid affecting the zoning of neighboring parcels also included in the Bristol Ridge PUD and now owned by a different entity. A letter documenting that owner's consent to this withdrawal is attached to this application.

ATTACHMENTS

Petitioner must attach a legal description of the property to this application and title it as "Exhibit A".

Petitioner must list the names and addresses of any adjoining or contiguous landowners within five hundred (500) feet of the property that are entitled notice of application under any applicable City Ordinance or State Statute. Attach a separate list to this application and title it as "Exhibit B".

Petitioner must attach a true and correct copy of the existing agreement and title it as "Exhibit C".

Petitioner must attach amendments from the existing agreement and title it as "Exhibit D".

Petitioner-Attached "Exhibit E" - Letter from the representative of the other landowner with property affected by the Annexation Agreement stating they do not object to this Ammendment effort.

United City of Yorkville
800 Game Farm Road
Yorkville, Illinois, 60560
Telephone: 630-553-4350
Fax: 630-553-7575
Website: www.yorkville.il.us

APPLICATION FOR AGREEMENT AMENDMENT

ATTORNEY INFORMATION	
NAME: Kyle C. Barry	COMPANY: McGuireWoods LLP
MAILING ADDRESS: 1 North Old State Capitol Plaza Suite 410	
CITY, STATE, ZIP: Springfield, IL 62701	TELEPHONE: 217-527-1282
EMAIL: kbarry@mcguirewoods.com	FAX: 217-527-1290
ENGINEER INFORMATION	
NAME: Jason Cooper	COMPANY: Kimley Horn
MAILING ADDRESS: 570 Lake Cook Rd, Suite 200	
CITY, STATE, ZIP: Deerfield, IL 60015	TELEPHONE: (630) 487-3449
EMAIL: Jason.Cooper@kimley-horn.com	FAX:
LAND PLANNER/SURVEYOR INFORMATION	
NAME:	COMPANY:
MAILING ADDRESS:	
CITY, STATE, ZIP:	TELEPHONE:
EMAIL:	FAX:

AGREEMENT

I VERIFY THAT ALL THE INFORMATION IN THIS APPLICATION IS TRUE TO THE BEST OF MY KNOWLEDGE. I UNDERSTAND AND ACCEPT ALL REQUIREMENTS AND FEES AS OUTLINED AS WELL AS ANY INCURRED ADMINISTRATIVE AND PLANNING CONSULTANT FEES WHICH MUST BE CURRENT BEFORE THIS PROJECT CAN PROCEED TO THE NEXT SCHEDULED COMMITTEE MEETING.

I UNDERSTAND ALL OF THE INFORMATION PRESENTED IN THIS DOCUMENT AND UNDERSTAND THAT IF AN APPLICATION BECOMES DORMANT IT IS THROUGH MY OWN FAULT AND I MUST THEREFORE FOLLOW THE REQUIREMENTS OUTLINED ABOVE.

Adam M. Beal — 2.9.23

PETITIONER SIGNATURE Adam M. Beal - Authorized Representative — DATE

OWNER HEREBY AUTHORIZES THE PETITIONER TO PURSUE THE APPROPRIATE ENTITLEMENTS ON THE PROPERTY.

Landowner's Approval documented in attached letter — February 8, 2023

OWNER SIGNATURE — DATE

Landowner letter in lieu of form signature

Daniel B. Light
104 S. Wynstone Park Drive
North Barrington, IL 60010

February 8, 2023

Krysti Barksdale-Noble
Community Development Director
United City of Yorkville
800 Game Farm Road
Yorkville, IL 60560

Dear Ms. Barksdale-Noble,

Re: Solar Energy Development on Kendal County Parcels

I acquired Kendall County Parcels 02-15-126-004 (54.23 acres) and 02-10-300-017 (41.82 acres) on August 8, 2017 from First Midwest Trust through a Trustee's Deed recorded with the Kendall County Recorder's Office on August 31, 2017 (#201700013916).

On November 02, 2022, I executed two "Real Estate Lease Option Agreements" with Turning Point Energy affiliates TPE IL KE105, LLC and TPE IL KE106, LLC, both Delaware limited liability companies. The purpose of each of these Agreements is the future "construction, operation, maintenance, and decommissioning of a photovoltaic solar project" on each of the above-referenced parcels.

In consideration of the United City of Yorkville's permitting timeline and a desire to initiate and advance that process, I hereby authorize TPE IL KE105, LLC and TPE IL KE106, LLC and their affiliates to file applications with the United City of Yorkville for the following purposes:

1) Agreement Amendment for the withdrawal of the above-referenced parcels from the Bristol Ridge Planned Unit Development subject to an Annexation Agreement adopted by Yorkville Ordinance 2006-126; and
2) Rezoning of said parcels to "A-1 – Agricultural District"; and
3) Variance to allow for a minimal solar panel mounting height lower than 10 feet above ground level; and
4) Special Use for the construction, operation, maintenance, and decommissioning of a photovoltaic solar project on each of the above-referenced parcels; and

5) Any other necessary applications and/or forms related to the solar energy efforts described in items #1-4, above.

A December 5, 2022 email from Jason Engberg, Senior Planner, United City of Yorkville, to Scott Osborn, Project Developer, Turning Point Energy states as follows: "To ensure that the property does not lose any of its existing entitlements prior to the construction of the solar farm, we will add language to the amended agreement which will state that the rezone, special use, and amendment (if approved) will not go into effect until a certain date or until a building permit is issued for the solar farms." Consistent with this language, it is my intention that the existing entitlement on my parcels will not change until a building permit is issued for the proposed solar facilities and the options to lease the property to TPE IL KE105, LLC and TPE IL KE106 are exercised by the optionee.

Any correspondence regarding this authorization may be delivered to me at my business address above with copies to:

1) Shannon Light, 104 S. Wynstone Park Drive, North Barrington, IL 60010; and
2) Turning Point Energy, 3720 South Dahlia Street, Denver, CO 80237

Sincerely,

Daniel B. Light

STATE OF Illinois)
)
COUNTY OF LAKE)

On February 8, 2023, before me, Sheryl McConney, personally appeared the above-named Daniel B. Light, who acknowledged the foregoing instrument to be his free act and deed.

WITNESS my hand and official seal.

OFFICIAL SEAL
SHERRY L MCCONNEY
NOTARY PUBLIC - STATE OF ILLINOIS
MY COMMISSION EXPIRES:10/17/24

Notary Public

Sheryl L McConney

Printed Name:

My commission expires: 10/17/24

Exhibit A to Application Forms

Legal Description – TPE IL KE106, LLC (02-10-300-017)

Note: This legal description is from the Trustee's Deed dated August 8, 2017 between First Midwest Bank and Daniel B. Light; Recorded Kendall County, IL 8/31/2017 #201700013916

Legal Description:

That part of the following described parcels lying easterly of the centerline of Cannonball Trail:

The South ½ of the Southwest ¼ of Section 10, Township 37 North, Range 7 East of the Third Principal Meridian; also the South ½ of the Southeast ¼ of Section 10, Township 37 North, Range 7 East of the Third Principal Meridian lying Westerly of the West line of lands conveyed be Nelson C. Rider to Jerry W. Rider by Warranty Deed Dated October 15, 1911 and Recorded in Book 66 as Page 255 and Depicted in Plat Book 1 at Page 62; all in Kendall County, Illinois.

Exhibit B

ROBERTA SILAGYI IRRVOC TR
%ANDREW SILAGYI
8312 B GALENA RD
BRISTOL, IL, 60512

MICHAEL MIERWINSKI
1687 N CANNONBALL TRL
BRISTOL, IL, 60512

% L B CONSTRUCTION INC LIGHT DANIEL B
104 S WYNSTONE PARK DR
NORTH BARRINGTON, IL, 60010

DANIEL J KRAMER TR NO 100
% MTR FARMS
10735 CHICAGO RD
WATERMAN, IL, 60556

ROBERTA SILAGYI IRRVOC TR
% JEROME SILAGYI
606 INARED CT
MECHANICSBURG, PA, 17055

DANIEL B LIGHT
%LB CONSTRUCTION INC
104 S WYNSTONE PARK DR
BARRINGTON, IL, 60010

% L B CONSTRUCTION INC LIGHT DANIEL B
104 S WYNSTONE PARK DR
NORTH BARRINGTON, IL, 60010

DANIEL J KRAMER TR NO 100
% MTR FARMS
10735 CHICAGO RD
WATERMAN, IL, 60556

FOX VALLEY FAMILY YMCA INC
3875 ELDAMAIN RD
PLANO, IL, 60545

BLACKBERRY HILL CONGREGATION OF JEHOVAHS WITNESSES
1700 CANNONBALL TRL
YORKVILLE, IL, 60560

ROBERT VELAZQUEZ
1996 CANNONBALL TRL
BRISTOL, IL, 60512

DANIEL J KRAMER TR NO 100
% MTR FARMS
10735 CHICAGO RD
WATERMAN, IL, 60556

MICHAEL MIERWINSKI
1687 N CANNONBALL TRL
BRISTOL, IL, 60512

Exhibit C

RE-RECORD TO ATTACH COMPLETE EXHIBIT "G"

STATE OF ILLINOIS)
) ss
COUNTY OF KENDALL)

200700006874
Filed for Record in
KENDALL COUNTY, ILLINOIS
PAUL ANDERSON
02-22-2007 At 02:13 pm.
ORDINANCE 87.00
RHSP Surcharge 10.00

200700015754
Filed for Record in
KENDALL COUNTY, ILLINOIS
PAUL ANDERSON
05-15-2007 At 11:15 am.
ORDINANCE 91.00
RHSP Surcharge 10.00

ORDINANCE NO. 2006- 126

AN ORDINANCE AUTHORIZING THE EXECUTION OF AN ANNEXATION AGREEMENT OF Bristol Ridge Subdivision

WHEREAS, it is prudent and in the best interest of the UNITED CITY OF YORKVILLE, Kendall County, Illinois, that a certain Annexation Agreement pertaining to the annexation of real estate described on the Exhibit "A" attached hereto and made a part hereof entered into by the UNITED CITY OF YORKVILLE; and

WHEREAS, said Annexation Agreement has been drafted and has been considered by the City Council; and

WHEREAS, the legal owners of record of the territory which is the subject of said Agreement are ready, willing and able to enter into said Agreement and to perform the obligations as required hereunder; and

WHEREAS, the statutory procedures provided in 65 ILCS 11-15.1., et seq, as amended, for the execution of said Annexation Agreement has been fully complied with; and

WHEREAS, the property is presently contiguous to the City

NOW THEREFORE, BE IT ORDAINED BY THE MAYOR AND THE CITY COUNCIL OF THE UNITED CITY OF YORKVILE, KENDALL COUNTY, ILLINOIS, AS FOLLOWS;

Section 1: The Mayor and the City Clerk are herewith authorized and directed to execute, on behalf of the City, an Annexation Agreement concerning the annexation of the real estate described therein, a copy of which Annexation Agreement is attached hereto and made a part hereof.

Section 2: This ordinance shall be in full force and effect from and after its passage and approval as provided by law.

JAMES BOCK	Y	JOSEPH BESCO	Y
VALERIE BURD	Y	PAUL JAMES	Y
DEAN WOLFER	Y	MARTY MUNNS	Y
ROSE SPEARS	Y	JASON LESLIE	Y
Proclaimer	Y		

Approved by me, as Mayor of the United City of Yorkville, Kendall County, Illinois, this 24 Day of October, A.D. 2006.

MAYOR

Passed by the City Council of the United City of Yorkville, Kendall County, Illinois this 24 day of October, A.D. 2006.

ATTEST: _____
CITY CLERK

Prepared by:

John Justin Wyeth
City Attorney
United City of Yorkville
800 Game Farm Road
Yorkville, IL 60560

ANNEXATION AGREEMENT
BETWEEN
UNITED CITY OF YORKVILLE
AND
BRISTOL RIDGE, LLC

THIS ANNEXATION AGREEMENT ("Agreement") is made and entered into this 24 day of OCTOBER, 2006 between the **UNITED CITY OF YORKVILLE,** a municipal corporation, located in the County of Kendall, State of Illinois ("CITY"), and **BRISTOL RIDGE, LLC,** as owner and/or developer (OWNER and/or DEVELOPER).

W I T N E S S E T H

WHEREAS, at the time of execution of this Agreement, the OWNER is the record owner of two parcels of certain real property which are the subject matter of this Agreement. The first parcel, known as the "Oliver Parcel" is approximately 135 acres, more or less, and is subject to a pre-annexation agreement with the CITY and is legally described on **EXHIBIT "A"** attached hereto and made a part hereof. The second parcel, known as the "Bristol Parcel" is approximately 55 acres, more or less, and is legally described on **EXHIBIT "A"** attached hereto and made a part hereof. Said parcels are located adjacent to Cannonball Trail in Kendall County, Illinois.

WHEREAS, the OWNER and CITY have after due and careful consideration, concluded that it would be best to amend and restate the relevant terms and conditions of the pre-annexation agreement for the Oliver Parcel in this Agreement as the Oliver Parcel and Bristol Parcel are to be developed as one cohesive subdivision. The pre-annexation agreement is attached hereto and made a part hereof as **EXHIBIT "B".**

WHEREAS, the two parcels (collectively the "TERRITORY") are comprised of approximately 190 acres, more or less, and are depicted on the Plat of Annexation attached hereto and made a part hereof as **EXHIBIT "C"**; and

WHEREAS, the OWNER and/or DEVELOPER shall develop the TERRITORY with uses and a design generally consistent with all the criteria contained in this Agreement and in the Preliminary Plat of Subdivision prepared by Jacob & Hefner, dated March 16, 2006, with a revision date of May 19, 2006 attached hereto and made a part hereof as **EXHIBIT "D"** and in conformance with CITY Ordinances, except as expressly and specifically modified by this Agreement; and

WHEREAS, the TERRITORY is currently contiguous with the existing corporate limits of the CITY, and is not within the boundary of any other city or village; and

WHEREAS, the OWNER and CITY, respectively, have complied with all applicable ordinances and laws of the State of Illinois regarding annexation and development approvals and all petitions for zoning and development approvals relating to the TERRITORY, all pursuant to and upon such notices and related procedures as are required by the ordinances of the CITY and the laws of the State of Illinois; and

WHEREAS, in fulfillment of the aforementioned requirements, the CITY published for and held a public hearing before the Plan Commission on June 14, 2006, on the Annexing and Rezoning proposal for the TERRITORY; and

WHEREAS, also in fulfillment of the aforementioned requirements, the CITY published for and held a public hearing before the Mayor and Alderman on July 11, 2006, on the proposed Annexation Agreement for the TERRITORY.

WHEREAS, the Mayor and Alderman, after due and careful consideration, have concluded that the execution of this Agreement subject to the terms and provisions of this Agreement, and the rezoning, subdivision and development of the TERRITORY as provided herein, will inure to the benefit and improvement of the CITY in that it will increase the taxable value of the real property within its corporate limits, promote the sound planning and development of the CITY and will otherwise enhance and promote the general welfare of the people of the CITY.

NOW, THEREFORE, in consideration of the mutual covenants and promises herein contained, the parties agree to as follows:

1. **ANNEXATION**. The CITY agrees to restate the relevant portions of the pre-annexation agreement as set forth herein and immediately annex the TERRITORY into the corporate limits of the CITY pursuant to the Petition for Annexation.

2. **TERM OF AGREEMENT**. This Agreement shall be valid and binding for a period of twenty (20) years. In the event the annexation of the TERRITORY, the classification of the TERRITORY for zoning purposes or other terms of this Agreement are challenged in any court proceeding, the period of time during which such litigation is pending, shall extend the term of this Agreement day-for-day for the date of the filing of such action to and including the date of any final nonappealable order.

3. **ZONING AND OTHER APPLICABLE ORDINANCES.** The CITY has examined the Plat of Zoning, as hereinafter defined, this Agreement and other submissions and documentations provided or required in connection therewith and find that it is in compliance with this Agreement.

A. Contemporaneously with the annexation of the TERRITORY, the CITY shall adopt an ordinance amending the provisions of the Yorkville Zoning Ordinance so as to provide that the TERRITORY shall be classified into the zoning districts identified on the Plat of Zoning. Rezoning granted shall be in conformance with the Plat of Zoning attached here to and made a part hereof as **EXHIBIT "E"**.

B. Further, the CITY agrees to grant those modifications as specified in this Agreement, Preliminary Plat of Subdivision, and Exhibits made a part hereof.

C. The CITY and OWNER/DEVELOPER agree that the TERRITORY shall be developed in substantial compliance with the ordinances of the CITY, and this Agreement, together with the Preliminary Plat of Subdivision and Exhibits attached hereto.

D. Interim Uses:

Interim uses set forth below shall be permitted anywhere on the TERRITORY during the term of this Agreement subject to City Subdivision Control, and /or other applicable ordinances, policies or regulations:

a. All types of crop farming.
b. Paved Parking lots for models.
c. Stock piling of dirt, so long as the location of said stock piling does not impact any adjacent residences and/or active farmland crops and are not located on land to be dedicated for parks.
d. Temporary detention.
e. Construction storage and office/sales trailers, as permitted in Section 16 of this Agreement.
f. Temporary Signs as permitted in Section 15 of this Agreement.

Said interim uses shall be allowed only for activities taking place on the TERRITORY and not for any other off-site activities not related to the development of the TERRITORY.

E. DEVELOPER shall be allowed to submit final plats for approval in phases. The CITY shall approve the Final Plat(s) of Subdivision and such final plans so submitted at any time during the term of this Agreement, subject to the terms and conditions set forth herein provided that such plat(s) and plans substantially conform with the Preliminary Subdivision Plans and otherwise meet all the requirements of the CITY'S Municipal Codes, except as expressly and specifically modified by this Agreement. The CITY shall act upon any final plat and final engineering or resubmitted final plat and final engineering within sixty (60) days of its receipt of such final plat, final engineering and all necessary supporting documentation and information by either; (1) adopting such ordinances as may be required to approve such final plat and final engineering and cause the CITY to process and execute any such final plat of subdivision or (2) issuing a letter of denial informing the applicant in writing and specifying in detail as to what corrections are necessary as a condition to the approval of any final plat and final engineering quoting the section of the Municipal Code or this Agreement relied upon by the CITY in its request for corrections.

F. Throughout the term of this Agreement and any extensions thereof, any setbacks, lot sizes, lot widths, landscaping, and subdivision requirements incorporated in the Preliminary Subdivision Plan shall remain in effect and shall govern the development of the TERRITORY.

G. All CITY ordinances, codes, policies and regulations with the exception of the City's Building Code in effect as of the date of this agreement shall be binding upon OWNER and/or DEVELOPER for a period of five (5) years. Thereafter said ordinances, policies and regulations then in effect shall apply, provided however, that the application of any such

ordinance, code, policy and regulation shall not result in a reduction in the number of residential or multi-family building lots herein approved for the TERRITORY, alter or eliminate any of the ordinance deviations provided for herein, nor result in any subdivided lot or structure constructed within the TERRITORY being classified as non-conforming.

H. To the extent of any conflict or inconsistency between the terms or standards of this Agreement and the terms or standards of the Subdivision and Development Control Regulations, Zoning Ordinance, Building Code or any other applicable CITY code, ordinance, rule or regulation, the terms and standards of this Agreement shall control.

I. Nothing contained herein shall prevent the CITY from enforcing Code modifications or requirements by other governmental bodies having jurisdiction so long as the enforcement is done consistent throughout the CITY.

J. OWNER and/or DEVELOPER may request and the CITY Administrator may approve minor changes to the Preliminary Plat of Subdivision subject to the provisions of this paragraph 3(J). All such changes shall be deemed incorporated into this Agreement. As used herein a change shall NOT be considered minor if it includes the following:

a. A change in the use or character of the development.
b. An increase of more than five percent (5%) in the overall coverage of structures.
c. A relocation of any street, curb cut or intersection of more than twenty-five (25) feet in a manner that would reasonably be expected to increase the problems of traffic circulation or public utilities, or that would cause a significant negative impact upon the buffer or open space scheme.
d. A reduction of more than five percent (5%) in approved open space.
e. An increase of more than five percent (5%) in the total number of dwelling units, inclusive in total, may be approved by the CITY, without any public hearing, such

approval not to be unreasonably conditioned, delayed or denied.

K. BUILDING CODE. The CITY has adopted the International Building Code, which is updated approximately every three years. The building codes for the CITY in effect as of the date of building permit application will govern any and all construction activity within the Subject Property.

4. PUBLIC IMPROVEMENTS AND SURETY BOND.

A. Prior to the commencement of construction for a certain phase of the development, the OWNER and/or DEVELOPER shall provide the CITY with an irrevocable letter of credit or surety bond acceptable to the CITY and issued by an institution approved by the CITY (hereinafter sometimes collectively referred to as "Surety") in an amount equal to one hundred ten percent (110%) of the CITY approved estimate of the established costs of the land improvements to be undertaken for said phase to be developed on the TERRITORY. Any irrevocable letter of credit shall be in a form substantially as set forth in **EXHIBIT "G"**. The estimate of cost shall be initially prepared by the engineer for the OWNER and/or DEVELOPER and shall then be submitted to the CITY engineer for approval, which approval shall not be unreasonably withheld, conditioned or delayed.

B. The Surety shall constitute a guarantee that all the land improvements required will be constructed by the OWNER and/or DEVELOPER pursuant to this Agreement, the applicable CITY Ordinances, and the approved final engineering plans and specifications, and shall be completed within a period of time, not to exceed two (2) years from the Final Plan and Plat approval for the TERRITORY or any given Phase thereof (any extension of time may

be mutually agreed upon by the OWNER and/or DEVELOPER and the CITY), and that should the OWNER and/or DEVELOPER fail or default in the completion of such obligation within the permitted time, then the CITY may, after complying with the terms and conditions of the Surety, use the Surety to the extent necessary to complete or repair any and all of the improvements secured thereby.

C. The OWNER and/or DEVELOPER shall be relieved of all continuing responsibility under a Surety provided pursuant to this Paragraph 4 once the CITY has accepted all land improvements required to be constructed with respect to a given lot(s) of the development of the TERRITORY, all warranty work for such Phase, if any, having been performed by OWNER and/or DEVELOPER and approved by the CITY, and all warranties of the OWNER and/or DEVELOPER hereunder have lapsed, provided, however, that as land improvements are partially completed and paid for by the OWNER and/or DEVELOPER and accepted by the CITY, the Surety deposited by the OWNER and/or DEVELOPER with the CITY, if requested by the OWNER and/or DEVELOPER, may be proportionately reduced or released on an individual improvement-by-improvement basis upon the review and recommendation of the CITY Engineer. Upon completion of a major portion of the public improvements required with respect to a given Phase of the development of the TERRITORY, the Surety shall be reduced by the CITY within sixty (60) days of receiving a positive recommendation from the CITY engineer that said Surety be reduced. The reduction of said Surety shall be in an amount proportional to the work then completed, as reviewed and recommended by the CITY Engineer. The CITY agrees that said review by the CITY engineer shall be of reasonable duration after the submittal of all documents required for said review. The

CITY agrees not to condition the reduction in the Surety on the construction of any public improvements not specifically included on the approved final engineering plans for said phase.

Notwithstanding anything herein, the CITY shall be entitled to retain ten percent (10%) of the Surety as security for the OWNER'S and /or DEVELOPER'S performance of any warranty work required hereunder, and to use said ten percent (10%) to perform such warranty work in the event that the OWNER and/or DEVELOPER fails to do so. Upon the expiration of the OWNER'S and/or DEVELOPER'S warranty obligation hereunder, the CITY shall promptly release any remaining retained amounts under the relevant Surety.

5. UTILITY CAPACITY AND EXTENSIONS.

A. The CITY has determined that the CITY's sanitary sewer transmission system, potable water, fire flow and water storage have sufficient capacity to adequately serve the anticipated uses of the TERRITORY when developed pursuant to the terms of this Agreement.

B. To the best of the CITY'S and Yorkville Bristol Sanitary District's knowledge and belief, there is no administrative, judicial, or legislative action pending or being threatened that would result in a reduction of, or limitation upon any party's right to use the sanitary sewer and potable water supplies and systems serving the CITY, and the CITY will notify the OWNER and/or DEVELOPER and use best efforts to promptly take remedial action if such reduction or limitation is threatened in the future.

6. STORMWATER MANAGEMENT.

A. The OWNER and/or DEVELOPER shall provide for storm water drainage

and the retention/detention thereof upon and from the TERRITORY in substantial conformity with the Preliminary Engineering, subject to review and approval of Final Engineering for each Phase subject to the depressional storage volume and the flood plain compensatory volume being provided in the TERRITORY in retention/detention areas above the TERRITORY storage volumes. OWNER and/or DEVELOPER shall use its best efforts to have all required plantings within the retention/detention areas established, weather permitting, prior to selling any lots which abut the retention/detention areas to individual home owners.

7. **EXCAVATION, GRADING AND PREPARATION OF TERRITORY.** The CITY agrees to allow the OWNER and/or DEVELOPER prior to final approval to allow mass earthwork and grading, provided that the CITY has approved mass grading and erosion control plans for such work, that the OWNERS and/or DEVELOPERS shall comply with all requirements of the CITY Erosion/Sediment Control Ordinance, and provided further that OWNERS and/or DEVELOPERS shall post a Surety in the amount of the cost of such work, as provided by the OWNER'S and/or DEVELOPER'S engineer, subject to the review and approval of the CITY Engineer, which approval shall not be unreasonably withheld, conditioned or delayed, with the CITY as security for the completion hereof, and provided that in the event that OWNERS and/or DEVELOPERS perform or construct any of the land improvements contemplated by Section 4 and Section 10 of this Agreement prior to the time that the CITY has approved the final engineering plans therefore, the CITY may exercise such remedies as it deems necessary to halt such work until such final engineering is approved.

8. **RECAPTURE.**

A. In the event the OWNER and/or DEVELOPER are required by CITY to

oversize water, sanitary sewer, storm water pipes and/or facilities or construct roadways and traffic related improvements to serve or benefit other properties, the CITY agrees to enter into a recapture agreement for said costs including but not limited to engineering and reasonable interest costs as provided by law. Any recapture agreement shall be substantially in the form as attached hereto and made a part hereof as **EXHIBIT "G"**.

9. EASEMENTS.

A. In the event that during the development of the TERRITORY, OWNER and/or DEVELOPER determines that any existing utility easements and/or lines require relocation to facilitate development of the TERRITORY in accordance with the Preliminary Plat of Subdivision, the CITY shall fully cooperate with the OWNER and/or DEVELOPER in causing the vacation and relocation of such existing easements. In the event an offsite easement is required, and the OWNER and/or DEVELOPER is unable to acquire such necessary easement the CITY shall exercise its power of eminent domain to acquire the same, provided OWNER and/or DEVELOPER shall pay the reasonable costs incurred by the CITY as a result thereof. OWNER and/or DEVELOPER shall place a landscape buffer easement in the rear yards on the Final Plat covering Lots 131-117. Said landscape buffer easement shall be initially planted by the OWNER and/or DEVELOPER but shall thereafter be maintained by the individual home owner for each Lot subject to the terms and conditions contained within the Homeowner's Association Documents, Covenants and Restrictions Documents or other such documents governing the TERRITORY.

B. Within 30 days of a written request from the United City of Yorkville, which includes legal descriptions and exhibits as necessary, the OWNER or DEVELOPER shall grant permanent and temporary construction easements as necessary for the construction of extension of City utilities and appurtenances and/or other utilities to serve the subject property and other properties within the City of Yorkville.

C. Within 30 days of a written request from the United City of Yorkville, which includes legal descriptions and exhibits as necessary, the OWNER or DEVELOPER shall convey by Warranty Deed, fee simple title of future highway or road right of way to the State of Illinois, Kendall County or the United City of Yorkville as necessary, regardless of whether or not these right of way needs have been previously identified in this agreement. Such request for conveyance of right of way shall have no impact on any previously entitled land development density or approved plats.

10. CONNECTION TO CITY SERVICES.

A. No users shall be permitted to connect to the sewer and water mains until the CITY or its designee (at the sole discretion of the City) has inspected and approved all such lines and the lines have received final regulatory approval from the Illinois Environmental Protection Agency, if required, and all applicable CITY and/or Yorkville Bristol Sanitary District fees have been paid.

B. The sole and exclusive purpose of such connections by the OWNER and/or DEVELOPER shall be to provide sanitary sewer and potable water services to the subject TERRITORY.

C. The OWNER and/or DEVELOPER shall be responsible for paying to the CITY its tap-on connection fees pursuant to Section 21 and Exhibit H-1 and H-2 of this agreement.

11. PUBLIC IMPROVEMENTS WARRANTY.

A. The CITY, once it has had the opportunity to inspect and fully confirm the public improvements required to be constructed under this Agreement comply with CITY approved plans, specifications and ordinances, shall approve all such public improvements, all in accordance with Paragraph 11B., shall accept their dedication subject to the OWNER'S and/or DEVELOPER'S warranty, as described herein, and shall thereafter operate, maintain, repair, and replace all such public improvement located therein. OWNER and/or DEVELOPER warrant that all public improvements required to be constructed by them hereunder shall be free from defects in workmanship or materials for a period of one (1) year after acceptance thereof by the CITY. Upon notice from the CITY, OWNER and/or DEVELOPER shall promptly commence to remedy any defects covered by the foregoing warranties, and in addition thereto, in the event that the OWNER'S and/or DEVELOPER'S construction of any Phase of the development in the TERRIORTY is determined to have damaged any public improvements previously installed by the OWNER and/or DEVELOPER within the TERRITORY, then upon notice thereof from the CITY, OWNER and/or DEVELOPER shall promptly commence to repair or replace any and all public improvements so damaged.

B. Infrastructure (public improvements and facilities) shall be accepted by the CITY according to the CITY Subdivision Control Ordinance.

12. **PUBLIC UTILITIES.** The installation of the necessary and appropriate on-site electric, natural gas, cable television, and telephone services to the TERRITORY shall be by underground installation and pursuant to the requirements of such utility companies or pursuant to the agreement of the CITY with such entities. The CITY agrees to cooperate with the OWNER and/or DEVELOPER to permit the extension of all such utilities along existing public rights-of-way and otherwise allow the extension of all necessary utilities to the TERRITORY, provided, however, that the CITY'S agreement to cooperate with the OWNER and/or DEVELOPER to allow the extension of utilities to the TERRITORY shall in no way relieve the OWNERS and/or DEVELOPER of their obligations to obtain any and all easements and permits necessary to do so, at their sole cost and expense.

13. **RIGHT-OF-WAY DEDICATIONS AND ROADWAY IMPROVEMENTS.**

The OWNER and/or DEVELOPER shall dedicate or cause to be dedicated to the CITY and/or applicable agency, all necessary rights-of-way as shown on the Final Plat of Subdivision for the TERRITORY.

It is recognized that the roadway improvements to be installed by OWNER/DEVELOPER on Cannonball Trail maybe more than would be required by County ordinance and policy. The OWNER/DEVELOPER shall submit to the CITY and County its cost estimate for the extra cost involved with the all the Cannonball Trail improvements consistent with the County roadway guidelines ("Cannonball Trail Extra Costs"). All of the cost estimates shall be supported by documentation and final determination of the costs shall be made by the County Engineer. In the event that the Cannonball Trail Extra Costs exceeds what would be required by County ordinance or policy, the OWNER/DEVELOPER shall receive a credit for the

excess Cannonball Trail Extra Costs against the CITY collected County road fees.

14. **INGRESS AND EGRESS.** The CITY hereby agrees to approve the proposed public right-of-way connections, in which the CITY has jurisdictional control to review and approve, for the TERRITORY as shown on the Preliminary Plat of Subdivision attached hereto. The OWNER and/or DEVELOPER acknowledge that any proposed right-of-way connections to roadways outside the jurisdictional control of the CITY shall be reviewed and approved by said applicable jurisdiction. Prior to or concurrently with any final plan or final plat review, the OWNER and/or DEVELOPER shall submit written approval from the applicable jurisdiction for said right-of-way connections. OWNER and/or DEVELOPER shall provide a temporary emergency only access over, through and across Lot 132 until a point in time when a second means of ingress/egress is available to the TERRITORY west of Cannonball Trail. Specifications of the said emergency access is subject to the review and approval of the City and the Bristol-Kendall Fire District, which review and approval shall not be unreasonably withheld, conditioned or delayed. After a second means of ingress/egress is available to the TERRITORY west of Cannonball Trail the OWNER and/or DEVELOPER may develop Lot 132 as a single family residence.

15. **SIGNAGE.** The CITY agrees to allow the following signage to be used in the development:

A. Permanent Development Entry Sign.

(i) Definition: Main monument sign at entry locations of the subdivision Preliminary Plat of Subdivision.
(ii) Number: Six (6).

B. Temporary Signs.

(i) Definition: Any sign, banner or advertisement for the development on the TERRITORY.
(ii) Number: Four (4).
(iii) Maximum Size: Ten feet by ten feet (10' x 10') double sided.
(iv) Removal: Said sign/s shall be removed upon completion of 85% build-out of the residential lots within the particular phase.

C. Other Sign/s.

(i) Definition: Any flag, balloon or other advertisement device.
(ii) Removal: Said sign/s shall be removed upon completion of 85% build-out of the residential lots within the TERRITORY.

D. Model Home Signs: One (1) identification sign in front of each model home; a maximum of four (4) feet in height and twelve (12) square feet in size. Model home signs shall be removed upon occupying the home for normal residential use.

E. No Signs in a public Right of Way or easement, Permits: OWNER/DEVELOPER agrees that no signs shall be placed in a public Right of Way or easement, and that a permit shall be obtained prior to erecting any of the above signs.

16. MODELS, MODEL AREAS, TEMPORARY TRAILERS.

A. Construction. The CITY agrees to allow the DEVELOPER and/or the builder of the end product ("BUILDER") to construct, maintain and use model home(s) during the development and build out of the TERRITORY prior to final plat approval for each type of housing product being constructed in a particular Phase of the development. Each DEVELOPER and/or BUILDER shall submit to the CITY for its review and approval plans and specifications for each model home(s) that the DEVELOPER and/or BUILDER seeks to construct within the

model area provided construction of a dust free aggregate surface acceptable to the CITY and the Bristol-Kendall Fire District in order to provide adequate emergency services to and adjacent to the said model(s); and posting of the necessary Surety guaranteeing public improvements.

It is agreed that a model home(s) shall not be used as a model until it is connected to all utilities. In the event that the utilities are not available, the CITY shall permit, subject to City inspection of the connection, the DEVELOPER and/or BUILDER to install temporary electricity generators, propane gas tanks for heat and waste water holding tanks to serve the model home(s), provided that the Yorkville Bristol Sanitary District agrees to permit truck transport of wastewater and each such temporary tank shall be removed and disconnected and said model home(s) shall be connected to the utilities as soon as the utilities become available. DEVELOPER and/or BUILDER shall cause the effluent within such temporary tanks to be transported, from time to time, to a receptacle designated by the CITY within ten (10) miles from the perimeter of the TERRITORY. The DEVELOPER and/or BUILDER shall indemnify and hold harmless the CITY and its officers and employees from any liability for any losses caused as a result of utilities not being available to or connected to said model home(s).

B. Model Area. The CITY agrees to permit in the model area, temporary fencing, lighting, signage and paved parking lots upon submission of appropriate plans to and approval by the CITY. Said temporary fencing shall not exceed four (4) feet in height, and be accessible for the provision of emergency services. Said temporary model/s signage shall be as per Section 15 of this Agreement.

Prior to the CITY accepting the public improvements in the model area, the DEVELOPER and/or BUILDER shall remove all temporary fencing, lighting, signage, parking

lot/s and promotional structures.

C. Temporary Sales Office Trailer. The CITY agrees to allow the DEVELOPER and/or BUILDER to construct and use temporary sales office trailer(s), subject to DEVELOPER and/or BUILDER submitting plans and specifications to the Building and Zoning Department and receiving approval of the same. In the event that the utilities are not available, the CITY shall permit, subject to City inspection, the DEVELOPER and/or BUILDER to install temporary electricity generators, propane gas tanks for heat and waste water holding tanks to serve the temporary sales office trailer(s). DEVELOPER and/or BUILDER shall cause the effluent within such temporary tanks to be transported provided the Yorkville Bristol Sanitary District agrees to permit truck transport of wastewater, from time to time, to a receptacle designated by the CITY within ten (10) miles from the perimeter of the TERRITORY. Said temporary sales office trailer shall be removed at such time as the model home(s) being served by said temporary sales office trailer are available for model occupancy.

The DEVELOPER and/or BUILDER shall indemnify and hold harmless the CITY and its officers and employees from any liability for any losses caused as a result of utilities not being available to or connected to said temporary sales office trailer.

D. Model Occupancy. Prior to the DEVELOPER and/or BUILDER occupying any model home or model unit, the DEVELOPER and/or BUILDER shall schedule a final inspection of said model home or model unit with the CITY's Building and Zoning Department. Upon approval of said final inspection, the respective model home or model unit may be used accordingly.

E. Temporary Construction Office Trailer. The CITY agrees to allow the DEVELOPER and/or BUILDER to construct and use a temporary construction office trailer, subject to DEVELOPER and/or BUILDER submitting plans and specifications to the Building and Zoning Department and receiving approval of the same. There shall be no more than two (2) temporary construction office trailers for each contractor providing construction services to said TERRITORY. In the event that the utilities are not available, the CITY shall permit the DEVELOPER and/or BUILDER to install temporary electricity generators, propane gas tanks for heat and waste water holding tanks to serve the temporary construction office trailers. DEVELOPER and/or BUILDER shall cause the effluent within such temporary tanks to be transported provided the Yorkville Bristol Sanitary District agrees to permit truck transport of wastewater, from time to time, to a receptacle designated by the CITY within ten (10) miles from the perimeter of the TERRITORY.

The DEVELOPER and/or BUILDER shall indemnify and hold harmless the CITY and its officers and employees from any liability for any losses caused as a result of utilities not being available to or connected to said temporary construction office trailer.

F. Temporary Construction Storage Trailers. The CITY agrees to allow the DEVELOPER and/or BUILDER to construct and use temporary construction storage trailers, subject to providing construction services to said TERRITORY submitting plans and specifications to the Building and Zoning Department and receiving approval of the same. There shall be no more than one (1) temporary construction storage trailer per contractor providing construction services to said TERRITORY.

17. **LOT SIZES.** The CITY agrees to the sizes, lot widths and depths for the land

use areas identified in the Preliminary Plat of Subdivision attached hereto and incorporated herein as **EXHIBIT "D"**.

18. **SETBACKS AND/OR BUILDING SEPARATIONS.** The CITY agrees to the setbacks and/or building separations for the land use areas identified in the Preliminary Plat of Subdivision attached hereto and incorporated herein as **EXHIBIT "D"**.

19. **ADJACENT FARMS.** The OWNER and/or DEVELOPER of the TERRITORY acknowledge that Kendall County has a long, rich tradition in agriculture and respects the role that farming continues to play in shaping the economic viability in the County. Normal agriculture practices may result in occasional smells, dust, sights, noise and unique hours of operation that are not typical in other zoning areas. The OWNER and/or DEVELOPER of the TERRITORY agrees to incorporate the "Right to Farm" language on the Final Plat of Subdivision and incorporate similar language within the Homeowner's Association Documents, Covenants and Restrictions Documents or other such documents governing the subdivision.

20. **STUB STREET CONNECTIONS.** The OWNER and/or DEVELOPER of the property acknowledge that roadways which do not end in an intersection or a cul-de-sac will continue to the boundary of the TERRITORY to provide for a connection with future roadways and adjacent developments.

21. **FEES, DONATIONS AND CONTRIBUTIONS.** Development fees for this property have been determined for the single-family detached units and for the attached and multi-family units and are attached in Exhibit "H-1" and H-2" The detached single family units (Exhibit H-1) uses the fee schedule of which portions are entitled by a 1994 agreement for a portion of the subject property. The duplex and multi-family unit fees are based on the current fees applicable

at the date of this agreement.

A. OWNER and/or DEVELOPER shall pay fees to the CITY as set forth on the attached **EXHIBIT "H-1" and EXHIBIT "H-2"** attached hereto and incorporated herein. The time at which the OWNER / DEVELOPER shall pay such fees shall be in accordance with the attached EXHIBIT "H-1" and "H-2". During the first five (5) years following the date of the Agreement, the CITY shall impose upon and collect from OWNER, and their respective contractors, only those permit, impact, tap on and connection fees and charges, and in such amount or at such rate, as are in effect on the date of this Agreement and as is generally applied throughout the CITY, except as otherwise expressly provided for in this Agreement on the Fee Schedules attached hereto and made a part hereof as Exhibits "H-1" and "H-2"". At the expiration of this five year term, the CITY shall give the OWNER a six (6) month grace period from the date they are notified of any changes to the permit, license, tap on and connection fees and charges in order to comply with the new regulations. OWNER and/or DEVELOPER may pre-pay any fee proposed to be changed which shall freeze said proposed fee increase and not affect the TERRITORY

B. No contribution of land for school purposes shall be required of OWNER and/or DEVELOPER as a result of the development of the TERRITORY. In lieu of the contribution of land, OWNER and/or DEVELOPER agrees to pay to the CITY for distribution by the CITY to the School District, as OWNER and/or DEVELOPER's sole and exclusive contribution for school purposes as a result of the development of the TERRITORY, the sum of $1,504,594.00 (hereinafter referred to as the "**School Contribution**"). Payment to satisfy the

$1,504,594.00 cash contribution shall be payable to the School District at the time of issuance of a building permit for each dwelling unit as specified in Exhibit "H-1" and "H-2".

C. OWNER and/or DEVELOPER, as its total contribution for park contribution purposes, shall contribute 6.1 acres of land identified as Lot 405 on the Preliminary Plat of Subdivision and the total sum of $598,800.00 (hereinafter referred to as the "**Park Contribution**"). Payment to satisfy the $598,800.00 cash contribution shall be payable to the CITY at the time of issuance of a building permit for each dwelling unit as specified in Exhibit "H-1" and "H-2".

22. CREATION OF HOMEOWNER'S ASSOCIATION AND DORMANT SPECIAL SERVICE AREA. OWNER and/or DEVELOPER shall create a Homeowner's Association that will be responsible for maintaining all common areas of the development, unless the same are accepted by the CITY. The OWNER and/or DEVELOPER shall further provide for the creation of a back-up "dormant" Special Service Area Tax for maintenance of said common areas and for the TERRITORY prior to or concurrent with the recording of the first Final Plat of Subdivision for the development.

23. BUILDING PERMITS AND CERTIFICATES OF OCCUPANCY. The CITY agrees to issue within fifteen (15) business days after receipt of application to the CITY Building Department permits for the construction of any buildings or improvements of buildings or issue a letter of denial within said period of time informing DEVELOPER as to wherein the application does not conform to the stated Municipal Code sections or this Agreement. The CITY shall not limit the number of building permits which may be issued or the time of issuance

of building permits during the term of this Agreement.

The CITY agrees to issue within fifteen (15) business days after receipt of application to the CITY Building Department certificates of occupancy or issue a letter of denial within said period of time informing DEVELOPER as to wherein the application does not conform to the stated Municipal Code sections or this Agreement. The CITY shall not be obligated to issue a certificate of occupancy for any residential unit constructed within the TERRITORY until the unit for which a certificate of occupancy is being sought is connected to and capable of being served by sanitary sewers, storm sewers, water mains, public streets, natural gas lines and electric utilities, and is in conformance with the CITY'S Building Codes.

The above notwithstanding, the CITY agrees to issue conditional occupancy permits in the event that weather conditions prohibit the installation of certain subdivision improvements such as sidewalks, driveways, and required landscaping. The developer of the lot shall post a financial guarantee to cover the costs of said improvements not covered under the Surety submitted as provided in this Agreement. The CITY shall not limit the number of certificates of occupancy or the time of issuance of Certificates of occupancy during the term of this Agreement.

No occupancy permits will be issued until the OWNER/DEVELOPER and/or BUILDER provides to the CITY evidence the the Bristol Kendall Fire Protection District fire hydrants within 300 feet of the dwelling units being permitted are operational. Furthermore, the OWNER/DEVELOPER agrees to mark or bag fire hydrants that are not in service within thirty (30) days of construction. Notwithstanding anything herein to the contrary, the CITY agrees that the Models or Temporary Trailers within the TERRITORY shall not need an occupancy permit.

24. **CITY ASSISTANCE.** The CITY agrees to cooperate and provide any reasonable assistance requested by the OWNER and/or DEVELOPER in applying for and obtaining any and all approvals or permits necessary for the development of the TERRITORY, including, but not limited to those required from the Illinois Department of Natural Resources, the Illinois Environmental Protection Agency, the Army Corps of Engineers and the Federal Emergency Management Agency. The CITY further agrees to reasonably cooperate with the OWNER and/or DEVELOPER in obtaining all other permits and approvals required by the County of Kendall and other governmental units in connection with the contemplated development of the TERRITORY.

25. **GOVERNING LAW; ENFORCEMENT; REMEDIES.**

A. The laws of the State of Illinois shall govern the validity, performance and enforcement of this Agreement. Enforcement shall be by an appropriate action or actions to secure the specific performance of this Agreement, or to secure any and all other remedies available at law or in equity in connection with, the covenants, agreements, conditions, and obligations contained herein. Venue for any action is in the Circuit court of Kendall County, Illinois.

B. In the event of a material breach of this Agreement, the Parties agree that the defaulting party shall have thirty (30) days after notice of said breach to correct the same prior to the non-breaching party's seeking of any remedy provided for herein; provided, however, any breach by the OWNER and/or DEVELOPER reasonably determined by the CITY to involve health or safety issues may be the subject of immediate action by the CITY without notice or 30 day delay.

C. In the event the performance of any covenant to be performed hereunder by either OWNER and/or DEVELOPER or CITY is delayed for causes which are beyond the reasonable control of the party responsible for such performance (which causes shall include, but not be limited to, acts of God; inclement weather conditions; strikes; material shortages; lockouts; the revocation, suspension, or inability to secure any necessary governmental permit, other than a CITY license or permit; and any similar case) the time for such performance shall be extended by the amount of time of such delay.

D. The failure of the Parties to insist upon the strict and prompt performance of the terms, covenants, agreements, and conditions herein contained, or any of them, upon any other party imposed, shall not constitute or be construed as a waiver or relinquishment of any party's right thereafter to enforce any such term, covenant, agreement, or condition, but the same shall continue in full force and effect.

26. INTEGRATION AND AMENDMENT.

A. This Agreement supersedes all prior agreements and negotiations between the parties and sets forth all promises, inducements, agreements, conditions, and understandings between and among the parties relative to the subject matter hereof, and there are no promises, agreements, conditions, or understandings, either oral or written, express or implied, between or among them, other than are herein set forth.

B. This Agreement, and any Exhibits or attachments hereto, may be amended from time to time in writing with the consent of the Parties, pursuant to applicable provisions of the Municipal Code and Illinois Statutes. This Agreement may be amended by the CITY and the owner of record of a portion of the TERRITORY as to provisions applying exclusively thereto,

without the consent of the owner of other portions of the TERRITORY not affected by such Amendment. Any modification to the Preliminary Plat of Subdivision shall not require an amendment to this Agreement. In the event the Parties desire to amend this Agreement, the signature of all parties owning property within the TERRITORY shall not be required to effect such Agreement. Rather, only those property owners owning property within that portion of the TERRITORY actually and directly affected by the proposed Amendment shall be required to execute any Amendment hereto.

27. SUCCESSORS AND ASSIGNS. This Agreement shall constitute a covenant running with the land and be binding upon and inure to the benefit of the Parties hereto, their successors in interest, assignees, lessees. Upon the conveyance or assignment by OWNER, DEVELOPER AND/OR BUILDER of its interest in the TERRITORY to any successor, assignee, or nominee, OWNER, DEVELOPER AND/OR BUILDER shall be released from any and all further liability or responsibility under this Agreement, and the CITY shall thereafter look only to the successor, assignee, or nominee of OWNER, DEVELOPER AND/OR BUILDER concerning the performance of such duties and obligations of OWNER, DEVELOPER AND/OR BUILDER required herein.

28. SEVERABILITY. Should any provision of this Agreement, or application thereof to any party or circumstance, be held invalid and such invalidity does not affect other provisions or applications of this Agreement which can be given effect without the invalid application or provision, then all remaining provisions shall remain in full force and effect.

29. TIME. Time is of the essence of this Agreement and all documents, agreements, and contracts pursuant hereto.

30. **NOTICE.** All notices, elections, and other communications between the Parties hereto shall be in writing and shall be mailed by certified mail, return receipt requested, postage prepaid, or delivered personally, to the parties at the following addresses, or at such other address as the parties may, by notice, designate:

If to the CITY:

United City of Yorkville
Attn: City Clerk
800 Game Farm Road
Yorkville, IL 60560

With a copy to:

United City of Yorkville
Attn: City Attorney
800 Game Farm Road
Yorkville, IL 60560

If to the OWNER and/or DEVELOPER:

Bristol Ridge, LLC
Attn: James Menard
800 Roosevelt Road
Building A, Suite 100
Glen Ellyn, IL 60137

With a copy to:

Rathje & Woodward, LLC
Kevin M. Carrara, Esq.
300 East Roosevelt Road, Suite 300
Wheaton, IL 60187

Notices shall be deemed received on the third business day following deposit in the U.S. Mail, if given by certified mail as aforesaid, and upon receipt, if personally delivered.

31. **CORPORATE AUTHORITIES.** The parties acknowledge and agree that the

individuals who are members of the group constitute the Corporate Authorities of the CITY are entering into this Agreement in their capacities as members of such group and shall have no personal liability in their individual capacities.

32. **AGREEMENT.** This Agreement or any Exhibits or attachments hereto, may be amended from time to time in writing with the consent of the parties hereto, pursuant to applicable provisions of the CITY Code and Illinois Compiled Statutes. This Agreement may be amended by the CITY and the owner of record of the TERRITORY as provisions applying exclusively thereto, without the consent of the owner of portions of the TERRITORY not effected by such amendment.

33. **ANNEXATION CHALLENGE.** If for any reason and at anytime, the annexation of the TERRITORY to the CITY or the terms of this Agreement is legally challenged by any person or entity by an action at law or in equity, CITY shall: (1) cooperate with the OWNER and DEVELOPER in the vigorous defense of such action through all proceedings, including appeals; and (2) take such other actions as may be then or thereafter possible pursuant to the Illinois Municipal Code to annex the TERRITOTY and/or other properties to the CITY so that the annexation of the TERRITORY to the CITY can be sustained and/or effected under the terms of this Agreement.

THE REMAINDER OF THIS PAGE LEFT INTENTIONALLY BLANK.

SIGNATURE PAGE TO FOLLOW.

IN WITNESS WHEREOF, the undersigned have executed this Agreement as of the date first above named.

UNITED CITY OF YORKVILLE,
an Illinois municipal corporation:

BY: _____
Mayor

ATTEST: _____
DEPUTY City Clerk

OWNER AND/OR DEVELOPER:
BRISTOL RIDGE, LLC,
an Illinois limited liability company,

By: Platinum Development, LLC,
an Illinois limited liability company,
its Sole Manager

By: _____
Michael A. Stahelin, President

SCHEDULE OF EXHIBITS

EXHIBIT A:	LEGAL DESCRIPTION
EXHIBIT B:	PLAT OF ANNEXATIOJN
EXHIBIT D:	PRELIMINARY PLAT OF SUBDIVISION
EXHIBIT E:	PLAT OF ZONING
EXHIBIT F:	LETTER OF CREDIT
EXHIBIT G:	RECAPTURE AGREEMENT
EXHIBIT H-1:	SCHEDULE OF FEES – SINGLE FAMILY DETACHED UNITS
EXHIBIT H-2:	SCHEDULE OF FEES – DUPLEX & MULTI-FAMILY UNITS

EXHIBIT A

PARCEL 1:

THE SOUTHEAST QUARTER OF THE SOUTHEAST QUARTER OF SECTION 9, TOWNSHIP 37 NORTH, RANGE 7 EAST OF THE THIRD PRINCIPAL MERIDIAN (EXCEPTING THEREFROM, THE WESTERLY 515.74 FEET AND THE SOUTHERLY 735.50 FEET, MEASURED ALONG THE SOUTH AND WEST LINES THEREOF); ALSO THE SOUTH HALF OF THE SOUTHWEST QUARTER OF SECTION 10, TOWNSHIP 37 NORTH, RANGE 7 EAST OF THE THIRD PRINCIPAL MERIDIAN; ALSO THAT PART OF THE SOUTH HALF OF THE SOUTHEAST QUARTER OF SECTION 10, TOWNSHIP 37 NORTH, RANGE 7 EAST OF THE THIRD PRINCIPAL MERIDIAN LYING WESTERLY OF THE WEST LINE OF LANDS CONVEYED BY NELSON C. RIDER TO JERRY W. RIDER BY WARRANTY DEED DATED OCTOBER 15, 1911 AND RECORDED IN BOOK 66 AT PAGE 255 AND DEPICTED IN PLAT BOOK 1 AT PAGE 62; AND ALSO THAT PART OF THE NORTH HALF OF SECTION 15, TOWNSHIP 37 NORTH, RANGE 7 EAST OF THE THIRD PRINCIPAL MERIDIAN DESCRIBED AS FOLLOWS:

COMMENCING AT THE NORTHWEST CORNER OF SAID SECTION 15; THENCE EASTERLY ALONG THE NORTH LINE OF SAID SECTION 15, A DISTANCE OF 53.65 FEET; THENCE SOUTHERLY, ALONG A LINE WHICH FORMS AN ANGLE OF 89 DEGREES 23 MINUTES 46 SECONDS WITH THE PROLONGATION OF THE LAST DESCRIBED COURSE (MEASURED CLOCKWISE THEREFROM), 332.40 FEET TO THE NORTH LINE OF THE GLAD-ELL SUBDIVISION FOR THE POINT OF BEGINNING; THENCE NORTHERLY, ALONG THE LAST DESCRIBED COURSE, 332.40 FEET TO SAID NORTH LINE OF SECTION 15; THENCE EASTERLY, ALONG SAID NORTH LINE 2833.21 FEET TO THE WEST LINE OF LANDS CONVEYED BY NELSON C. RIDER TO JERRY W. RIDER BY WARRANTY DEED DATED OCTOBER 15, 1911 AND RECORDED IN BOOK 66 AT PAGE 255 AND DEPICTED IN PLAT BOOK 1 AT PAGE 62; THENCE SOUTHERLY, ALONG SAID WEST LINE, 291.68 FEET TO THE NORTHERLY LINE OF THE FORMER LANDS OF CHARLES HUNT; THENCE WESTERLY, ALONG SAID NORTHERLY LINE, 1551.74 FEET; THENCE WESTERLY, ALONG A LINE WHICH IF EXTENDED WOULD INTERSECT THE NORTHWEST CORNER OF SAID SECTION 15, A DISTANCE OF 447.72 FEET TO THE CENTER LINE OF CANNONBALL TRAIL; THENCE SOUTHWESTERLY, ALONG SAID CENTER LINE, 125.62 FEET TO SAID NORTH LINE OF GLAD-ELL SUBDIVISION; THENCE WESTERLY ALONG SAID NORTH LINE, 760.50 FEET TO THE POINT OF BEGINNING;

EXCEPTING THEREFROM THAT PART OF THE SOUTHWEST QUARTER OF SAID SECTION 10 AND THAT PART OF THE NORTHWEST QUARTER OF SAID SECTION 15 DESCRIBED AS FOLLOWS:

COMMENCING AT THE SOUTHWEST CORNER OF SAID SOUTHWEST QUARTER; THENCE SOUTHEASTERLY ALONG A LINE WHICH IF EXTENDED WOULD INTERSECT THE NORTHERLY LINE OF THE FORMER LANDS OF CHARLES HUNT AT A POINT ON SAID NORTHERLY LINE WHICH IS 1551.74 FEET WESTERLY OF THE WEST LINE OF A TRACT OF LAND CONVEYED BY NELSON C. RIDER TO JERRY W. RIDER BY A WARRANTY DEED RECORDED NOVEMBER 29, 1911 IN BOOK 66 OF DEEDS, PAGE 255 AND DEPICTED IN PLAT BOOK 1 AT PAGE 62, A DISTANCE OF 938.61 FEET TO THE CENTER LINE OF CANNONBALL TRAIL, FOR A POINT OF BEGINNING; THENCE SOUTHEASTERLY ALONG THE LAST DESCRIBED COURSE EXTENDED 447.72 FEET TO SAID NORTHERLY LINE; THENCE EASTERLY ALONG SAID NORTHERLY LINE, WHICH FORMS AN ANGLE OF 160 DEGREES 49 MINUTES 30 SECONDS WITH THE LAST DESCRIBED COURSE, MEASURED CLOCKWISE THEREFROM, 296.83 FEET; THENCE NORTHERLY AT RIGHT ANGLES TO THE LAST DESCRIBED COURSE, 309.14 FEET; THENCE NORTHWESTERLY ALONG A LINE WHICH FORMS AN ANGLE OF 132 DEGREES 19 MINUTES 35 SECONDS WITH THE LAST DESCRIBED COURSE, MEASURED CLOCKWISE THEREFROM 386.56 FEET TO THE CENTER LINE OF CANNONBALL TRAIL; THENCE SOUTHWESTERLY ALONG SAID CENTER LINE TO THE POINT OF BEGINNING ALL IN THE UNITED CITY OF THE VILLAGE OF YORKVILLE, KENDALL COUNTY, ILLINOIS.

EXHIBIT A

PARCEL 2 (RECORD DESCRIPTION)
(02-15-126-004):

A PART OF THE NORTH HALF OF SECTION 15, TOWNSHIP 37 NORTH, RANGE 7, EAST OF THE THIRD PRINCIPAL MERIDIAN, DESCRIBED AS FOLLOWS:

COMMENCING AT A POINT ON THE EAST LINE OF THE PUBLIC HIGHWAY LEADING NORTH FROM HUNTSVILLE, IN SAID SECTION, AT A POINT WHERE THE EASTERLY LINE OF SAID HIGHWAY INTERSECTS THE SOUTHERLY LINE OF ELIZABETH RIDER'S LAND; THENCE EASTERLY, ALONG THE SOUTHERLY LINE OF SAID ELIZABETH RIDER'S LAND 315 FEET, TO THE SOUTHEAST CORNER THEREOF; THENCE NORTH, AT RIGHT ANGLES WITH SAID FIRST LINE ALONG THE EAST LINE OF SAID RIDER LAND, TO THE CENTER OF SAID BRISTOL ROAD; THENCE NORTHEASTERLY, ALONG THE CENTER OF SAID HIGHWAY, TO THE SOUTHERLY LINE OF LAND BELONGING TO HARRY C. ECCLES; THENCE SOUTHEASTERLY ALONG THE SOUTHERLY LINE OF SAID ECCLES LAND, TO A POINT IN SAID SOUTHERLY LINE 60 CHAINS FROM THE EAST LINE OF SAID SECTION; THENCE EAST, ALONG THE SAID SOUTHERLY LINE OF SAID HARRY C. ECCLES LAND TO THE 8TH SECTION LINE, AND BEING THE WEST LINE OF N. C. RIDER'S LAND; THENCE SOUTH, ON SAID 8TH SECTION LINE AND RIDER'S WEST LINE TO THE RIGHT OF WAY OF C. B. AND Q. RAILROAD CO.; THENCE SOUTHWESTERLY, ALONG THE NORTHERLY LINE OF SAID RIGHT OF WAY OF SAID RAILROAD CO. TO WHERE THE SAME IS INTERSECTED BY THE NORTHERLY LINE OF JAMES KENNEDY'S LAND; THENCE WESTERLY, ALONG THE NORTH LINE OF SAID KENNEDY'S LAND, TO THE NORTHWEST CORNER OF SAID JAMES KENNEDY'S LAND; THENCE NORTHERLY, ALONG THE HIGHWAY TO THE PLACE OF BEGINNING, INCLUDING THE EAST HALF OF HIGHWAY WESTERLY AND BORDERING ON SAID PREMISES, AND CONTAINING 69.06 ACRES OF LAND; EXCEPTING FROM THE ABOVE PREMISES TWO LOTS 4 BY 8 RODS EACH IN THE SOUTHWEST CORNER OF THE ABOVE DESCRIBED PREMISES, HERETOFORE DEEDED TO JOSEPH KENNEDY AND JAMES KENNEDY, SITUATED IN THE TOWN OF BRISTOL, KENDALL COUNTY, ILLINOIS,

EXCEPTING THEREFROM THE FOLLOWING DESCRIBED REAL ESTATE HERETOFORE CONVEYED TO COMMONWEALTH EDISON COMPANY BY DEED RECORDED AS DOCUMENT NO. 73-1974, TO-WIT: THAT PART OF THE NORTH HALF OF SECTION 15, TOWNSHIP 37 NORTH, RANGE 7, EAST OF THE THIRD PRINCIPAL MERIDIAN, DESCRIBED AS FOLLOWS:

BEGINNING AT THE INTERSECTION OF THE EAST LINE OF THE WEST HALF OF THE NORTHEAST QUARTER OF SAID SECTION 15 AND THE NORTHWESTERLY RIGHT OF WAY LINE OF THE BURLINGTON NORTHERN (FORMERLY CHICAGO, BURLINGTON AND QUINCY) RAILROAD; THENCE SOUTH 74 DEGREES 19 MINUTES 17 SECONDS WEST ALONG THE NORTHERLY RIGHT OF WAY LINE OF SAID RAILROAD, A DISTANCE OF 2910.45 FEET TO THE SOUTHEAST CORNER OF "REEVES" LAND DESCRIBED IN DEED RECORDED MARCH 13, 1952, AS DOCUMENT #101936; THENCE NORTH 3 DEGREES 10 MINUTES 43 SECONDS WEST ALONG THE EASTERLY LINE OF SAID "REEVES" LAND A DISTANCE OF 12.80 FEET TO THE NORTHEAST CORNER THEREOF; THENCE NORTH 81 DEGREES 50 MINUTES 18 SECONDS WEST ALONG THE NORTHERLY LINE OF SAID "REEVES" LAND, A DISTANCE OF 340.18 FEET TO THE INTERSECTION OF SAID LINE WITH A LINE DRAWN 150 FEET NORTHWESTERLY OF, MEASURED AT RIGHT ANGLES TO, AND PARALLEL WITH THE NORTHERLY RIGHT OF WAY LINE OF SAID RAILROAD; THENCE NORTH 74 DEGREES 19 MINUTES 17 SECONDS EAST ALONG SAID PARALLEL LINE A DISTANCE OF 331.83 FEET; THENCE NORTH 15 DEGREES 40 MINUTES 43 SECONDS WEST, PERPENDICULAR TO THE LAST DESCRIBED LINE, A DISTANCE OF 40 FEET; THENCE NORTH 74 DEGREES 19 MINUTES, 17 SECONDS EAST ALONG A LINE 190 FEET NORTHWESTERLY OF, AND PARALLEL WITH THE NORTHWESTERLY RIGHT OF WAY LINE OF SAID RAILROAD, A DISTANCE OF 2941.14 FEET TO THE EAST LINE OF SAID WEST HALF OF THE NORTHEAST QUARTER; THENCE SOUTH 0

EXHIBIT A

DEGREES 13 MINUTES 40 SECONDS WEST ALONG THE EAST LINE OF SAID WEST HALF OF THE NORTHEAST QUARTER, A DISTANCE OF 197.57 FEET TO THE POINT OF BEGINNING; ALL IN KENDALL COUNTY, ILLINOIS,

ALSO EXCEPTING THEREFROM THAT PART OF THE NORTHWEST QUARTER OF SECTION 15, TOWNSHIP 37 NORTH, RANGE 7, EAST OF THE THIRD PRINCIPAL MERIDIAN DESCRIBED AS FOLLOWS:

BEGINNING AT THE INTERSECTION OF THE CENTER LINE OF CANNONBALL TRAIL (BEING THE CENTER LINE OF STATE AIDE ROUTE 10, SECTION 19-15D) AND A LINE DRAWN PARALLEL WITH AND 80.0 FEET, NORMALLY DISTANT, SOUTHERLY OF "ELIZABETH RIDER'S LAND", THENCE EASTERLY ALONG SAID PARALLEL LINE 239.10 FEET; THENCE SOUTHERLY AT RIGHT ANGLES TO THE LAST DESCRIBED COURSE, 354.96 FEET TO THE NORTH LINE OF A TRACT OF LAND CONVEYED TO JAMES KENNEDY BY A WARRANTY DEED RECORDED ON APRIL 21, 1882, IN BOOK 48 OF DEEDS, PAGE 480; THENCE WESTERLY ALONG SAID NORTH LINE, 106.70 FEET TO THE EAST LINE, AS OCCUPIED AND MONUMENTED, OF LANDS CONVEYED TO GEORGE MEWHIRTER BY A WARRANTY DEED RECORDED MAY 1, 1899, IN BOOK 55 OF DEEDS, PAGE 25; THENCE NORTHERLY AT RIGHT ANGLES TO THE LAST DESCRIBED COURSE, BEING ALONG SAID EAST LINE AND SAID EAST LINE EXTENDED 132.0 FEET; THENCE WESTERLY AT RIGHT ANGLES TO THE LAST DESCRIBED COURSE, 190.33 FEET TO SAID CENTER LINE; THENCE NORTHEASTERLY ALONG SAID CENTER LINE, TO THE POINT OF BEGINNING, IN BRISTOL TOWNSHIP, KENDALL COUNTY, ILLINOIS.

PARCEL 2 (MEASURED DESCRIPTION)
BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

A PART OF THE NORTH HALF OF SECTION 15, TOWNSHIP 37 NORTH, RANGE 7 EAST OF THE THIRD PRINCIPAL MERIDIAN, DESCRIBED AS FOLLOWS:

BEGINNING AT THE INTERSECTION OF THE SOUTH LINE OF LANDS FORMERLY BELONGING TO ELIZABETH RIDER (RIDER) AND THE PRESENT CENTERLINE OF CANNONBALL TRAIL; THENCE NORTH 89 DEGREES 39 MINUTES 39 SECONDS EAST ALONG SAID SOUTH LINE, 361.37 FEET; THENCE NORTH 00 DEGREES 02 MINUTES 21 SECONDS WEST ALONG THE EAST LINE OF SAID RIDER PROPERTY, 545.51 FEET TO THE CENTERLINE OF SAID CANNONBALL TRAIL; THENCE NORTH 40 DEGREES 39 MINUTES 03 SECONDS EAST ALONG SAID CENTERLINE, 241.12 FEET TO THE SOUTH LINE OF LANDS FORMERLY BELONGING TO HARRY C. ECCLES (ECCLES); THENCE SOUTH 76 DEGREES 08 MINUTES 48 SECONDS EAST ALONG SAID SOUTH LINE, 447.63 FEET TO THE NORTH LINE OF LANDS FORMERLY BELONGING TO CHARLES HUNT (HUNT); THENCE NORTH 84 DEGREES 40 MINUTES 44 SECONDS EAST ALONG SAID NORTH LINE, 2649.92 FEET TO THE WEST LINE OF LANDS FORMERLY BELONGING TO N.C. RIDER (N.C. RIDER), SAID WEST LINE ALSO BEING THE 8TH SECTION LINE; THENCE SOUTH 01 DEGREES 31 MINUTES 39 SECONDS EAST ALONG SAID WEST LINE, 360.82 FEET TO THE NORTHERLY LINE OF LANDS BELONGING TO COMMONWEALTH EDISON (COM ED) PER DOCUMENT NUMBER 73-1974 (THE FOLLOWING THREE CALLS ARE ALONG THE NORTH LINE OF SAID COM ED PROPERTY);

1) SOUTH 73 DEGREES 24 MINUTES 22 SECONDS WEST, 2944.40 FEET;
2) SOUTH 16 DEGREES 35 MINUTES 38 SECONDS EAST, 40.00 FEET;
3) SOUTH 73 DEGREES 24 MINUTES 22 SECONDS WEST, 331.83 FEET TO THE NORTHERLY LINE OF LANDS FORMERLY BELONGING TO JAMES KENNEDY (KENNEDY);

THENCE NORTH 82 DEGREES 53 MINUTES 17 SECONDS WEST ALONG SAID NORTHERLY LINE, 257.00 FEET TO THE EAST LINE OF LANDS BELONGING TO RICHARD AND LAURA

UNDESSER (UNDESSER) PER DOCUMENT NUMBER 00-9148; THENCE NORTH 00 DEGREES 22 MINUTES 21 SECONDS WEST ALONG SAID EAST LINE, 354.96 FEET TO THE NORTH LINE OF SAID UNDESSER PROPERTY; THENCE SOUTH 89 DEGREES 39 MINUTES 39 SECONDS WEST ALONG SAID NORTH LINE, 236.42 FEET TO A CURVE BEING CONCAVE TO THE SOUTHEAST AND HAVING A RADIUS OF 1184.10 FEET; THENCE NORTHEASTERLY ALONG SAID CURVE AN ARC DISTANCE OF 83.74 FEET TO THE POINT OF BEGINNING, ALL IN KENDALL COUNTY, ILLINOIS.

ALSO

PURSUANT TO ARTICLE 7 SECTION 5/7-1-1 OF THE ILLINOIS MUNICIPAL CODE (65 ILCS 5/7-1-1 ANNEXATION OF CONTIGUOUS TERRITORY) THE NEW BOUNDARY OF THE TERRITORY TO BE ANNEXED SHALL EXTEND TO THE FAR SIDE OF ANY ADJACENT HIGHWAY AND SHALL INCLUDE ALL OF EVERY HIGHWAY WITHIN THE AREA TO BE ANNEXED. THEREFORE, FOR THIS ANNEXATION, THE AREA TO BE ANNEXED SHALL EXTEND TO THE NORTHERLY SIDE OF CANNONBALL TRAIL AND THE SOUTHERLY SIDE OF CANNONBALL TRAIL, EXCEPT THAT PART FALLING IN ANY OTHER MUNICIPALITY.

EXHIBIT B

Plat of Annexation

to the United City of Yorkville, Kendall County, Illinois

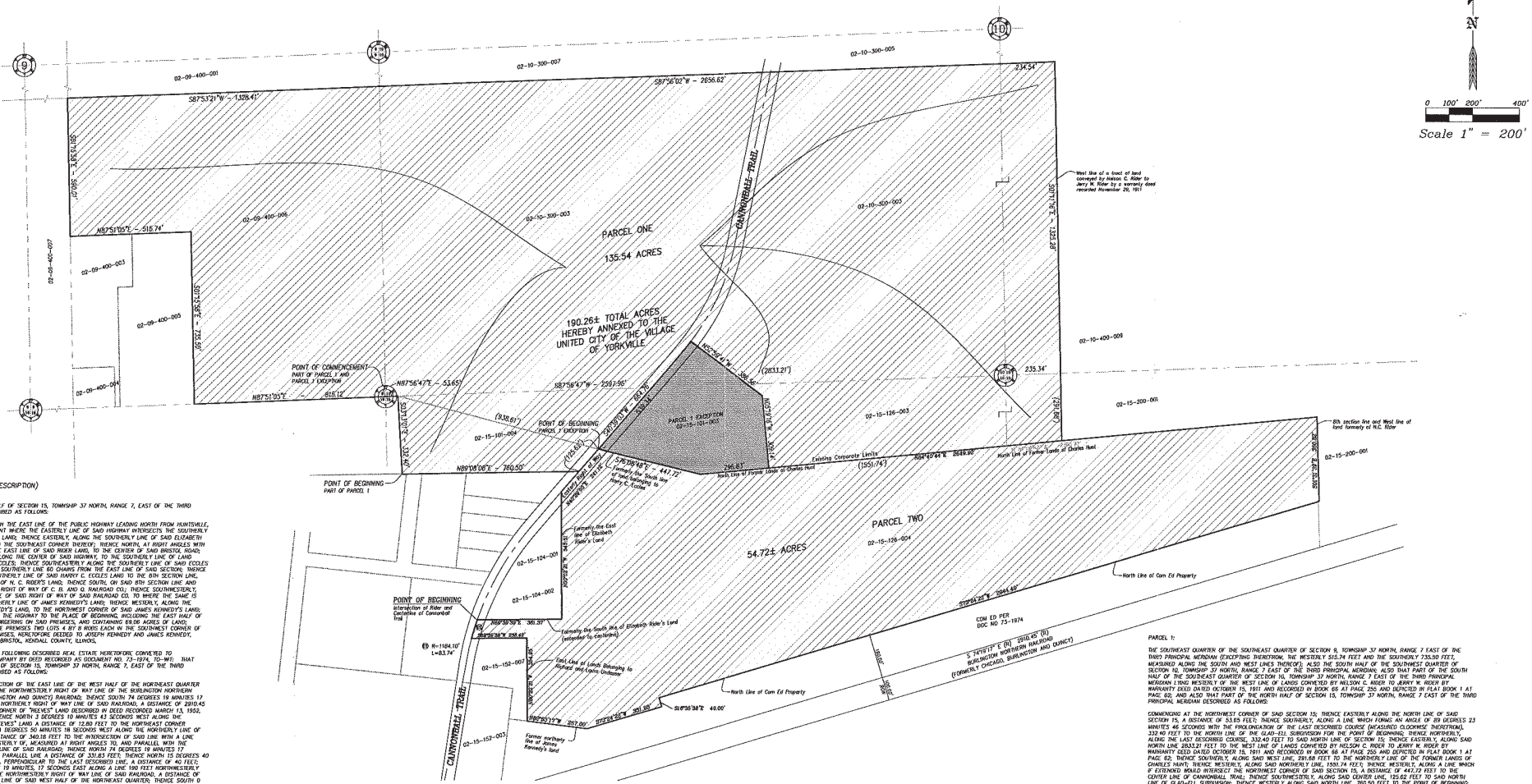

PARCEL ONE
135.54 ACRES
190.26± TOTAL ACRES
HEREBY ANNEXED TO THE
UNITED CITY OF THE VILLAGE
OF YORKVILLE
PARCEL TWO
54.72± ACRES
CANNONBALL TRAIL
POINT OF COMMENCEMENT
PART OF PARCEL 1 AND
PARCEL 1 EXCEPTION
POINT OF BEGINNING
PARCEL 1 EXCEPTION
POINT OF BEGINNING
PART OF PARCEL 1
POINT OF BEGINNING
intersection of Rider and
Centerline of Cannonball
trail
Existing Corporate Limits
North Line of Former Lands of Charles Hunt
North Line of Corn Ed Property
BURLINGTON NORTHERN RAILROAD
(FORMERLY CHICAGO, BURLINGTON AND QUINCY)
CORN ED PER
DOC NO 73-1974
S87°56'02"W - 2656.62'
S87°53'21"W - 1328.41'
N87°51'05"E - 516.74'
N87°56'47"E - 53.65'
N87°56'47"W - 2387.96'
N89°08'08"E - 760.50'
N89°59'59"E 361.37'
S12°04'23"E 1044.49'
S16°36'38"E 40.00'
N89°20'17"W 257.00'
S17°24'25"E 391.88'
S 74°01'17" E (M) 2810.40' (R)
R=1184.10'
L=83.74'
R=1392.39'
L=1335.58'
R=1332.39'
L=1278.06'
R=1184.10'
L=1136.07'
1335.58'
1278.06'
1136.07'
1044.49'
391.88'
361.37'
257.00'
40.00'
83.74'
234.54'
235.34'
(2633.21')
(938.61')
(1551.74')
(1103.65')
(1551.74')
295.81'
447.72'
Former northerly line of James Kennedy's land
Former Lands of Elizabeth Rider's Land
Former Lands of Richard and Laura Undesser
Former Lands of Harry C. Eccles
Former Lands of Charles Hunt
Former Lands of James Kennedy

EXHIBIT D

PINS: 02-09-400-006
02-10-300-003
02-15-101-004
02-10-126-003
02-16-126-004

PRELIMINARY PLAT OF SUBDIVISION
OF
BRISTOL RIDGE

A PART OF THE SOUTHEAST QUARTER OF SECTION 9, PART OF THE SOUTHWEST QUARTER OF SECTION 10 AND PART OF THE NORTH HALF OF SECTION 15, ALL IN TOWNSHIP 37 NORTH, RANGE 7 EAST OF THE THIRD PRINCIPAL MERIDIAN, IN THE UNITED CITY OF YORKVILLE, KENDALL COUNTY, ILLINOIS.

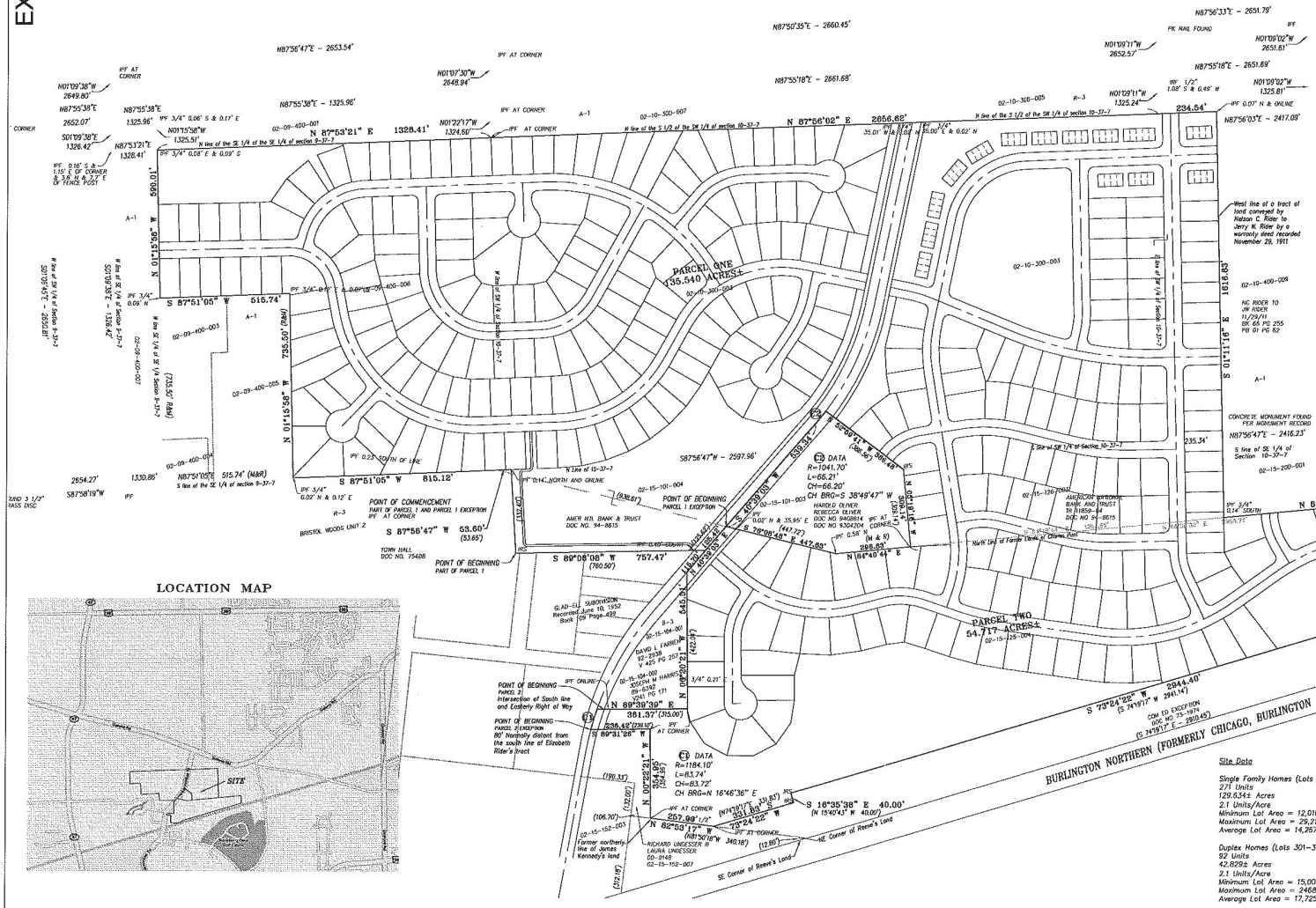

PARCEL ONE
735.540 ACRES±
PARCEL TWO
54.717 ACRES±
POINT OF BEGINNING
PART OF PARCEL 1
POINT OF COMMENCEMENT
PART OF PARCEL 1 AND PARCEL 1 EXCEPTION
POINT OF BEGINNING
PARCEL 1 EXCEPTION
POINT OF BEGINNING
PARCEL 2
POINT OF BEGINNING
PARCEL 2 EXCEPTION
DATA
R=1041.70'
L=66.21'
CH=66.20'
CH BRG=S 38°49'47" W
DATA
R=1184.10'
L=83.74'
CH=83.72'
CH BRG=N 16°46'36" E
BURLINGTON NORTHERN (FORMERLY CHICAGO, BURLINGTON AND QUINCY) RAILROAD
BRISTOL WOODS UNIT 2
GLAD-ELL SUBDIVISION
TOWN HALL
DOC NO. 75408
AMER. NTL BANK & TRUST
DOC NO. 94-8615
HAROLD OLIVER
REBECCA OLIVER
DOC NO 94G6614
DOC NO 93G4304
AMERICAN NATIONAL BANK AND TRUST TR #1856-84
DOC NO 94-8615
GERALD W RIDER TRUST
BK 66 PG 255
RICHARD LINDESSER III
LAURA LINDESSER
02-0148
02-15-152-007
NE Corner of Reeve's Land
SE Corner of Reeve's Land
Former northerly line of James Kennedy's land
West line of a tract of land conveyed by Nelson C. Rider to Jerry N. Rider by a warranty deed recorded November 29, 1911
NC RIDER TO JW RIDER
11/29/11
BK 66 PG 255
PB 01 PG 62
CONCRETE MONUMENT FOUND PER MONUMENT RECORD
S line of SE 1/4 of Section 10-37-7
North line of Prairie Path
Bth section line and West line of land formerly of N.C. Rider
N87°56'33"E – 2651.78'
N87°50'35"E – 2660.45'
N87°55'18"E – 2661.68'
N87°56'47"E – 2653.54'
N87°55'38"E – 1325.96'
N87°56'03"E – 2417.09'
N87°56'47"E – 2416.23'
N87°56'47"W – 2597.96'
S87°58'19"W
N 87°56'02" E 2656.68'
N 87°53'21" E 1328.41'
S 87°51'05" W 515.74'
S 87°51'05" W 815.12'
S 87°56'47" W 53.60'
S 89°08'08" W 757.47'
N 84°40'44" E 1098.19'
S 73°24'22" W 2944.40'
N 89°39'39" E 361.37'
S 89°31'26" W 336.42'
S 16°35'38" E 40.00'
N 82°53'17" W 257.99'
N 01°15'58" W 1616.83'
S 01°15'58" E 1330.86'
S 01°11'16" E 1316.83'
N 01°15'58" W 1325.51'
S01°09'38"E 1326.42'
N01°09'38"W 2649.80'
N01°03'30"W 2648.94'
N01°22'17"W 1324.60'
N01°09'11"W 2652.57'
N01°09'02"W 2651.61'
N01°29'11"W 1325.24'
N01°09'02"W 1325.81'
S01°13'39"E – 196.76'
(S 00°37'40" W 197.57')
S 01°15'58" E 360.02'
(S 00°37'40" W)
N 01°22'21" E 645.34'
(642.97')
N 00°20'21" E 354.45'
(353.98')
(S 74°19'17" E 2944.14')
(S 74°19'17" E – 2910.45')
(N 15°40'43" W 40.00')
(N 15°40'43" W 40.00')
(N 82°50'18" W 340.18')
(12.80')
(190.31')
(192.01')
(106.70')
(312.87')
(N 89°39'39" E 361.80')
(S 89°39'39" W 361.80')
(S 89°31'26" W)
(N 89°08'08" E 760.50')
(S 89°08'08" W 760.50')
(N 84°40'44" E 1098.19')
(S 84°40'44" W 1098.19')
(S 73°24'22" W 2944.40')
(N 84°40'44" E 1098.19')
(S 84°40'44" W 1098.19')
(S 89°08'08" W 757.47')
(S 89°08'08" W 760.50')
(S 89°31'26" W 336.42')
(S 89°39'39" W 361.37')
(S 89°39'39" W 361.80')
(S 87°51'05" W 515.74')
(S 87°51'05" W 815.12')
(S 87°56'47" W 53.60')
(S 87°56'47" W 53.60')
(S 87°56'47" W 53.60

EXHIBIT D

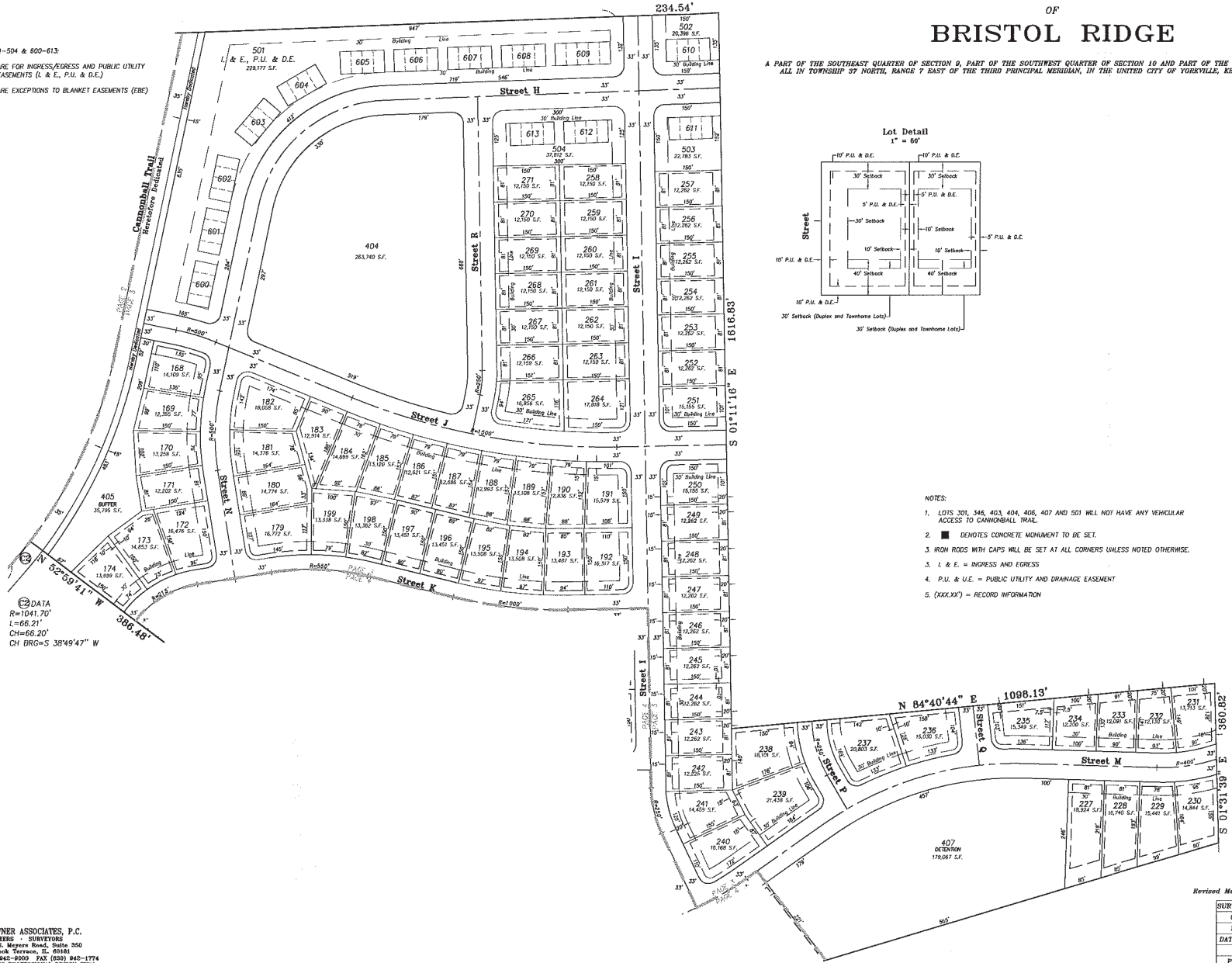
PRELIMINARY PLAT OF SUBDIVISION
OF
BRISTOL RIDGE

A PART OF THE SOUTHEAST QUARTER OF SECTION 9, PART OF THE SOUTHWEST QUARTER OF SECTION 10 AND PART OF THE NORTH HALF OF SECTION 15, ALL IN TOWNSHIP 37 NORTH, RANGE 7 EAST OF THE THIRD PRINCIPAL MERIDIAN, IN THE UNITED CITY OF YORKVILLE, KENDALL COUNTY, ILLINOIS.

NOTES FOR LOTS 501-504 & 600-613:

LOTS 501-504 ARE FOR INGRESS/EGRESS AND PUBLIC UTILITY AND DRAINAGE EASEMENTS (I. & E., P.U. & D.E.)

LOTS 600-613 ARE EXCEPTIONS TO BLANKET EASEMENTS (EBE)



Lot Detail
1" = 60'

N

0 50' 100' 200'

Scale 1" = 100'

NOTES:

1. LOTS 301, 346, 403, 404, 406, 407 AND 501 WILL NOT HAVE ANY VEHICULAR ACCESS TO CANNONBALL TRAIL.
2. ■ DENOTES CONCRETE MONUMENT TO BE SET.
3. IRON RODS WITH CAPS WILL BE SET AT ALL CORNERS UNLESS NOTED OTHERWISE.
3. I. & E. = INGRESS AND EGRESS
4. P.U. & U.E. = PUBLIC UTILITY AND DRAINAGE EASEMENT
5. (XXX.XX') = RECORD INFORMATION

Revised May 19, 2006 per Comments from the United City of Yorkville

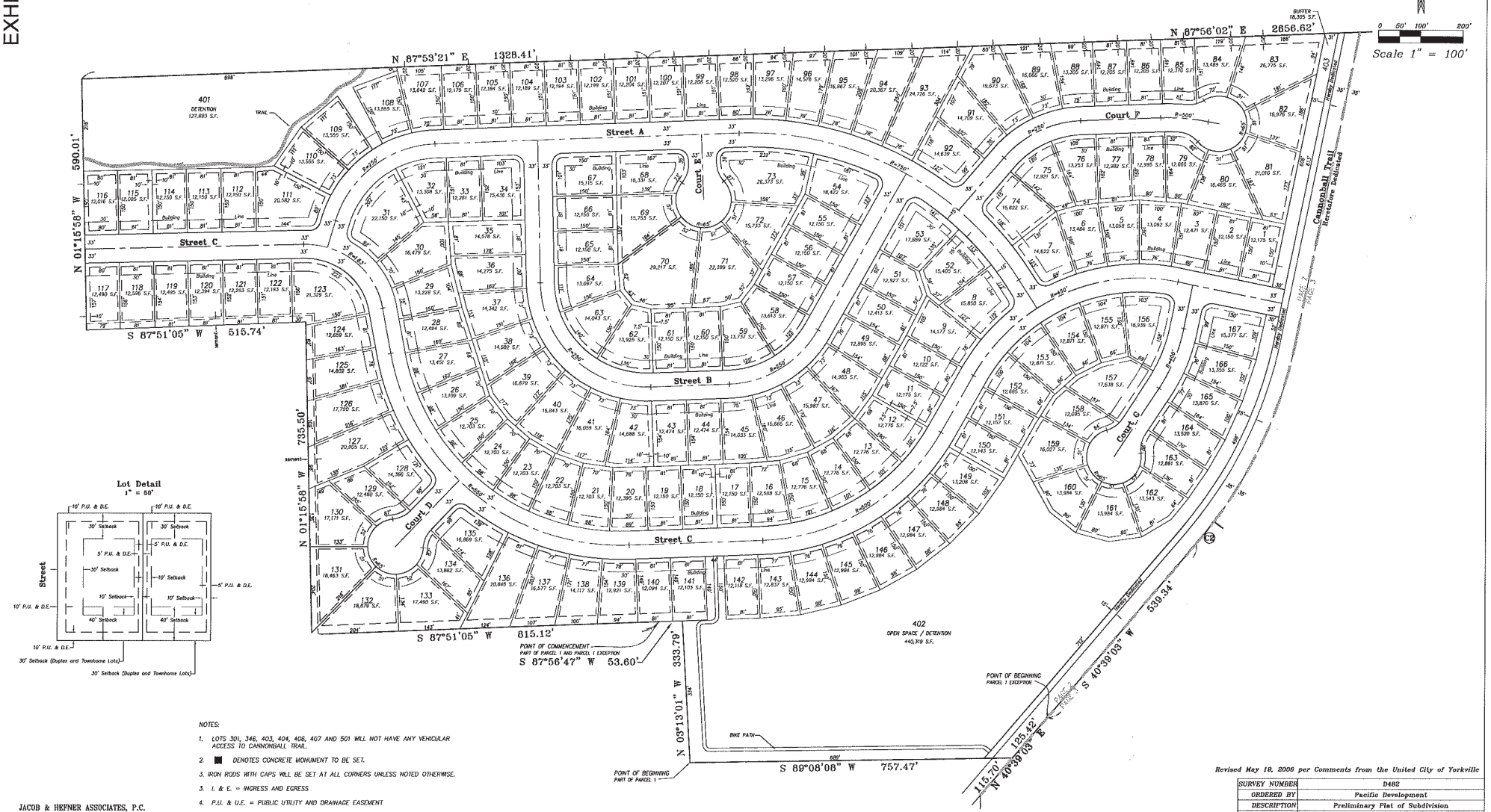
SURVEY NUMBER	D462		
ORDERED BY	Pacific Development		
DESCRIPTION	Preliminary Plat of Subdivision		
DATE PREPARED	March 16, 2006		
SCALE	1" = 100'	CHECKED BY	
PREPARED BY	JSB	FIELD CREW	JB/BF/RKO
SHEET NUMBER	4 OF 4	FIELD WORK COMPLETED	March 16, 2006

JACOB & HEFNER ASSOCIATES, P.C.
ENGINEERS · SURVEYORS
1901 S. Meyers Road, Suite 350
Oakbrook Terrace, IL. 60181
(630) 942-9000 FAX (630) 942-1774
ILLINOIS PROFESSIONAL DESIGN FIRM
LICENSE NO. 184.001792 EXP. 4/30/07

EXHIBIT D

PRELIMINARY PLAT OF SUBDIVISION
OF
BRISTOL RIDGE

A PART OF THE SOUTHEAST QUARTER OF SECTION 9, PART OF THE SOUTHWEST QUARTER OF SECTION 10 AND PART OF THE NORTH HALF OF SECTION 15, ALL IN TOWNSHIP 37 NORTH, RANGE 7 EAST OF THE THIRD PRINCIPAL MERIDIAN, IN THE UNITED CITY OF YORKVILLE, KENDALL COUNTY, ILLINOIS.



NOTES:

1. LOTS 301, 346, 403, 404, 406, 407 AND 501 WILL NOT HAVE ANY VEHICULAR ACCESS TO CANNONBALL TRAIL.
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3. IRON RODS WITH CAPS WILL BE SET AT ALL CORNERS UNLESS NOTED OTHERWISE.
3. I. & E. = INGRESS AND EGRESS
4. P.U. & U.E. = PUBLIC UTILITY AND DRAINAGE EASEMENT
5. (XXX.XX') = RECORD INFORMATION

Revised May 19, 2006 per Comments from the United City of Yorkville

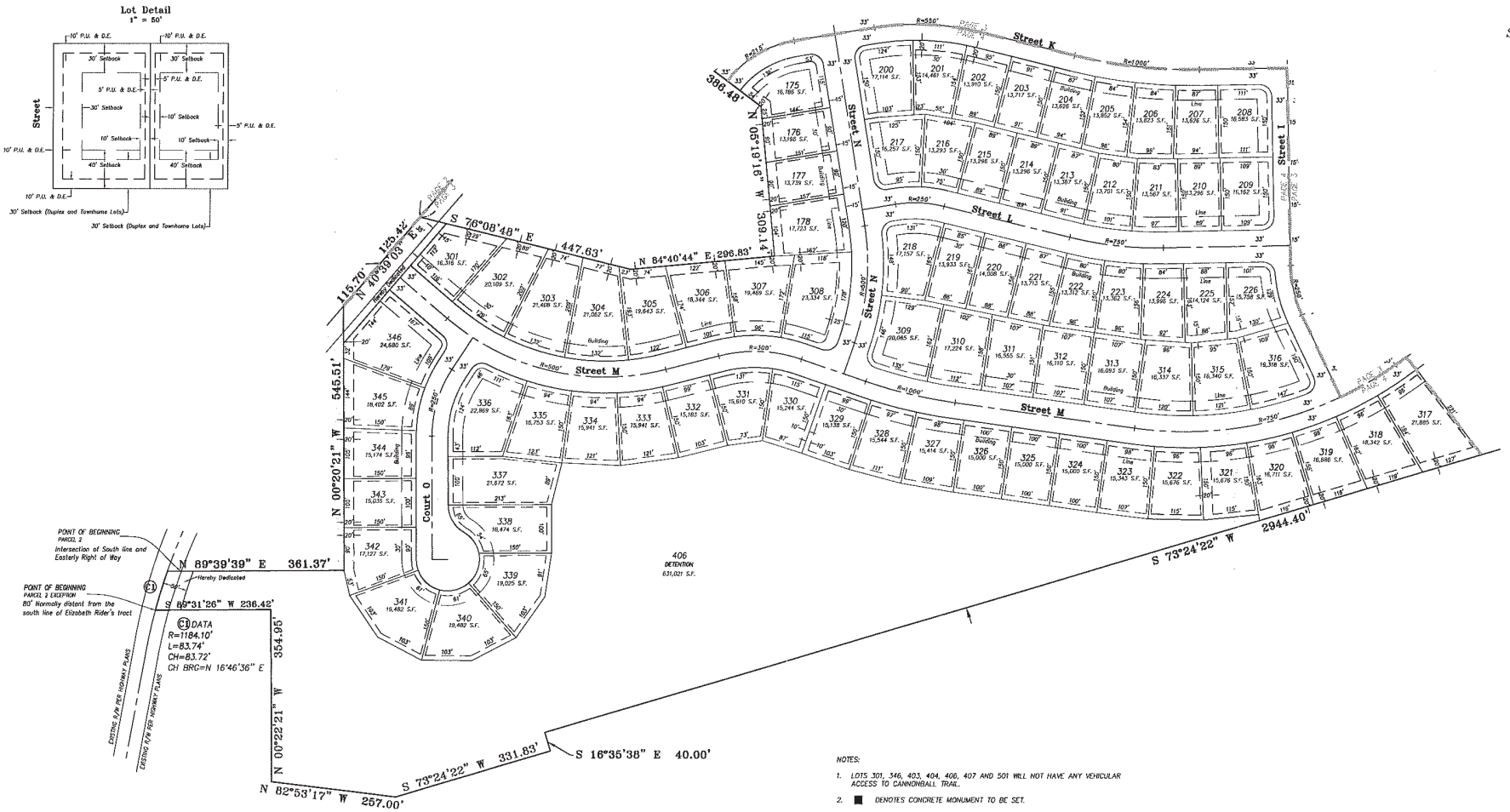
SURVEY NUMBER	D482		
ORDERED BY	Pacific Development		
DESCRIPTION	Preliminary Plat of Subdivision		
DATE PREPARED	March 16, 2006		
SCALE	1" = 100'	CHECKED BY	
PREPARED BY	JSB	FIELD CREW	JB/BF/RKO
SHEET NUMBER	2 OF 4	FIELD WORK COMPLETED	March 16, 2006

JACOB & HEFNER ASSOCIATES, P.C.
ENGINEERS · SURVEYORS
1901 S. Meyers Road, Suite 350
Oakbrook Terrace, IL. 60181
(630) 942-9000 FAX (630) 942-1774
ILLINOIS PROFESSIONAL DESIGN FIRM

EXHIBIT D

PRELIMINARY PLAT OF SUBDIVISION
OF
BRISTOL RIDGE

A PART OF THE SOUTHEAST QUARTER OF SECTION 9, PART OF THE SOUTHWEST QUARTER OF SECTION 10 AND PART OF THE NORTH HALF OF SECTION 15, ALL IN TOWNSHIP 37 NORTH, RANGE 7 EAST OF THE THIRD PRINCIPAL MERIDIAN, IN THE UNITED CITY OF YORKVILLE, KENDALL COUNTY, ILLINOIS.



NOTES:

1. LOTS 301, 346, 403, 404, 406, 407 AND 501 WILL NOT HAVE ANY VEHICULAR ACCESS TO CANNONBALL TRAIL.
2. ■ DENOTES CONCRETE MONUMENT TO BE SET.
3. IRON RODS WITH CAPS WILL BE SET AT ALL CORNERS UNLESS NOTED OTHERWISE.
3. I. & E. = INGRESS AND EGRESS
4. P.U. & U.E. = PUBLIC UTILITY AND DRAINAGE EASEMENT
5. (XXX.XX') = RECORD INFORMATION

Revised May 19, 2006 per Comments from the United City of Yorkville

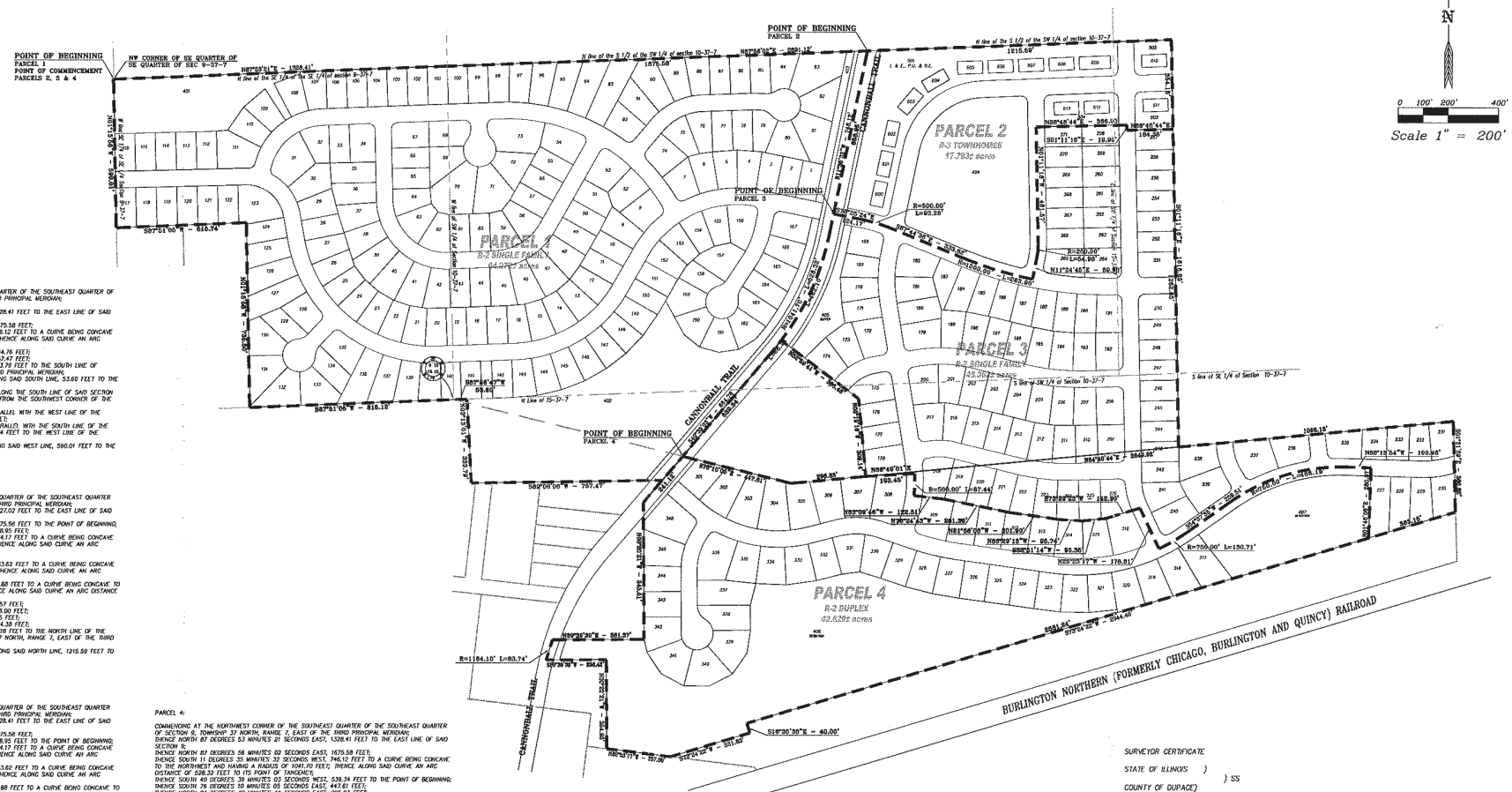
SURVEY NUMBER	D482		
ORDERED BY	Pacific Development		
DESCRIPTION	Preliminary Plat of Subdivision		
DATE PREPARED	March 16, 2006		
SCALE	1" = 100'	CHECKED BY	
PREPARED BY	JSB	FIELD CREW	JB/BF/RKO
SHEET NUMBER	3 OF 4	FIELD WORK COMPLETED	March 16, 2006

JACOB & HEFNER ASSOCIATES, P.C.
ENGINEERS · SURVEYORS
1901 S. Meyers Road, Suite 350
Oakbrook Terrace, IL. 60181
(630) 942-6000 FAX (630) 942-1774
ILLINOIS PROFESSIONAL DESIGN FIRM
LICENSE NO. 184-003026 EXP. 4/30/07

EXHIBIT E

PLAT OF ZONING

Bristol Ridge Subdivision



PARCEL 1:

BEGINNING AT THE NORTHWEST CORNER OF THE SOUTHEAST QUARTER OF THE SOUTHEAST QUARTER OF SECTION 9, TOWNSHIP 37 NORTH, RANGE 7, EAST OF THE THIRD PRINCIPAL MERIDIAN;

THENCE NORTH 87 DEGREES 53 MINUTES 21 SECONDS EAST, 1328.41 FEET TO THE EAST LINE OF SAID SECTION 9;
THENCE NORTH 87 DEGREES 56 MINUTES 02 SECONDS EAST, 1675.58 FEET;
THENCE SOUTH 11 DEGREES 35 MINUTES 32 SECONDS WEST, 748.12 FEET TO A CURVE BEING CONCAVE TO THE NORTHWEST AND HAVING A RADIUS OF 1041.70 FEET; THENCE ALONG SAID CURVE AN ARC DISTANCE OF 528.33 FEET TO ITS POINT OF TANGENCY;
THENCE SOUTH 40 DEGREES 39 MINUTES 03 SECONDS WEST, 664.76 FEET;
THENCE SOUTH 69 DEGREES 08 MINUTES 08 SECONDS WEST, 757.47 FEET;
THENCE NORTH 03 DEGREES 13 MINUTES 01 SECONDS WEST, 333.79 FEET TO THE SOUTH LINE OF SECTION 10, TOWNSHIP 37 NORTH, RANGE 7, EAST OF THE THIRD PRINCIPAL MERIDIAN;
THENCE SOUTH 87 DEGREES 35 MINUTE 47 SECONDS WEST ALONG SAID SOUTH LINE, 53.60 FEET TO THE SOUTHEAST CORNER OF SAID SECTION 9;
THENCE SOUTH 87 DEGREES 51 MINUTES 05 SECONDS WEST ALONG THE SOUTH LINE OF SAID SECTION 9 A DISTANCE OF 815.12 FEET TO A POINT LYING 516.74 FEET FROM THE SOUTHWEST CORNER OF THE SOUTHEAST QUARTER OF SAID SOUTHEAST QUARTER;
THENCE NORTH 01 DEGREE 15 MINUTES 58 SECONDS WEST, PARALLEL WITH THE WEST LINE OF THE SOUTHEAST QUARTER OF SAID SOUTHEAST QUARTER, 735.50 FEET;
THENCE SOUTH 87 DEGREES 51 MINUTES 05 SECONDS WEST, PARALLEL WITH THE SOUTH LINE OF THE SOUTHEAST QUARTER OF SAID SECTION 9 A DISTANCE OF 515.74 FEET TO THE WEST LINE OF THE SOUTHEAST QUARTER OF SAID SOUTHEAST QUARTER;
THENCE NORTH 01 DEGREE 15 MINUTES 58 SECONDS WEST ALONG SAID WEST LINE, 590.01 FEET TO THE POINT OF BEGINNING, IN KENDALL COUNTY, ILLINOIS.

PARCEL 2:

COMMENCING AT THE NORTHWEST CORNER OF THE SOUTHEAST QUARTER OF THE SOUTHEAST QUARTER OF SECTION 9, TOWNSHIP 37 NORTH, RANGE 7, EAST OF THE THIRD PRINCIPAL MERIDIAN;
THENCE NORTH 87 DEGREES 53 MINUTES 10 SECONDS EAST, 1327.02 FEET TO THE EAST LINE OF SAID SECTION 9;
THENCE NORTH 87 DEGREES 59 MINUTES 21 SECONDS EAST, 1675.58 FEET TO THE POINT OF BEGINNING;
THENCE SOUTH 11 DEGREES 35 MINUTES 32 SECONDS WEST, 636.93 FEET;
THENCE SOUTH 78 DEGREES 25 MINUTES 24 SECONDS EAST, 124.17 FEET TO A CURVE BEING CONCAVE TO THE SOUTHWEST AND HAVING A RADIUS OF 500.00 FEET; THENCE ALONG SAID CURVE AN ARC DISTANCE OF 83.20 FEET TO ITS POINT OF TANGENCY;

THENCE SOUTH 67 DEGREES 44 MINUTES 36 SECONDS EAST, 333.62 FEET TO A CURVE BEING CONCAVE TO THE NORTHEAST AND HAVING A RADIUS OF 1500.00 FEET; THENCE ALONG SAID CURVE AN ARC DISTANCE OF 263.90 FEET TO A POINT;
THENCE NORTH 11 DEGREES 24 MINUTES 45 SECONDS EAST, 89.88 FEET TO A CURVE BEING CONCAVE TO THE NORTHWEST AND HAVING A RADIUS OF 250.00 FEET; THENCE ALONG SAID CURVE AN ARC DISTANCE OF 54.98 FEET TO ITS POINT OF TANGENCY;
THENCE NORTH 01 DEGREE 11 MINUTES 18 SECONDS WEST, 461.57 FEET;
THENCE NORTH 88 DEGREES 48 MINUTES 44 SECONDS EAST, 366.00 FEET;
THENCE SOUTH 01 DEGREE 11 MINUTES 18 SECONDS EAST, 19.95 FEET;
THENCE NORTH 88 DEGREES 48 MINUTES 44 SECONDS EAST, 194.38 FEET;
THENCE NORTH 01 DEGREE 11 MINUTES 18 SECONDS WEST, 354.18 FEET TO THE NORTH LINE OF THE SOUTH HALF OF THE SOUTH HALF OF SECTION 10, TOWNSHIP 37 NORTH, RANGE 7, EAST OF THE THIRD PRINCIPAL MERIDIAN;
THENCE SOUTH 87 DEGREES 56 MINUTES 02 SECONDS WEST ALONG SAID NORTH LINE, 1215.59 FEET TO THE POINT OF BEGINNING, IN KENDALL COUNTY, ILLINOIS.

PARCEL 3:

COMMENCING AT THE NORTHWEST CORNER OF THE SOUTHEAST QUARTER OF THE SOUTHEAST QUARTER OF SECTION 9, TOWNSHIP 37 NORTH, RANGE 7, EAST OF THE THIRD PRINCIPAL MERIDIAN;
THENCE NORTH 87 DEGREES 53 MINUTES 21 SECONDS EAST, 1328.41 FEET TO THE EAST LINE OF SAID SECTION 9;
THENCE NORTH 87 DEGREES 56 MINUTES 02 SECONDS EAST, 1675.58 FEET;
THENCE SOUTH 11 DEGREES 35 MINUTES 32 SECONDS WEST, 858.95 FEET TO THE POINT OF BEGINNING;
THENCE SOUTH 78 DEGREES 25 MINUTES 24 SECONDS EAST, 124.17 FEET TO A CURVE BEING CONCAVE TO THE SOUTHWEST AND HAVING A RADIUS OF 500.00 FEET; THENCE ALONG SAID CURVE AN ARC DISTANCE OF 83.20 FEET TO ITS POINT OF TANGENCY;
THENCE SOUTH 67 DEGREES 44 MINUTES 36 SECONDS EAST, 333.62 FEET TO A CURVE BEING CONCAVE TO THE NORTHEAST AND HAVING A RADIUS OF 1500.00 FEET; THENCE ALONG SAID CURVE AN ARC DISTANCE OF 263.90 FEET TO A POINT;
THENCE NORTH 11 DEGREES 24 MINUTES 45 SECONDS EAST, 89.88 FEET TO A CURVE BEING CONCAVE TO THE NORTHWEST AND HAVING A RADIUS OF 250.00 FEET; THENCE ALONG SAID CURVE AN ARC DISTANCE OF 54.98 FEET TO ITS POINT OF TANGENCY;
THENCE NORTH 01 DEGREE 11 MINUTES 18 SECONDS WEST, 461.57 FEET;
THENCE NORTH 88 DEGREES 48 MINUTES 44 SECONDS EAST, 366.00 FEET;
THENCE SOUTH 01 DEGREE 11 MINUTES 18 SECONDS EAST, 19.95 FEET;
THENCE NORTH 88 DEGREES 48 MINUTES 44 SECONDS EAST, 194.38 FEET;
THENCE SOUTH 01 DEGREE 11 MINUTES 18 SECONDS EAST, 1098.15 FEET;
THENCE SOUTH 05 DEGREES 31 MINUTES 39 SECONDS EAST, 360.82 FEET;
THENCE SOUTH 73 DEGREES 24 MINUTES 22 SECONDS WEST, 363.15 FEET;
THENCE NORTH 01 DEGREE 46 MINUTES 06 SECONDS EAST, 280.07 FEET;
THENCE NORTH 88 DEGREES 13 MINUTES 54 SECONDS WEST, 106.46 FEET TO A CURVE BEING CONCAVE TO THE SOUTHEAST AND HAVING A RADIUS OF 750.00 FEET; THENCE ALONG SAID CURVE AN ARC DISTANCE OF 486.19 FEET TO ITS POINT OF TANGENCY;
THENCE SOUTH 54 DEGREES 37 MINUTES 35 SECONDS WEST, 209.51 FEET TO A CURVE BEING CONCAVE TO THE NORTHWEST AND HAVING A RADIUS OF 750.00 FEET; THENCE ALONG SAID CURVE AN ARC DISTANCE OF 130.71 FEET TO A POINT;
THENCE NORTH 25 DEGREES 23 MINUTES 17 SECONDS WEST, 178.81 FEET;
THENCE SOUTH 73 DEGREES 29 MINUTES 23 SECONDS WEST, 142.80 FEET;
THENCE SOUTH 83 DEGREES 51 MINUTES 14 SECONDS WEST, 95.35 FEET;
THENCE NORTH 86 DEGREES 29 MINUTES 13 SECONDS WEST, 93.74 FEET;
THENCE NORTH 81 DEGREES 56 MINUTES 06 SECONDS WEST, 201.80 FEET;
THENCE NORTH 78 DEGREES 24 MINUTES 43 SECONDS WEST, 261.39 FEET;
THENCE NORTH 83 DEGREES 09 MINUTES 46 SECONDS WEST, 122.51 FEET TO A CURVE BEING CONCAVE TO THE NORTHWEST AND HAVING A RADIUS OF 500.00 FEET; THENCE ALONG SAID CURVE AN ARC DISTANCE OF 87.44 FEET TO A POINT;
THENCE NORTH 88 DEGREES 48 MINUTES 44 SECONDS EAST, 366.00 FEET;
THENCE SOUTH 01 DEGREE 11 MINUTES 18 SECONDS EAST, 19.95 FEET;
THENCE NORTH 88 DEGREES 48 MINUTES 44 SECONDS EAST, 194.38 FEET;
THENCE SOUTH 01 DEGREE 11 MINUTES 18 SECONDS EAST, 1262.65 FEET;
THENCE NORTH 84 DEGREES 40 MINUTES 44 SECONDS EAST, 1098.15 FEET;
THENCE SOUTH 05 DEGREES 31 MINUTES 39 SECONDS EAST, 360.82 FEET;
THENCE SOUTH 73 DEGREES 24 MINUTES 22 SECONDS WEST, 363.15 FEET;
THENCE NORTH 01 DEGREE 46 MINUTES 06 SECONDS EAST, 280.07 FEET;
THENCE NORTH 88 DEGREES 13 MINUTES 54 SECONDS WEST, 106.46 FEET TO A CURVE BEING CONCAVE TO THE SOUTHEAST AND HAVING A RADIUS OF 750.00 FEET; THENCE ALONG SAID CURVE AN ARC DISTANCE OF 486.19 FEET TO ITS POINT OF TANGENCY;
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THENCE NORTH 25 DEGREES 23 MINUTES 17 SECONDS WEST, 178.81 FEET;
THENCE SOUTH 73 DEGREES 29 MINUTES 23 SECONDS WEST, 142.80 FEET;
THENCE SOUTH 83 DEGREES 51 MINUTES 14 SECONDS WEST, 95.35 FEET;
THENCE NORTH 86 DEGREES 29 MINUTES 13 SECONDS WEST, 93.74 FEET;
THENCE NORTH 81 DEGREES 56 MINUTES 06 SECONDS WEST, 201.80 FEET;
THENCE NORTH 78 DEGREES 24 MINUTES 43 SECONDS WEST, 261.39 FEET;
THENCE NORTH 83 DEGREES 09 MINUTES 46 SECONDS WEST, 122.51 FEET TO A CURVE BEING CONCAVE TO THE NORTHWEST AND HAVING A RADIUS OF 500.00 FEET; THENCE ALONG SAID CURVE AN ARC DISTANCE OF 87.44 FEET TO A POINT;
THENCE NORTH 88 DEGREES 48 MINUTES 44 SECONDS EAST, 366.00 FEET;
THENCE SOUTH 01 DEGREE 11 MINUTES 18 SECONDS EAST, 19.95 FEET;
THENCE NORTH 88 DEGREES 48 MINUTES 44 SECONDS EAST, 194.38 FEET;
THENCE SOUTH 01 DEGREE 11 MINUTES 18 SECONDS EAST, 1262.65 FEET;
THENCE NORTH 84 DEGREES 40 MINUTES 44 SECONDS EAST, 1098.15 FEET;
THENCE SOUTH 05 DEGREES 31 MINUTES 39 SECONDS EAST, 360.82 FEET;
THENCE SOUTH 73 DEGREES 24 MINUTES 22 SECONDS WEST, 363.15 FEET;
THENCE NORTH 01 DEGREE 46 MINUTES 06 SECONDS EAST, 280.07 FEET;
THENCE NORTH 88 DEGREES 13 MINUTES 54 SECONDS WEST, 106.46 FEET TO A CURVE BEING CONCAVE TO THE SOUTHEAST AND HAVING A RADIUS OF 750.00 FEET; THENCE ALONG SAID CURVE AN ARC DISTANCE OF 486.19 FEET TO ITS POINT OF TANGENCY;
THENCE SOUTH 54 DEGREES 37 MINUTES 35 SECONDS WEST, 209.51 FEET TO A CURVE BEING CONCAVE TO THE NORTHWEST AND HAVING A RADIUS OF 750.00 FEET; THENCE ALONG SAID CURVE AN ARC DISTANCE OF 130.71 FEET TO ITS POINT OF TANGENCY;
THENCE SOUTH 68 DEGREES 13 MINUTES 54 SECONDS EAST, 100.46 FEET;
THENCE SOUTH 01 DEGREE 46 MINUTES 06 SECONDS WEST, 280.07 FEET;
THENCE SOUTH 73 DEGREES 24 MINUTES 22 SECONDS WEST, 2581.24 FEET;
THENCE SOUTH 16 DEGREES 35 MINUTES 38 SECONDS EAST, 40.00 FEET;
THENCE SOUTH 73 DEGREES 24 MINUTES 22 SECONDS WEST, 331.83 FEET;
THENCE NORTH 82 DEGREES 53 MINUTES 17 SECONDS WEST, 257.00 FEET;
THENCE NORTH 00 DEGREES 22 MINUTES 21 SECONDS WEST, 354.95 FEET;
THENCE SOUTH 89 DEGREES 39 MINUTES 39 SECONDS WEST, 235.42 FEET TO A CURVE BEING CONCAVE TO THE SOUTHEAST AND HAVING A RADIUS OF 1184.10 FEET; THENCE ALONG SAID CURVE AN ARC DISTANCE OF 83.74 FEET TO A POINT;
THENCE NORTH 89 DEGREES 39 MINUTES 39 SECONDS EAST, 361.37 FEET;
THENCE NORTH 00 DEGREES 20 MINUTES 21 SECONDS WEST, 345.51 FEET;
THENCE NORTH 40 DEGREES 39 MINUTES 03 SECONDS EAST, 241.12 FEET TO THE POINT OF BEGINNING, IN KENDALL COUNTY, ILLINOIS.

PARCEL 4:

COMMENCING AT THE NORTHWEST CORNER OF THE SOUTHEAST QUARTER OF THE SOUTHEAST QUARTER OF SECTION 9, TOWNSHIP 37 NORTH, RANGE 7, EAST OF THE THIRD PRINCIPAL MERIDIAN;
THENCE NORTH 87 DEGREES 53 MINUTES 21 SECONDS EAST, 1328.41 FEET TO THE EAST LINE OF SAID SECTION 9;
THENCE NORTH 87 DEGREES 56 MINUTES 02 SECONDS EAST, 1675.58 FEET;
THENCE SOUTH 11 DEGREES 35 MINUTES 32 SECONDS WEST, 748.12 FEET TO A CURVE BEING CONCAVE TO THE NORTHWEST AND HAVING A RADIUS OF 1041.70 FEET; THENCE ALONG SAID CURVE AN ARC DISTANCE OF 528.33 FEET TO ITS POINT OF TANGENCY;
THENCE SOUTH 40 DEGREES 39 MINUTES 03 SECONDS WEST, 539.34 FEET TO THE POINT OF BEGINNING;
THENCE SOUTH 76 DEGREES 10 MINUTES 05 SECONDS EAST, 447.61 FEET;
THENCE NORTH 84 DEGREES 40 MINUTES 44 SECONDS EAST, 298.83 FEET;
THENCE NORTH 86 DEGREES 49 MINUTES 01 SECONDS EAST, 193.45 FEET TO A CURVE BEING CONCAVE TO THE NORTHWEST AND HAVING A RADIUS OF 500.00 FEET; THENCE ALONG SAID CURVE AN ARC DISTANCE OF 87.44 FEET TO A POINT;
THENCE SOUTH 83 DEGREES 09 MINUTES 46 SECONDS EAST, 122.51 FEET;
THENCE SOUTH 78 DEGREES 24 MINUTES 43 SECONDS EAST, 261.39 FEET;
THENCE SOUTH 81 DEGREES 56 MINUTES 06 SECONDS EAST, 201.80 FEET;
THENCE SOUTH 86 DEGREES 29 MINUTES 13 SECONDS EAST, 93.74 FEET;
THENCE NORTH 83 DEGREES 51 MINUTES 14 SECONDS EAST, 95.35 FEET;
THENCE NORTH 73 DEGREES 29 MINUTES 23 SECONDS EAST, 142.80 FEET;
THENCE SOUTH 25 DEGREES 23 MINUTES 17 SECONDS EAST, 178.81 FEET TO A CURVE BEING CONCAVE TO THE NORTHWEST AND HAVING A RADIUS OF 750.00 FEET, THENCE ALONG SAID CURVE AN ARC DISTANCE OF 130.71 FEET TO ITS POINT OF TANGENCY;
THENCE NORTH 54 DEGREES 37 MINUTES 35 SECONDS EAST, 209.51 FEET TO A CURVE BEING CONCAVE TO THE SOUTHEAST AND HAVING A RADIUS OF 750.00 FEET; THENCE ALONG SAID CURVE AN ARC DISTANCE OF 486.19 FEET TO ITS POINT OF TANGENCY;
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THENCE SOUTH 73 DEGREES 24 MINUTES 22 SECONDS WEST, 331.83 FEET;
THENCE NORTH 82 DEGREES 53 MINUTES 17 SECONDS WEST, 257.00 FEET;
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THENCE NORTH 89 DEGREES 39 MINUTES 39 SECONDS EAST, 361.37 FEET;
THENCE NORTH 00 DEGREES 20 MINUTES 21 SECONDS WEST, 345.51 FEET;
THENCE NORTH 40 DEGREES 39 MINUTES 03 SECONDS EAST, 241.12 FEET TO THE POINT OF BEGINNING, IN KENDALL COUNTY, ILLINOIS.

SURVEYOR CERTIFICATE

STATE OF ILLINOIS)
) SS
COUNTY OF DUPAGE)

I, Douglas R. McClintic, an Illinois Professional Land Surveyor, do hereby certify that the Plat shown hereon is a correct representation of a survey, performed at and under my direction, to the best of my knowledge and belief. All dimensions shown in feet and decimal parts thereof.

Dated this_____ day of_____ in the year 2006.

_____
Illinois Professional Land Surveyor No. 35-2992

DOUGLAS R. McCLINTIC
35-002992
PROFESSIONAL LAND SURVEYOR
STATE OF ILLINOIS
Renewals
11-30-06

JACOB & HEFNER ASSOCIATES, P.C.
ENGINEERS - SURVEYORS
1201 S. Meyers Road, Suite 350
Oakbrook Terrace, IL. 60181
(630) 942-9000 FAX (630) 942-1774
ILLINOIS PROFESSIONAL DESIGN FIRM
LICENSE NO. 184-001076 (EXP. 4/30/2007)

SURVEY NUMBER	D482		
ORDERED BY	Pacific Development		
DESCRIPTION	Plat of Zoning Bristol Ridge Subdivision		
DATE PREPARED	March 15, 2006		
SCALE	1" = 200'	CHECKED BY	DM
PREPARED BY	RJP	FIELD CREW	
SHEET NUMBER	1 OF 1	FIELD WORK COMPLETED	

EXHIBIT F
(Letterhead of a Bank, Savings and Loan or Mortgage House)

_____, 20__

Mayor and Aldermen
City of Yorkville
800 Game Farm Road
Yorkville, IL 60560

Re: Subdivision Name
Letter of Credit No.
For Account of
Amount
Date

Gentlemen:

The undersigned _____ by _____, its' duly
(name of financial institution) (name & title)
authorized agent,, hereby establishes and issues this Irrevocable Letter of Credit in favor of the City of Yorkville in the amount of $_____, which represents 110% of the cost of the improvements described herein. Such credit is available to be drawn upon by said City upon presentation to this bank of your demand for payment accompanies by a copy of this Letter of Credit.

This Letter of Credit is issued for the purpose of securing and paying for the installation of the following public improvements in the aforesaid subdivision:

DIVISION "A" - SANITARY SEWERS
(engineer's estimate = _____)
DIVISION "B" - WATER MAIN
(engineer's estimate = _____)
DIVISION "C" - STORM SEWERS
(engineer's estimate = _____)
DIVISION "D" - STREETS
(engineer's estimate = _____)
DIVISION "E" - DETENTION BASIN
(engineer's estimate = _____)
DIVISION "F" - MISC. IMPROVEMENTS
(engineer's estimate = _____)
Total engineer's estimate =

EXHIBIT F

The costs of the foregoing improvements are detailed in the attached Engineer's Cost Estimate. The development is legally described as follows:

See Attached Exhibit "A"

Said public improvements shall be constructed by _____ our customer, in
(subdivider)
accordance with the plans, specifications, completion schedules and cost estimates prepared by
_____.
(subdivider's engineer)

The undersigned agrees that this Irrevocable Letter of Credit shall remain in full force and effect and pertain to any and all amendments or modifications which may be made from time to time to the plans, specifications and cost estimated for said modifications.

This Irrevocable Letter of Credit shall expire on _____, 20____. provided, however, the undersigned shall notify the City Clerk by certified or registered mail, return receipt requested, at least ninety (90) days prior to said expiration date, that said Letter of Credit is about to expire. In no event shall this Irrevocable Letter of Credit or the obligations contained herein expire except upon said prior written notice, it being expressly agreed by the undersigned that the above expiration date shall be extended as required to comply with this notice provision.

This Irrevocable Letter of Credit shall remain in effect until _____, 20__, without regard to
(expiration date)
any default in payment of money owed to the issuer by our customer and without regard to other claims which the Issuer may have against our customer, and in no event shall terminate without notice as specified above.

This Letter of Credit may be renewed by the Issuer or our customer prior to the above expiration date by submitting a new Letter of Credit to the same form and substance as this Letter of Credit to the City Clerk in an amount equal to 110% of the estimated cost to complete and pay for the above described improvements.

It is agreed that the following shall be considered a default by our customer and shall entitle the City to make demand on this Letter of Credit:

1. that said Letter of Credit will expire within thirty (30) days and has not been renewed;

   or

2. that the aforesaid improvements have not been completed by the subdivider at least thirty (30) days prior to the aforesaid expiration date; or
3. that the owner and/or subdivider has failed to complete or carry on the work of the installation and construction of the required improvements in accordance with the schedule, or at a faster pace if the installation of the private improvements shall be completed before public improvements to service them are available; or

4. that the City of Yorkville has determined that the owner and/or subdivider has demonstrated that they will be unable to complete the improvement; or
5. that the City of Yorkville has determined that the public improvements or other improvements covered by this commitment have been or are likely to be the subject of liens or other claims by contractors, subcontractors or third parties; or
6. that if more funds are disbursed at this time on order of the owner and/or subdivider insufficient funds will remain irrevocably committed to guarantee the completion of all improvements, and such certification indicates that the owner and/or subdivider has been notified that the municipality finds that a breach of the owner's and/or subdivider's obligations has occurred and has not been cured within a period of thirty (30) days.

The Issuer's obligation to the City is based solely on this Irrevocable Letter of Credit engagement between this financial institution and the City and is not subject to instructions from our customer.

It is recognized that the City has directed our customer to proceed with the construction of public improvements upon the guarantee of this irrevocable commitment. It is further acknowledged that the consideration for this irrevocable commitment is provided by agreements between this financial institution and our customer.

This Irrevocable Letter of Credit sets forth in full the terms of this undertaking between the Issuer and the City, and such undertaking shall not in any way be modified, amended, amplified, nor shall it be limited by reference to any documents, instrument or agreement referred to herein, and any such reference shall not be deemed to incorporate herein by reference any document, instrument or agreement.

Demands on this Letter of Credit shall be made by presenting the Issuer with a letter from the City Clerk of the City of Yorkville demanding payment accompanied by the certificate of the City Clerk of the City of Yorkville certifying the basis for the default and demand on this Letter of Credit.

The undersigned agrees that this Letter of Credit shall not be reduced or discharged except upon receipt of a certificate of the City Clerk of the City of Yorkville certifying that this Letter of Credit may be reduced. The outstanding balance of this Letter of Credit shall be the face amount of this Letter of Credit less any amount which is discharged upon certificate of the City Clerk; Provided however, the outstanding balance of this Letter of Credit shall not be reduced to less than 15% of the approved engineer's estimate upon which this Letter of Credit is based until the City Council accepts the aforementioned improvements and a certificate of the City Clerk certifying that the Letter of Credit has been released by the City Council of the City.

All acts, requirements and other preconditions for the issuance of this Irrevocable Letter of Credit have been completed.

The undersigned further agrees and engages that it will be responsible and liable for attorney fees and court costs which may be incurred by the City in enforcing collection of this Letter of Credit in accordance with its' terms.

EXHIBIT F

We hereby engage with you that all demands for payment in conformity with the terms of this Irrevocable Letter of Credit will be duly honored on presentation to us prior to expiration of this Letter of Credit.

BY:_____ ATTEST:

Name:_____ Name:
Title:_____ Title:

STATE OF ILLINOIS)
) SS
COUNTY OF_____)

I, the undersigned, a Notary Public in and for the County and State aforesaid, do hereby certify that _____, personally known to me to be the_____ of the
(title)
_____, and _____personally known to me to be the
(name of institution) (title)
of said institution, and who are personally known to me to be the same persons whose names are subscribed to the foregoing Letter of Credit as such _____ and _____
(title) (title)
respectively, and caused the corporate seal of said _____ to be affixed thereto
(name of institution)
pursuant to authority given by the Board of Directors thereof as their free and voluntary acts and as the free and voluntary act and deed of said institution.

Given under my hand and official seal this __ day of _____20__.

_____SEAL
Notary Public

RECAPTURE AGREEMENT

THIS RECAPTURE AGREEMENT ("Agreement"), is made and entered as of the ____ day of _____, 200_, by and between the UNITED CITY OF YORKVILLE, an Illinois municipal corporation ("CITY") and _____ ("DEVELOPER").

RECITALS:

A. DEVELOPER is the OWNER and DEVELOPER of that certain real estate development located within the corporate limits of the CITY and commonly known as _____ ("Subdivision").

B. DEVELOPER and the CITY have heretofore entered into that certain Annexation Agreement dated _____, 2006 ("Annexation Agreement") pertaining to the annexation and development of the Subdivision within the CITY.

C. DEVELOPER desires to recapture an allocable share of the costs of constructing certain of the public improvements for the Subdivision ("Recapture Items") which will provide benefit to other properties ("Benefited Properties") from the OWNERs of the Benefited Properties ("Benefited OWNERs").

D. DEVELOPER and the CITY are desirous of entering into this Agreement to provide for the fair and allocable recapture by DEVELOPER of the proportionate costs of the Recapture Items from the Benefited OWNERs, subject to the terms and conditions set forth in this Agreement.

NOW, THEREFORE, in consideration of the foregoing recitals and the mutual covenants hereinafter set forth, and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged by the parties hereto, the parties hereby agree as follows:

1. **RECAPTURE ITEMS**. The Recapture Items, being elements of the public improvements to be constructed as a part of the development of the Subdivision, are identified in Attachment "A" attached hereto ("Recapture Schedule"). The Recapture Schedule identifies each Recapture Item and the estimated cost to construct each Recapture Item ("Estimated Cost"). DEVELOPER shall cause each of the Recapture Items to be constructed in compliance with the provisions of the Annexation Agreement and to be accepted and conveyed to the CITY in accordance with applicable ordinances of the CITY.

2. **BENEFITED PROPERTIES**. The Benefited Properties are legally described in the Recapture Schedule attached hereto as Attachment "B". Each parcel of real estate contained within the Benefited Properties is referred to herein individually as a "Benefited Parcel". There are a total of _____ (___) Benefited Parcels as identified in the Recapture Schedule.

3. **RECAPTURE COSTS**. The Recapture Item(s) which the Corporate Authorities of the CITY have determined will benefit a Benefited Parcel, and the prorata share of the Estimated Cost of each such Recapture Item to be allocated to such Benefited Parcel are set forth in the Recapture Schedule. The aggregate amount of the proportionate share of the Estimated Cost for each of the Recapture Items allocable to a Benefited Parcel is referred to herein as the "Recapture Costs". The Recapture Costs for each of the Benefited Parcels shall be as identified in the Recapture Schedule. Interest shall accrue on the Recapture Costs for the benefit of DEVELOPER at the rate of six percent (6 %) per annum from the date the Recapture Item is completed until the Recapture Cost is paid. All references to Recapture Costs herein shall include accrued interest owed thereon.

4. **COLLECTION OF RECAPTURE COSTS**. The CITY shall assess against and collect from the Benefited OWNER of a Benefited Parcel, or any portion thereof, his successors and assigns, the Recapture Cost, calculated under Paragraph 3 of this Agreement for such Benefited Parcel. At such time as a Benefited OWNER, or its agent or representative, annexes and/or subdivides a Benefited Parcel, or any portion thereof, or subdivides the Benefited Parcel from a larger parcel of land, or applies to the CITY for issuance of a permit for connection to all or any of the Recapture Items, whichever shall first occur, the CITY shall collect from such Benefited OWNER, or its agent or representative, the applicable Recapture Costs, owed hereunder by such Benefited Parcel. No Benefited Parcel which is a part of a subdivision (whether by plat or division by deed) shall be approved or recognized by the CITY or be issued a connection permit to a Recapture Item by the CITY until such Benefited Parcel has fully paid the applicable Recapture Costs, owed by such Benefited Parcel under this Agreement.

5. **PAYMENT OF RECAPTURE COSTS**. Any Recapture Costs, collected by the CITY pursuant to this Agreement shall be paid to DEVELOPER, or such other person or entity as DEVELOPER may direct by written notice to the CITY, within thirty (30) days following collection thereof by the CITY. It is understood and agreed that the CITY's obligation to reimburse DEVELOPER shall be limited to funds collected from the Benefited OWNERs as provided herein, and payments made hereunder shall be made solely out of said funds. This Agreement shall not be construed as creating any obligation upon the CITY to make payments from its general corporate funds or revenue.

6. **CITY'S OBLIGATION**. The CITY and its officers, employees and agents shall make all reasonable efforts to make the aforesaid collections of the Recapture Costs, for each Benefitted Parcel. Neither the CITY or any of its officials shall be liable in any manner for the failure to make such collections, and DEVELOPER agrees to hold the CITY, its officers, employees and agents, harmless from the failure to collect said fees. In any event, however, DEVELOPER and/or the CITY may sue any Benefited OWNER owing any Recapture Costs, hereunder for collection thereof, and in the event DEVELOPER initiates a collection lawsuit, the CITY agrees to cooperate in DEVELOPER's collection attempts hereunder by allowing full and

free access to the CITY's books and records pertaining to the subdivision and/or development of the Benefited Parcel and the collection of any Recapture Costs therefore. In the event the CITY and any of its agents, officers or employees is made a party defendant in any litigation rising out of or resulting from this Agreement, DEVELOPER shall defend such litigation, including the interest of the CITY, and shall further release and hold the CITY harmless from any judgment entered against DEVELOPER and/or the CITY and shall further indemnify the CITY from any loss resulting therefrom, except to the extent such loss results from the grossly negligent or willfully wrongful act or conduct of the CITY or any of its agents, officers or employees.

7. **CITY'S COLLECTION OF OTHER FEES AND CHARGES**. Nothing contained in this Agreement shall limit or in any way affect the rights of the CITY to collect other fees and charges pursuant to CITY ordinances, resolutions, motions and policies. The Recapture Costs provided for herein for each Benefited Parcel is in addition to such other CITY fees and charges.

8. **TERM**. This Agreement shall remain in full force and effect for a period of twenty (20) years from the date hereof, unless sooner terminated by the mutual agreement of the parties hereto or by the completion of all duties to be performed hereunder. In the event no portion of a Benefited Parcel is a part of a subdivision approved or recognized by the CITY and no connection permit as aforesaid is issued by the CITY for such Benefited Parcel within ten years following the date of this Agreement, this Agreement, and each and every duty and undertaking set forth herein pertaining to such Benefited Parcel, shall become null and void and of no further force and effect as to such Benefited Parcel.

9. **LIEN**. The recordation of this Agreement against the Benefited Properties shall create and constitute a lien against each Benefited Parcel, and each subdivided lot hereafter contained therein, in the amount of the Recapture Costs, plus interest, applicable hereunder to such Benefited Parcel.

10. **MISCELLANEOUS PROVISIONS**.

A. Agreement: This Agreement may be amended upon the mutual consent of the parties hereto from time to time by written instrument and conformity with all applicable statutory and ordinance requirements and without the consent of any other person or corporation owning all or any portion of the Benefited Properties.

B. Binding Effect: Except as otherwise herein provided, this Agreement shall inure to the benefit of and be binding upon the successors and assigns of DEVELOPER and any successor municipal corporation of the CITY.

C. Enforcement: Each party to this Agreement, and their respective successors and assigns, may either in law or in equity, by suit, action, mandamus, or other proceeding in force and compel performance of this Agreement.

D. Recordation: A true and correct copy of this Agreement shall be recorded, at DEVELOPER's expense, with the Kendall County Recorder's office. This Agreement shall constitute a covenant running with the land and shall be binding upon the Benefited Properties in accordance with the terms and provisions set forth herein.

E. Notices: Any notice required or desired to be given under this Agreement, unless expressly provided to the contrary herein, shall be in writing and shall be deemed to have been given on the date of personal delivery, on the date of confirmed telefacsimile transmission provided a hard copy of such notice is deposited in the U.S. mail addressed to the recipient within twenty-four hours following the telefacsimile transmission, or on the date when deposited in the U.S. Mail, registered or certified mail, postage prepaid, return receipt requested, and addressed as follows:

If to CITY:	United CITY of Yorkville Attn: CITY Clerk 800 Game Farm Road Yorkville, Il 60560 Fax: (630) 553-4350
with a copy to:	John Wyeth, Esq. 800 Game Farm Road Yorkville, Il 60560 Fax: (630) 553-4350

If to OWNER

F. Severability: The invalidity or unenforceability of any of the provisions hereof, or any charge imposed as to any portion of the Benefited Properties, shall not affect the validity or enforceability of the remainder of this Agreement or the charges imposed hereunder.

G. Complete Agreement: This Agreement contains all the terms and conditions agreed upon by the parties hereto and no other prior agreement, excepting the Annexation Agreement, regarding the subject matter of this Agreement shall be deemed to exist to bind the parties. This Agreement shall be governed by the laws of the State of Illinois.

H. Captions and Paragraph Headings: Captions and paragraph headings incorporated herein are for convenience only and are not part of this Agreement, and further shall not be used to construe the terms hereof.

I. Recitals and Exhibits: The recitals set forth at the beginning of this Agreement and the exhibits attached hereto are hereby incorporated into this Agreement and made a part of the substance hereof.

J. Enforceability: This Agreement shall be enforceable in the Circuit Court of Kendall County by any of the parties hereto by an appropriate action of law or in equity to secure the performance of the covenants herein contained.

IN WITNESS WHEREOF, the parties hereto have hereunto set their hands and seals as of the date first above written.

DEVELOPER:

By: _____

Title: President

Dated: _____

CITY:

UNITED CITY OF YORKVILLE,
an Illinois municipal corporation

By: _____
Mayor

Attest:

_____
CITY Clerk

EXHIBIT H-1

Bristol Ridge - Single Family Unit Fee Schedule

	Name of Fee	Amount	Time of Payment
1	**School District Transition Fee**	**$1,500 per unit***	Paid to School District Office prior to application for building permit
2	Yorkville Bristol Sanitary District Connection Fee	$1,400 per unit	At time of building permit, paid at City Hall with separate check made out to YBSD
3	Yorkville Bristol Sanitary District Annexation Fee	$3,523 per acre	Paid for entire development, at time of annexation to sanitary district
4	Yorkville Bristol Sanitary District Infrastructure Fee	$3,523 per acre	Paid for entire development, at time of sanitary district
5	Building Permit Fee	$650 + $.0.20 per square foot	Building Permit
6	Water Connection Fee	$3,700 per unit	Building Permit
7	Water Meter Cost (not applicable to fee lock)	$390 per unit	Building Permit
8	City Sewer Connection Fee	$2,000 per unit	Building Permit
9	Water and Sewer Inspection Fee	$25 per unit	Building Permit
10	Public Walks and Driveway Inspection Fee	$35 per unit	Building Permit
11a	**Public Works (Development Impact Fee)**	**$450 per unit***	**Building Permit**
11b	**Police (Development Impact Fee)**	**$150 per unit***	**Building Permit**
11c	**Municipal Building (Development Impact Fee)**	**$150 per unit***	**Building Permit**
11d	**Library (Development Impact Fee)**	**$150 per unit***	**Building Permit**
11e	**Parks and Rec (Development Impact Fee)**	**N/A***	
11f	**Engineering (Development Impact Fee)**	**N/A***	
11g	**Bristol Kendall Fire District (Development Impact Fee)**	**$250 per unit***	**Building Permit**
12	Parks Land Cash Fee	$1653 per single family detached unit	Building Permit
		$1040 per duplex unit	Building Permit
		$968 per townhouse unit	Building Permit
13	School Land Cash Fee	$4154 per single family detached unit	Building Permit
		$2613 per duplex unit	Building Permit
		$2432 per townhouse unit	Building Permit
14	**Road Contribution Fund**	**N/A***	
15	**County Road Fee**	**N/A***	
16	**Weather Warning Siren**	**N/A***	
17	Administration Review Fee	1.75% of Approved Engineer's Estimate of Cost of Land Improvements	Final Plat
18	Engineering Review Fee	1.25% of Approved Engineer's Estimate of Cost of Land Improvements	Final Plat
	*** Fee rate as of April 21, 1994**		

EXHIBIT H-2

Bristol Ridge - Duplex and Multi Family Unit Fee Schedule

	Name of Fee	Amount	Time of Payment
1	School District Transition Fee	$3,000 per unit	Paid to School District Office prior to application for building permit
2	Yorkville Bristol Sanitary District Connection Fee	$1,400 per unit	At time of building permit, paid at City Hall with separate check made out to YBSD
3	Yorkville Bristol Sanitary District Annexation Fee	$3,523 per acre	Paid for entire development, at time of annexation to sanitary district
4	Yorkville Bristol Sanitary District Infrastructure Fee	$3,523 per acre	Paid for entire development, at time of sanitary district
5	Building Permit Fee	$650 + $.0.20 per square foot	Building Permit
6	Water Connection Fee	$3,700 per unit	Building Permit
7	Water Meter Cost (not applicable to fee lock)	$390 per unit	Building Permit
8	City Sewer Connection Fee	$2,000 per unit	Building Permit
9	Water and Sewer Inspection Fee	$25 per unit	Building Permit
10	Public Walks and Driveway Inspection Fee	$35 per unit	Building Permit
11a	Public Works (Development Impact Fee)	$700 per unit	Building Permit
11b	Police (Development Impact Fee)	$300 per unit	Building Permit
11c	Municipal Building (Development Impact Fee)	see "time of payment"	Municipal Building Impact Fee is set up as $5,509 per unit if paid at time of permit, or $3,288 per unit if paid at time of final plat for all units in the entirety of the annexed development.
11d	Library (Development Impact Fee)	$500 per unit	Building Permit
11e	Parks and Rec (Development Impact Fee)	$50 per unit	Building Permit
11f	Engineering (Development Impact Fee)	$100 per unit	Building Permit
11g	Bristol Kendall Fire District (Development Impact Fee)	$1,000 per unit	Building Permit
12	Parks Land Cash Fee	$1653 per single family detached	Building Permit
		$1040 per duplex unit	Building Permit
		$968 per townhouse unit	Building Permit
13	School Land Cash Fee	$4154 per single family detached	Building Permit
		$2613 per duplex unit	Building Permit
		$2432 per townhouse unit	Building Permit
12	Parks Land Cash Fee	Calculated by ordinance, $80,000 per acre	Building Permit or Final Plat, depending on annexation/development agreement and land/cash donations negotiated
13	School Land Cash Fee	Calculated by ordinance, $80,000 per acre	Building Permit or Final Plat, depending on annexation/development agreement and land/cash donations negotiated
14	Road Contribution Fund	$2,000 per unit	Building Permit
15	County Road Fee	$1,549 per unit, escalating each calendar year at a rate determined by ordinance	Building Permit
16	Weather Warning Siren	$75 per acre	Final Plat
17	Administration Review Fee	1.75% of Approved Engineer's Estimate of Cost of Land Improvements	Final Plat
18	Engineering Review Fee	1.25% of Approved Engineer's Estimate of Cost of Land Improvements	Final Plat

Exhibit E

Law Offices
of
Daniel J. Kramer
1107A S. Bridge Street
Yorkville, Illinois 60560
630-553-9500
Fax: 630-553-5764

Daniel J. Kramer

Kelly A. Helland
D.J. Kramer

February 8, 2023

Scott Osborn
Turning Point Energy
Via Email: sosborn@tppoint-e.com

RE: Solar Energy Project in Bristol Ridge P.U.D. in Bristol Township, Kendall County, Illinois

Dear Mr. Osborn:

In regard to your request for Consent by one of the Bristol Ridge P.U.D, Members as to your Petition for a Solar Array being established in Bristol Township, Kendall County, Illinois. Please be advised that I am providing this letter as Land Trustee for the Beneficiaries of Daniel J. Kramer Trust No. 100.

As an Owner of a portion of the real property that was originally included in this Planned Unit Development the underlying Beneficiaries to my Trust have no objection whatsoever to your Petition to get a Special Use from the United City of Yorkville for a Solar Array on real property that is located within Bristol Ridge P.U.D.

Hopefully this letter suffices for your filing purposes.

Very truly yours,

Daniel J. Kramer

Daniel J. Kramer
Attorney at Law

DJK:rg

cc: Steve Kratz

Exhibit C

United City of Yorkville
800 Game Farm Road
Yorkville, Illinois, 60560
Telephone: 630-553-4350
Fax: 630-553-7575
Website: www.yorkville.il.us

APPLICATION FOR REZONING

DATE: 02/03/2023	PZC NUMBER:	DEVELOPMENT NAME: TPE IL KE106, LLC

PETITIONER INFORMATION

NAME: Scott Osborn	COMPANY: TPE IL KE106, LLC
MAILING ADDRESS: 3720 S Dahlia St	
CITY, STATE, ZIP: Denver, CO 80237	TELEPHONE: ◉ BUSINESS ○ HOME (303) 618-9570
EMAIL: sosborn@tpoint-e.com	FAX:

PROPERTY INFORMATION

NAME OF HOLDER OF LEGAL TITLE: Daniel B. Light

IF LEGAL TITLE IS HELD BY A LAND TRUST, LIST THE NAMES OF ALL HOLDERS OF ANY BENEFICIAL INTEREST THEREIN:

PROPERTY STREET ADDRESS: 1700 Cannonball Trail

DESCRIPTION OF PROPERTY'S PHYSICAL LOCATION:

East of Cannonball Trail, North of BNSF Rail line and Oak Street, south of Galena Rd, and west of Blackberry Creek and Kennedy Road

CURRENT ZONING CLASSIFICATION: PUD (underlying: R2, R3)	REQUESTED ZONING CLASSIFICATION: Agricultural
COMPREHENSIVE PLAN FUTURE LAND USE DESIGNATION:	TOTAL ACREAGE: 41.82

ZONING AND LAND USE OF SURROUNDING PROPERTIES

NORTH:	B4, PUD (R2, R3)
EAST:	A1
SOUTH:	A1-SU, PUD (R2, R3)
WEST:	PUD (R2, R3)

KENDALL COUNTY PARCEL IDENTIFICATION NUMBER(S)

02-10-300-017			

United City of Yorkville
800 Game Farm Road
Yorkville, Illinois, 60560
Telephone: 630-553-4350
Fax: 630-553-7575
Website: www.yorkville.il.us

APPLICATION FOR REZONING

ATTORNEY INFORMATION	
NAME: Kyle C. Barry	COMPANY: McGuireWoods LLP
MAILING ADDRESS: 1 North Old State Capitol Plaza Suite 410	
CITY, STATE, ZIP: Springfield, IL 62701	TELEPHONE: 217-527-1282
EMAIL: kbarry@mcguirewoods.com	FAX: 217-527-1290
ENGINEER INFORMATION	
NAME: Jason Cooper	COMPANY: Kimley Horn
MAILING ADDRESS: 570 Lake Cook Rd, Suite 200	
CITY, STATE, ZIP: Deerfield, IL 60015	TELEPHONE: (630) 487-3449
EMAIL: Jason.Cooper@kimley-horn.com	FAX:
LAND PLANNER/SURVEYOR INFORMATION	
NAME:	COMPANY:
MAILING ADDRESS:	
CITY, STATE, ZIP:	TELEPHONE:
EMAIL:	FAX:

ATTACHMENTS

Petitioner must attach a legal description of the property to this application and title it as "Exhibit A".

Petitioner must list the names and addresses of any adjoining or contiguous landowners within five hundred (500) feet of the property that are entitled notice of application under any applicable City Ordinance or State Statute. Attach a separate list to this application and title it as "Exhibit B".

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Yorkville, Illinois, 60560
Telephone: 630-553-4350
Fax: 630-553-7575
Website: www.yorkville.il.us

APPLICATION FOR REZONING

REZONING STANDARDS

PLEASE STATE THE EXISTING ZONING CLASSIFICATION(S) AND USES OF THE PROPERTY WITHIN THE GENERAL AREA OF THE PROPOSED REZONED PROPERTY:

Ordinance 2006-126 Authorizing Execution of Annexation Agreement of the Bristol Ridge Subdivision

PLEASE STATE THE TREND OF DEVELOPMENT, IF ANY, IN THE GENERAL AREA OF THE PROPERTY IN QUESTION, INCLUDING CHANGES, IF ANY, WHICH HAVE TAKEN PLACE SINCE THE DAY THE PROPERTY IN QUESTION WAS PLACED IN ITS PRESENT ZONING CLASSIFICATION:

February 22, 2007 / May 15, 2007

PLEASE STATE THE EXTENT TO WHICH PROPERTY VALUES ARE DIMINISHED BY THE PARTICULAR ZONING RESTRICTIONS:

Petitioner seeks to withdraw the Kendall County Parcel identified above from the Bristol Ridge Annexation Agreement and Bristol Ridge Planned Unit Development. Petitioner will further seek to rezone this parcel to Agricultural District Use in which, solar energy development is allowable as a Special Use.

This withdrawal is requested to avoid affecting the zoning of neighboring parcels also included in the Bristol Ridge PUD and now owned by a different entity. A letter documenting that owner's consent to this withdrawal is attached to this application.

PLEASE STATE THE EXTENT TO WHICH THE DESTRUCTION OF PROPERTY VALUES OF PETITIONER PROMOTES THE HEALTH, SAFETY, MORALS, AND GENERAL WELFARE OF THE PUBLIC:

The Project would create approximately 50-75 jobs during the approximately 4 to 6-month construction period, generating property tax revenue of approximately $840,000 over 30 years. Unlike nearly all other forms of development (residential, commercial, or industrial), the community would benefit from the significant economic benefits mentioned above without stressing community infrastructure – no new children in schools, no use of water and sewer systems, extremely limited use of roads, and little to no need for police or fire departments.

The proposed facility under this rezoning effort will produce enough electricity to power approximately 1,050 homes. The EPA Clean Energy Equivalencies Calculator estimates an offset of approximately 8,235 metric tons of carbon dioxide which is the equivalent of removing 1,774 gas-powered cars from the roads, or consuming 926,600 gallons of gasoline.

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APPLICATION FOR REZONING

REZONING STANDARDS

PLEASE STATE THE LENGTH OF TIME THE PROPERTY HAS BEEN VACANT AS ZONED CONSIDERED IN THE CONTEXT OF LAND DEVELOPMENT IN THE AREA IN THE VICINITY OF THE SUBJECT PROPERTY:

The parcel has remained vacant since its annexation by Yorkville in 2006. The bulk of the adjoining land remains in agricultural production. North of Galena road, the Village of Montgomery has expanded residential development with home construction and sales in recent years.

PLEASE STATE THE COMMUNITY NEED FOR THE PROPOSED LAND USE:

The proposed use for the re-zoned property will promote the general welfare of the community by contributing new jobs during the construction of the solar facility and $840,000 over 30 years in new tax revenues to the community. The proposed use will also help shore up the electric grid and enhance its reliability in the immediate vicinity of the property by installing a new source for generating clean, pollution-free electricity.

WITH RESPECT TO THE SUBJECT PROPERTY, PLEASE STATE THE CARE WITH WHICH THE COMMUNITY HAS UNDERTAKEN TO PLAN ITS LAND USE DEVELOPMENT:

The proposed use is consistent with the City of Yorkville's Comprehensive Plan by promoting sustainable energy infrastructure that will also support the City's energy efficiency goals for homeowners through community solar subscriptions.

The parcel is currently listed as undeveloped residential property (Section 2: Community Characteristics and Land Use Trends), Per Comprehensive Plan Table 2.17, Residential Built-Out Projections, it could be up to 89 years before this parcel, part of the Undeveloped Residential Zoning Area Capacity, is needed for residential use.

PLEASE STATE THE IMPACT THAT SUCH RECLASSIFICATION WILL HAVE UPON TRAFFIC AND TRAFFIC CONDITIONS ON SAID ROUTES; THE EFFECT, IF ANY, SUCH RECLASSIFICATION AND/OR ANNEXATION WOULD HAVE UPON EXISTING ACCESSES TO SAID ROUTES; AND THE IMPACT OF ADDITIONAL ACCESSES AS REQUESTED BY THE PETITIONER UPON TRAFFIC AND TRAFFIC CONDITIONS AND FLOW ON SAID ROUTES (ORD. 1976-43, 11-4-1976):

The resulting use of this parcel as proposed by this application package is that of a solar energy facility. Petitioner anticipates minimal construction traffic (approximately 25 vehicles per day) on Cannonball Trail during the 4-6 months of construction activity. Post-construction traffic is expected to be limited to regular maintenance of of the facility using 1-ton service vehicles, a few times per year.

United City of Yorkville
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APPLICATION FOR REZONING

REZONING STANDARDS

PLEASE STATE THE RELATIVE GAIN TO THE PUBLIC AS COMPARED TO THE HARDSHIP IMPOSED UPON THE INDIVIDUAL PROPERTY OWNER:

The property owner is a real estate investor with a very long-term vision for his various properties. He is not negatively affected by this change.

The public gains by the environmental benefits of clean, renewable energy, consistent with the environmental and energy-production goals established by the State of Illinois.

PLEASE STATE THE SUITABILITY OF THE SUBJECT PROPERTY FOR THE ZONED PURPOSES:

Rezoning the property to comply with the rules of the Agricultural district is consistent and appropriate with the current use and will allow for the proposed solar energy use to advance under Yorkville's zoning ordinance.

AGREEMENT

I VERIFY THAT ALL THE INFORMATION IN THIS APPLICATION IS TRUE TO THE BEST OF MY KNOWLEDGE. I UNDERSTAND AND ACCEPT ALL REQUIREMENTS AND FEES AS OUTLINED AS WELL AS ANY INCURRED ADMINISTRATIVE AND PLANNING CONSULTANT FEES WHICH MUST BE CURRENT BEFORE THIS PROJECT CAN PROCEED TO THE NEXT SCHEDULED COMMITTEE MEETING.

I UNDERSTAND ALL OF THE INFORMATION PRESENTED IN THIS DOCUMENT AND UNDERSTAND THAT IF AN APPLICATION BECOMES DORMANT IT IS THROUGH MY OWN FAULT AND I MUST THEREFORE FOLLOW THE REQUIREMENTS OUTLINED ABOVE.

Adam M. Beal — 2.9.23

PETITIONER SIGNATURE Adam M. Beal - Authorized Representative — DATE

OWNER HEREBY AUTHORIZES THE PETITIONER TO PURSUE THE APPROPRIATE ENTITLEMENTS ON THE PROPERTY.

Landowner's Approval documented in attached letter — February 8, 2023

OWNER SIGNATURE — DATE

THIS APPLICATION MUST BE NOTARIZED PLEASE NOTARIZE HERE:

Application for Rezoning
TPE IL KE106

STATE OF Nevada)
)
COUNTY OF Clark)

This instrument was acknowledged before me on February 9, 2023 by Adam Beal, as the Authorized Representative of TPE IL KE106, LLC, a Delaware limited liability company.

PEGGY PAAS
Notary Public, State of Nevada
Appointment No. 08-6951-1
My Appt. Expires Jun 6, 2024

(Signature of Notary Public)

(Seal)

Landowner letter in lieu of form signature

Daniel B. Light
104 S. Wynstone Park Drive
North Barrington, IL 60010

February 8, 2023

Krysti Barksdale-Noble
Community Development Director
United City of Yorkville
800 Game Farm Road
Yorkville, IL 60560

Dear Ms. Barksdale-Noble,

Re: Solar Energy Development on Kendal County Parcels

I acquired Kendall County Parcels 02-15-126-004 (54.23 acres) and 02-10-300-017 (41.82 acres) on August 8, 2017 from First Midwest Trust through a Trustee's Deed recorded with the Kendall County Recorder's Office on August 31, 2017 (#201700013916).

On November 02, 2022, I executed two "Real Estate Lease Option Agreements" with Turning Point Energy affiliates TPE IL KE105, LLC and TPE IL KE106, LLC, both Delaware limited liability companies. The purpose of each of these Agreements is the future "construction, operation, maintenance, and decommissioning of a photovoltaic solar project" on each of the above-referenced parcels.

In consideration of the United City of Yorkville's permitting timeline and a desire to initiate and advance that process, I hereby authorize TPE IL KE105, LLC and TPE IL KE106, LLC and their affiliates to file applications with the United City of Yorkville for the following purposes:

1) Agreement Amendment for the withdrawal of the above-referenced parcels from the Bristol Ridge Planned Unit Development subject to an Annexation Agreement adopted by Yorkville Ordinance 2006-126; and
2) Rezoning of said parcels to "A-1 – Agricultural District"; and
3) Variance to allow for a minimal solar panel mounting height lower than 10 feet above ground level; and
4) Special Use for the construction, operation, maintenance, and decommissioning of a photovoltaic solar project on each of the above-referenced parcels; and

5) Any other necessary applications and/or forms related to the solar energy efforts described in items #1-4, above.

A December 5, 2022 email from Jason Engberg, Senior Planner, United City of Yorkville, to Scott Osborn, Project Developer, Turning Point Energy states as follows: "To ensure that the property does not lose any of its existing entitlements prior to the construction of the solar farm, we will add language to the amended agreement which will state that the rezone, special use, and amendment (if approved) will not go into effect until a certain date or until a building permit is issued for the solar farms." Consistent with this language, it is my intention that the existing entitlement on my parcels will not change until a building permit is issued for the proposed solar facilities and the options to lease the property to TPE IL KE105, LLC and TPE IL KE106 are exercised by the optionee.

Any correspondence regarding this authorization may be delivered to me at my business address above with copies to:

1) Shannon Light, 104 S. Wynstone Park Drive, North Barrington, IL 60010; and
2) Turning Point Energy, 3720 South Dahlia Street, Denver, CO 80237

Sincerely,

Daniel B. Light

STATE OF Illinois)
)
COUNTY OF LAKE)

On February 8, 2023, before me, Sheryl McConney, personally appeared the above-named Daniel B. Light, who acknowledged the foregoing instrument to be his free act and deed.

WITNESS my hand and official seal.

OFFICIAL SEAL
SHERRY L MCCONNEY
NOTARY PUBLIC - STATE OF ILLINOIS
MY COMMISSION EXPIRES:10/17/24

Notary Public

Sheryl L McConney

Printed Name:

My commission expires: 10/17/24

Exhibit A to Application Forms

Legal Description – TPE IL KE106, LLC (02-10-300-017)

Note: This legal description is from the Trustee's Deed dated August 8, 2017 between First Midwest Bank and Daniel B. Light; Recorded Kendall County, IL 8/31/2017 #201700013916

Legal Description:

That part of the following described parcels lying easterly of the centerline of Cannonball Trail:

The South ½ of the Southwest ¼ of Section 10, Township 37 North, Range 7 East of the Third Principal Meridian; also the South ½ of the Southeast ¼ of Section 10, Township 37 North, Range 7 East of the Third Principal Meridian lying Westerly of the West line of lands conveyed be Nelson C. Rider to Jerry W. Rider by Warranty Deed Dated October 15, 1911 and Recorded in Book 66 as Page 255 and Depicted in Plat Book 1 at Page 62; all in Kendall County, Illinois.

Exhibit B

ROBERTA SILAGYI IRRVOC TR
%ANDREW SILAGYI
8312 B GALENA RD
BRISTOL, IL, 60512

MICHAEL MIERWINSKI
1687 N CANNONBALL TRL
BRISTOL, IL, 60512

% L B CONSTRUCTION INC LIGHT DANIEL B
104 S WYNSTONE PARK DR
NORTH BARRINGTON, IL, 60010

DANIEL J KRAMER TR NO 100
% MTR FARMS
10735 CHICAGO RD
WATERMAN, IL, 60556

ROBERTA SILAGYI IRRVOC TR
% JEROME SILAGYI
606 INARED CT
MECHANICSBURG, PA, 17055

DANIEL B LIGHT
%LB CONSTRUCTION INC
104 S WYNSTONE PARK DR
BARRINGTON, IL, 60010

% L B CONSTRUCTION INC LIGHT DANIEL B
104 S WYNSTONE PARK DR
NORTH BARRINGTON, IL, 60010

DANIEL J KRAMER TR NO 100
% MTR FARMS
10735 CHICAGO RD
WATERMAN, IL, 60556

FOX VALLEY FAMILY YMCA INC
3875 ELDAMAIN RD
PLANO, IL, 60545

BLACKBERRY HILL CONGREGATION OF JEHOVAHS WITNESSES
1700 CANNONBALL TRL
YORKVILLE, IL, 60560

ROBERT VELAZQUEZ
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MICHAEL MIERWINSKI
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BRISTOL, IL, 60512

United City of Yorkville
800 Game Farm Road
Yorkville, Illinois, 60560
Telephone: 630-553-4350
Fax: 630-553-7575
Website: www.yorkville.il.us

APPLICATION FOR VARIANCE

DATE: 02/03/2023	PZC NUMBER:	DEVELOPMENT NAME: TPE IL KE106, LLC

PETITIONER INFORMATION

NAME: Scott Osborn	COMPANY: TPE IL KE106, LLC
MAILING ADDRESS: 3720 S Dahlia St	
CITY, STATE, ZIP: Denver, CO 80237	TELEPHONE: ◉ BUSINESS ○ HOME (303) 618-9570
EMAIL: sosborn@tpoint-e.com	FAX:

PROPERTY INFORMATION

NAME OF HOLDER OF LEGAL TITLE: Daniel B. Light

IF LEGAL TITLE IS HELD BY A LAND TRUST, LIST THE NAMES OF ALL HOLDERS OF ANY BENEFICIAL INTEREST THEREIN:

PROPERTY STREET ADDRESS: 1700 Cannonball Trail

DESCRIPTION OF PROPERTY'S PHYSICAL LOCATION:

East of Cannonball Trail, North of BNSF Rail line and Oak Street, south of Galena Rd, and west of Blackberry Creek and Kennedy Road

CURRENT ZONING CLASSIFICATION: PUD (underlying: R2, R3)

ZONING AND LAND USE OF SURROUNDING PROPERTIES

NORTH: B4, PUD (R2, R3)

EAST: A1

SOUTH: A1-SU, PUD (R2, R3)

WEST: PUD (R2, R3)

KENDALL COUNTY PARCEL IDENTIFICATION NUMBER(S)

02-10-300-017			

United City of Yorkville
800 Game Farm Road
Yorkville, Illinois, 60560
Telephone: 630-553-4350
Fax: 630-553-7575
Website: www.yorkville.il.us

APPLICATION FOR VARIANCE

ATTORNEY INFORMATION	
NAME: Kyle C. Barry	COMPANY: McGuireWoods LLP
MAILING ADDRESS: 1 North Old State Capitol Plaza Suite 410	
CITY, STATE, ZIP: Springfield, IL 62701	TELEPHONE: 217-527-1282
EMAIL: kbarry@mcguirewoods.com	FAX: 217-527-1290
ENGINEER INFORMATION	
NAME: Jason Cooper	COMPANY: Kimley Horn
MAILING ADDRESS: 570 Lake Cook Rd, Suite 200	
CITY, STATE, ZIP: Deerfield, IL 60015	TELEPHONE: (630) 487-3449
EMAIL: Jason.Cooper@kimley-horn.com	FAX:
LAND PLANNER/SURVEYOR INFORMATION	
NAME:	COMPANY:
MAILING ADDRESS:	
CITY, STATE, ZIP:	TELEPHONE:
EMAIL:	FAX:

ATTACHMENTS

Petitioner must attach a legal description of the property to this application and title it as "Exhibit A".

Petitioner must list the names and addresses of any adjoining or contiguous landowners within 500 feet of the property that are entitled notice of application under any applicable City Ordinance or State Statute. Attach a separate list to this application and title it as "Exhibit B".

VARIANCE STANDARDS

PLEASE CONFIRM THE PROPOSED VARIATION IS CONSISTENT WITH THE OFFICIAL COMPREHENSIVE PLAN AND OTHER DEVELOPMENT STANDARDS AND POLICIES OF THE CITY.

Ordinance 2006-126 Authorizing Execution of Annexation Agreement of the Bristol Ridge Subdivision

United City of Yorkville
800 Game Farm Road
Yorkville, Illinois, 60560
Telephone: 630-553-4350
Fax: 630-553-7575
Website: www.yorkville.il.us

APPLICATION FOR VARIANCE

VARIANCE STANDARDS

PLEASE STATE THE VARIANCE REQUESTED AND THE CITY ORDINANCE INCLUDING THE SECTION NUMBERS TO BE VARIED:

February 22, 2007 / May 15, 2007

PLEASE STATE HOW THE PARTICULAR SURROUNDINGS, SHAPE OR TOPOGRAPHICAL CONDITIONS OF THE SPECIFIC PROPERTY INVOLVED, A PARTICULAR HARDSHIP TO THE OWNER WOULD RESULT, AS DISTINGUISHED FROM A MERE INCONVENIENCE, IF THE STRICT LETTER OF REGULATIONS WAS CARRIED OUT:

Petitioner seeks to withdraw the Kendall County Parcel identified above from the Bristol Ridge Annexation Agreement and Bristol Ridge Planned Unit Development. Petitioner will further seek to rezone this parcel to Agricultural District Use in which, solar energy development is allowable as a Special Use.

This withdrawal is requested to avoid affecting the zoning of neighboring parcels also included in the Bristol Ridge PUD and now owned by a different entity. A letter documenting that owner's consent to this withdrawal is attached to this application.

PLEASE STATE HOW THE CONDITIONS UPON WHICH THE APPLICATION FOR A VARIATION IS BASED ARE UNIQUE TO THE PROPERTY FOR WHICH THE VARIATION IS SOUGHT AND ARE NOT APPLICABLE, GENERALLY, TO OTHER PROPERTY WITHIN THE SAME ZONING CLASSIFICATION:

The Project would create approximately 50-75 jobs during the approximately 4 to 6-month construction period, generating property tax revenue of approximately $840,000 over 30 years. Unlike nearly all other forms of development (residential, commercial, or industrial), the community would benefit from the significant economic benefits mentioned above without stressing community infrastructure – no new children in schools, no use of water and sewer systems, extremely limited use of roads, and little to no need for police or fire departments.

The proposed facility under this rezoning effort will produce enough electricity to power approximately 1,050 homes. The EPA Clean Energy Equivalencies Calculator estimates an offset of approximately 8,235 metric tons of carbon dioxide which is the equivalent of removing 1,774 gas-powered cars from the roads, or consuming 926,600 gallons of gasoline.

PLEASE STATE HOW THE ALLEGED DIFFICULTY OR HARDSHIP IS CAUSED BY THIS TITLE AND HAS NOT BEEN CREATED BY ANY PERSON PRESENTLY HAVING AN INTEREST IN THE PROPERTY:

To petitioner's knowledge, no person presently having an interest in the property was involved in the drafting of the Alternative Energy Section of the Zoning Ordinance.

The minimum clearance of 10 feet above surface level was suggested to have originated with a concern that individuals could be injured from climbing on, and then sliding down the surface of the panels. For this project, the proposed structures are not climbable, and the array will be fenced for safety and security.

The height requirement would impose an unnecessary hardship that would cause the project to use more concrete and increase visibility while offering no positive benefits.

United City of Yorkville
800 Game Farm Road
Yorkville, Illinois, 60560
Telephone: 630-553-4350
Fax: 630-553-7575
Website: www.yorkville.il.us

APPLICATION FOR VARIANCE

VARIANCE STANDARDS

PLEASE STATE HOW THE GRANTING OF THE VARIATION WILL NOT BE DETRIMENTAL TO THE PUBLIC WELFARE OR INJURIOUS TO OTHER PROPERTY OR IMPROVEMENTS IN THE NEIGHBORHOOD IN WHICH THE PROPERTY IS LOCATED:

The proposed variation will be beneficial to the public welfare. It will minimize the appearance of the Project for those who live in, and pass through the Bristol area on Cannonball Trail. It will further reduce the environmental impact of the construction effort by allowing the Project to use steel auger anchors versus concrete pier foundations.

PLEASE STATE HOW THE PROPOSED VARIATION WILL NOT IMPAIR AN ADEQUATE SUPPLY OF LIGHT AND AIR TO ADJACENT PROPERTY, OR SUBSTANTIALLY INCREASE THE CONGESTION IN THE PUBLIC STREETS, OR INCREASE THE DANGER TO THE PUBLIC SAFETY, OR SUBSTANTIALLY DIMINISH OR IMPAIR PROPERTY VALUES WITHIN THE NEIGHBORHOOD:

The proposed variation will allow the structures to be placed lower to the ground, thereby diminishing visual impacts on neighbors and drivers. As a result, the variance will reduce any potential impacts to air and light on neighboring properties, and will reduce the likelihood that the project will lead to any diminished property values.

AGREEMENT

I VERIFY THAT ALL THE INFORMATION IN THIS APPLICATION IS TRUE TO THE BEST OF MY KNOWLEDGE. I UNDERSTAND AND ACCEPT ALL REQUIREMENTS AND FEES AS OUTLINED AS WELL AS ANY INCURRED ADMINISTRATIVE AND PLANNING CONSULTANT FEES WHICH MUST BE CURRENT BEFORE THIS PROJECT CAN PROCEED TO THE NEXT SCHEDULED COMMITTEE MEETING.

I UNDERSTAND ALL OF THE INFORMATION PRESENTED IN THIS DOCUMENT AND UNDERSTAND THAT IF AN APPLICATION BECOMES DORMANT IT IS THROUGH MY OWN FAULT AND I MUST THEREFORE FOLLOW THE REQUIREMENTS OUTLINED ABOVE.

Adam M. Beal — 2.9.23

PETITIONER SIGNATURE Adam M. Beal - Authorized Representative — DATE

OWNER HEREBY AUTHORIZES THE PETITIONER TO PURSUE THE APPROPRIATE ENTITLEMENTS ON THE PROPERTY.

Landowner's Approval documented in attached letter — February 8, 2023

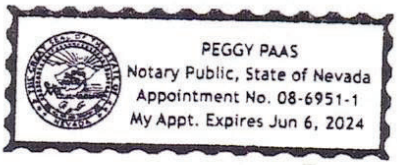
OWNER SIGNATURE — DATE

THIS APPLICATION MUST BE NOTARIZED PLEASE NOTARIZE HERE:

Application for Variance
TPE IL KE106

STATE OF Nevada)
)
COUNTY OF Clark)

This instrument was acknowledged before me on February 9, 2023 by Adam Beal, as the Authorized Representative of TPE IL KE106, LLC, a Delaware limited liability company.



(Signature of Notary Public)

(Seal)

Landowner letter in lieu of form signature

Daniel B. Light
104 S. Wynstone Park Drive
North Barrington, IL 60010

February 8, 2023

Krysti Barksdale-Noble
Community Development Director
United City of Yorkville
800 Game Farm Road
Yorkville, IL 60560

Dear Ms. Barksdale-Noble,

Re: Solar Energy Development on Kendal County Parcels

I acquired Kendall County Parcels 02-15-126-004 (54.23 acres) and 02-10-300-017 (41.82 acres) on August 8, 2017 from First Midwest Trust through a Trustee's Deed recorded with the Kendall County Recorder's Office on August 31, 2017 (#201700013916).

On November 02, 2022, I executed two "Real Estate Lease Option Agreements" with Turning Point Energy affiliates TPE IL KE105, LLC and TPE IL KE106, LLC, both Delaware limited liability companies. The purpose of each of these Agreements is the future "construction, operation, maintenance, and decommissioning of a photovoltaic solar project" on each of the above-referenced parcels.

In consideration of the United City of Yorkville's permitting timeline and a desire to initiate and advance that process, I hereby authorize TPE IL KE105, LLC and TPE IL KE106, LLC and their affiliates to file applications with the United City of Yorkville for the following purposes:

1) Agreement Amendment for the withdrawal of the above-referenced parcels from the Bristol Ridge Planned Unit Development subject to an Annexation Agreement adopted by Yorkville Ordinance 2006-126; and
2) Rezoning of said parcels to "A-1 – Agricultural District"; and
3) Variance to allow for a minimal solar panel mounting height lower than 10 feet above ground level; and
4) Special Use for the construction, operation, maintenance, and decommissioning of a photovoltaic solar project on each of the above-referenced parcels; and

5) Any other necessary applications and/or forms related to the solar energy efforts described in items #1-4, above.

A December 5, 2022 email from Jason Engberg, Senior Planner, United City of Yorkville, to Scott Osborn, Project Developer, Turning Point Energy states as follows: "To ensure that the property does not lose any of its existing entitlements prior to the construction of the solar farm, we will add language to the amended agreement which will state that the rezone, special use, and amendment (if approved) will not go into effect until a certain date or until a building permit is issued for the solar farms." Consistent with this language, it is my intention that the existing entitlement on my parcels will not change until a building permit is issued for the proposed solar facilities and the options to lease the property to TPE IL KE105, LLC and TPE IL KE106 are exercised by the optionee.

Any correspondence regarding this authorization may be delivered to me at my business address above with copies to:

1) Shannon Light, 104 S. Wynstone Park Drive, North Barrington, IL 60010; and
2) Turning Point Energy, 3720 South Dahlia Street, Denver, CO 80237

Sincerely,

Daniel B. Light

STATE OF Illinois)
)
COUNTY OF LAKE)

On February 8, 2023, before me, Sheryl McConney, personally appeared the above-named Daniel B. Light, who acknowledged the foregoing instrument to be his free act and deed.

WITNESS my hand and official seal.

OFFICIAL SEAL
SHERRY L MCCONNEY
NOTARY PUBLIC - STATE OF ILLINOIS
MY COMMISSION EXPIRES:10/17/24

Notary Public

Sheryl L McConney

Printed Name:

My commission expires: 10/17/24

Exhibit A to Application Forms

Legal Description – TPE IL KE106, LLC (02-10-300-017)

Note: This legal description is from the Trustee's Deed dated August 8, 2017 between First Midwest Bank and Daniel B. Light; Recorded Kendall County, IL 8/31/2017 #201700013916

Legal Description:

That part of the following described parcels lying easterly of the centerline of Cannonball Trail:

The South ½ of the Southwest ¼ of Section 10, Township 37 North, Range 7 East of the Third Principal Meridian; also the South ½ of the Southeast ¼ of Section 10, Township 37 North, Range 7 East of the Third Principal Meridian lying Westerly of the West line of lands conveyed be Nelson C. Rider to Jerry W. Rider by Warranty Deed Dated October 15, 1911 and Recorded in Book 66 as Page 255 and Depicted in Plat Book 1 at Page 62; all in Kendall County, Illinois.

Exhibit B

ROBERTA SILAGYI IRRVOC TR
%ANDREW SILAGYI
8312 B GALENA RD
BRISTOL, IL, 60512

MICHAEL MIERWINSKI
1687 N CANNONBALL TRL
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DANIEL B LIGHT
%LB CONSTRUCTION INC
104 S WYNSTONE PARK DR
BARRINGTON, IL, 60010

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PLANO, IL, 60545

BLACKBERRY HILL CONGREGATION OF JEHOVAHS WITNESSES
1700 CANNONBALL TRL
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United City of Yorkville
800 Game Farm Road
Yorkville, Illinois, 60560
Telephone: 630-553-4350
Fax: 630-553-7575
Website: www.yorkville.il.us

APPLICATION FOR SPECIAL USE

DATE: 02/03/2023	PZC NUMBER:	DEVELOPMENT NAME: TPE IL KE106, LLC

PETITIONER INFORMATION

NAME: Scott Osborn	COMPANY: TPE IL KE106, LLC
MAILING ADDRESS: 3720 S Dahlia St	
CITY, STATE, ZIP: Denver, CO 80237	TELEPHONE: ◉ BUSINESS ○ HOME (303) 618-9570
EMAIL: sosborn@tpoint-e.com	FAX:

PROPERTY INFORMATION

NAME OF HOLDER OF LEGAL TITLE: Daniel B. Light

IF LEGAL TITLE IS HELD BY A LAND TRUST, LIST THE NAMES OF ALL HOLDERS OF ANY BENEFICIAL INTEREST THEREIN:

PROPERTY STREET ADDRESS: 1700 Cannonball Trail

DESCRIPTION OF PROPERTY'S PHYSICAL LOCATION:
East of Cannonball Trail, North of BNSF Rail line and Oak Street, south of Galena Rd, and west of Blackberry Creek and Kennedy Road

CURRENT ZONING CLASSIFICATION: PUD (underlying: R2, R3)	COMPREHENSIVE PLAN FUTURE LAND USE DESIGNATION: To petitioner's

REQUESTED SPECIAL USE:
Solar Farm (Freestanding Solar Energy Systems)

ZONING AND LAND USE OF SURROUNDING PROPERTIES

NORTH: B4, PUD (R2, R3)	
EAST: A1	
SOUTH: A1-SU, PUD (R2, R3)	
WEST: PUD (R2, R3)	

KENDALL COUNTY PARCEL IDENTIFICATION NUMBER(S)

02-10-300-017			

United City of Yorkville
800 Game Farm Road
Yorkville, Illinois, 60560
Telephone: 630-553-4350
Fax: 630-553-7575
Website: www.yorkville.il.us

APPLICATION FOR SPECIAL USE

ATTORNEY INFORMATION	
NAME: Kyle C. Barry	COMPANY: McGuireWoods LLP
MAILING ADDRESS: 1 North Old State Capitol Plaza Suite 410	
CITY, STATE, ZIP: Springfield, IL 62701	TELEPHONE: 217-527-1282
EMAIL: kbarry@mcguirewoods.com	FAX: 217-527-1290
ENGINEER INFORMATION	
NAME: Jason Cooper	COMPANY: Kimley Horn
MAILING ADDRESS: 570 Lake Cook Rd, Suite 200	
CITY, STATE, ZIP: Deerfield, IL 60015	TELEPHONE: (630) 487-3449
EMAIL: Jason.Cooper@kimley-horn.com	FAX:
LAND PLANNER/SURVEYOR INFORMATION	
NAME:	COMPANY:
MAILING ADDRESS:	
CITY, STATE, ZIP:	TELEPHONE:
EMAIL:	FAX:

ATTACHMENTS

Petitioner must attach a legal description of the property to this application and title it as "Exhibit A".

Petitioner must list the names and addresses of any adjoining or contiguous landowners within five hundred (500) feet of the property that are entitled notice of application under any applicable City Ordinance or State Statute. Attach a separate list to this application and title it as "Exhibit B".

United City of Yorkville
800 Game Farm Road
Yorkville, Illinois, 60560
Telephone: 630-553-4350
Fax: 630-553-7575
Website: www.yorkville.il.us

APPLICATION FOR SPECIAL USE

SPECIAL USE STANDARDS

PLEASE STATE HOW THE ESTABLISHMENT, MAINTENANCE OR OPERATION OF THE SPECIAL USE WILL NOT BE UNREASONABLY DETRIMENTAL TO OR ENDANGER THE PUBLIC HEALTH, SAFETY, MORALS, COMFORT OR GENERAL WELFARE:

Ordinance 2006-126 Authorizing Execution of Annexation Agreement of the Bristol Ridge Subdivision

PLEASE STATE HOW THE SPECIAL USE WILL NOT BE INJURIOUS TO THE USE AND ENJOYMENT OF OTHER PROPERTY IN THE IMMEDIATE VICINITY FOR THE PURPOSE ALREADY PERMITTED, NOR SUBSTANTIALLY DIMINISH AND IMPAIR PROPERTY VALUES WITHIN THE NEIGHBORHOOD:

February 22, 2007 / May 15, 2007

PLEASE STATE HOW THE ESTABLISHMENT OF THE SPECIAL USE WILL NOT IMPEDE THE NORMAL AND ORDERLY DEVELOPMENT AND IMPROVEMENT OF SURROUNDING PROPERTY FOR USES PERMITTED IN THE DISTRICT:

Petitioner seeks to withdraw the Kendall County Parcel identified above from the Bristol Ridge Annexation Agreement and Bristol Ridge Planned Unit Development. Petitioner will further seek to rezone this parcel to Agricultural District Use in which, solar energy development is allowable as a Special Use.

This withdrawal is requested to avoid affecting the zoning of neighboring parcels also included in the Bristol Ridge PUD and now owned by a different entity. A letter documenting that owner's consent to this withdrawal is attached to this application.

PLEASE STATE HOW ADEQUATE UTILITIES, ACCESS ROADS, DRAINAGE OR OTHER NECESSARY FACILITIES HAVE BEEN OR ARE BEING PROVIDED:

The Project would create approximately 50-75 jobs during the approximately 4 to 6-month construction period, generating property tax revenue of approximately $840,000 over 30 years. Unlike nearly all other forms of development (residential, commercial, or industrial), the community would benefit from the significant economic benefits mentioned above without stressing community infrastructure – no new children in schools, no use of water and sewer systems, extremely limited use of roads, and little to no need for police or fire departments.

The proposed facility under this rezoning effort will produce enough electricity to power approximately 1,050 homes. The EPA Clean Energy Equivalencies Calculator estimates an offset of approximately 8,235 metric tons of carbon dioxide which is the equivalent of removing 1,774 gas-powered cars from the roads, or consuming 926,600 gallons of gasoline.

Petitioner retained the services of Cole Rayniak and Associates to prepare a preliminary engineering report to evaluate the effects of th

United City of Yorkville
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APPLICATION FOR SPECIAL USE

SPECIAL USE STANDARDS

PLEASE STATE HOW ADEQUATE MEASURES HAVE BEEN OR WILL BE TAKEN TO PROVIDE INGRESS OR EGRESS SO DESIGNED AS TO MINIMIZE TRAFFIC CONGESTION IN THE PUBLIC STREETS:

The Project will be designed to include all roads and road entrances necessary to provide adequate ingress and egress to its facilities. Construction traffic will include approximately 25 work trucks per day. Considering the low number of work trucks visiting the project site over the construction phase, traffic patterns in the vicinity of the Project will not be impacted. The Project will have minimal traffic upon completion of construction. Landscape maintenance and maintenance to the Project components are anticipated to occur only a few times a year. Existing traffic patterns will not be impacted in the post-construction phase.

PLEASE STATE HOW THE SPECIAL USE SHALL IN ALL OTHER RESPECTS CONFORM TO THE APPLICABLE REGULATIONS OF THE DISTRICT IN WHICH IT IS LOCATED, EXCEPT AS SUCH REGULATIONS MAY IN EACH INSTANCE BE MODIFIED BY THE CITY COUNCIL PURSUANT TO THE RECOMMENDATIONS OF THE PLANNING AND ZONING COMMISSION:

This Application for Special Use is accompanied by an Application for Rezoning requesting a reclassification of the the parcel's zoning district from PUD (underlying: R2, R3) to Agricultural District Use. The proposed use will comply with all requirements of the new zoning classification.

An Application for Rezoning to change this parcel's is included with this Application for Special Use.

The Project will comply with the applicable regulations for the R-2 and R-3 zoning districts as well as the Ordinance. The Project will also comply with all other County requirements, and State and Federal requirements as well.

AGREEMENT

I VERIFY THAT ALL THE INFORMATION IN THIS APPLICATION IS TRUE TO THE BEST OF MY KNOWLEDGE. I UNDERSTAND AND ACCEPT ALL REQUIREMENTS AND FEES AS OUTLINED AS WELL AS ANY INCURRED ADMINISTRATIVE AND PLANNING CONSULTANT FEES WHICH MUST BE CURRENT BEFORE THIS PROJECT CAN PROCEED TO THE NEXT SCHEDULED COMMITTEE MEETING.

I UNDERSTAND ALL OF THE INFORMATION PRESENTED IN THIS DOCUMENT AND UNDERSTAND THAT IF AN APPLICATION BECOMES DORMANT IT IS THROUGH MY OWN FAULT AND I MUST THEREFORE FOLLOW THE REQUIREMENTS OUTLINED ABOVE.

Adam M. Beal — 2.9.23

PETITIONER SIGNATURE Adam M. Beal - Authorized Representative — DATE

OWNER HEREBY AUTHORIZES THE PETITIONER TO PURSUE THE APPROPRIATE ENTITLEMENTS ON THE PROPERTY.

Landowner's Approval documented in attached letter — February 8, 2023

OWNER SIGNATURE — DATE

THIS APPLICATION MUST BE NOTARIZED PLEASE NOTARIZE HERE:

United City of Yorkville
800 Game Farm Road
Yorkville, Illinois, 60560
Telephone: 630-553-4350
Fax: 630-553-7575
Website: www.yorkville.il.us

APPLICANT DEPOSIT ACCOUNT/ ACKNOWLEDGMENT OF FINANCIAL RESPONSIBILITY

PROJECT NUMBER:	FUND ACCOUNT NUMBER:	PROPERTY ADDRESS: 1700 Cannonball Trail

PETITIONER DEPOSIT ACCOUNT FUND:

It is the policy of the United City of Yorkville to require any petitioner seeking approval on a project or entitlement request to establish a Petitioner Deposit Account Fund to cover all actual expenses occurred as a result of processing such applications and requests. Typical requests requiring the establishment of a Petitioner Deposit Account Fund include, but are not limited to, plan review of development approvals/engineering permits. Deposit account funds may also be used to cover costs for services related to legal fees, engineering and other plan reviews, processing of other governmental applications, recording fees and other outside coordination and consulting fees. Each fund account is established with an initial deposit based upon the estimated cost for services provided in the **INVOICE & WORKSHEET PETITION APPLICATION**. This initial deposit is drawn against to pay for these services related to the project or request. Periodically throughout the project review/approval process, the Financially Responsible Party will receive an invoice reflecting the charges made against the account. At any time the balance of the fund account fall below ten percent (10%) of the original deposit amount, the Financially Responsible Party will receive an invoice requesting additional funds equal to one-hundred percent (100%) of the initial deposit if subsequent reviews/fees related to the project are required. In the event that a deposit account is not immediately replenished, review by the administrative staff, consultants, boards and commissions may be suspended until the account is fully replenished. If additional funds remain in the deposit account at the completion of the project, the city will refund the balance to the Financially Responsible Party. A written request must be submitted by the Financially Responsible Party to the city by the 15th of the month in order for the refund check to be processed and distributed by the 15th of the following month. All refund checks will be made payable to the Financially Responsible Party and mailed to the address provided when the account was established.

ACKNOWLEDGMENT OF FINANCIAL RESPONSIBILITY

NAME: Scott Osborn	COMPANY: TPE IL KE106, LLC
MAILING ADDRESS: 3720 S Dahlia St	
CITY, STATE, ZIP: Denver, CO, 80237	TELEPHONE: (303) 618-9570
EMAIL: sosborn@tpoint-e.com	FAX:

FINANCIALLY RESPONSIBLE PARTY:

I acknowledge and understand that as the Financially Responsible Party, expenses may exceed the estimated initial deposit and, when requested by the United City of Yorkville, I will provide additional funds to maintain the required account balance. Further, the sale or other disposition of the property does not relieve the individual or Company/Corporation of their obligation to maintain a positive balance in the fund account, unless the United City of Yorkville approves a Change of Responsible Party and transfer of funds. Should the account go into deficit, all City work may stop until the requested replenishment deposit is received.

Adam M. Beal
PRINT NAME

Authorized Representative
TITLE

Adam M. Beal
SIGNATURE*

2.9.23
DATE

**The name of the individual and the person who signs this declaration must be the same. If a corporation is listed, a corporate officer must sign the declaration (President, Vice-President, Chairman, Secretary or Treasurer)*

INITIAL ENGINEERING/LEGAL DEPOSIT TOTALS

ENGINEERING DEPOSITS:		LEGAL DEPOSITS:	
Up to one (1) acre	$5,000	Less than two (2) acres	$1,000
Over one (1) acre, but less than ten (10) acres	$10,000	Over two (2) acres, but less than ten (10) acres	$2,500
Over ten (10) acres, but less than forty (40) acres	$15,000	Over ten (10) acres	$5,000
Over forty (40) acres, but less than one hundred (100)	$20,000		
In excess of one hundred (100.00) acres	$25,000		

CERTIFIED MAILING
AFFIDAVIT

STATE OF ~~ILLINOIS~~ Nevada (pp))
) SS
COUNTY OF ~~KENDALL~~ Clark (pp))

I/We, Adam Beal for TPE IL KE106, LLC, petitioner, being first duly sworn, do hereby state under oath that to the best of my knowledge the **attached** list is a true, correct and **complete list of all permanent parcel numbers, and names and addresses of owners,** of all lots and parts of lots located within 500 feet (exclusively of any public streets and alleys) of the property legally described on the attached application for annexation, rezoning, special use permit, planned unit development, variation, or other zoning amendment. I further state that said list was obtained from the current tax rolls of the Kendall County Treasurer's Office. I further state that I mailed by U.S. Certified Mail, Return Receipt Requested, a copy of the Public Notice of Public Hearing before the United City of Yorkville Planning and Zoning Commission for the Public Hearing held on Wednesday, _____, at the United City of City Council Chambers, Yorkville, Illinois. The notice was mailed to the attached list of all of the permanent parcel numbers and names and addresses of owners at the U.S. Post office on _____, 20____.

Adam M. Beal
Signature of Petitioner(s)
For TPE IL KE106, LLC

Subscribed and sworn to before me this
9th day of February, 2023

Notary Public

PEGGY PAAS
Notary Public, State of Nevada
Appointment No. 08-6951-1
My Appt. Expires Jun 6, 2024

United City of Yorkville
800 Game Farm Road
Yorkville, Illinois, 60560
Telephone: 630-553-4350
Fax: 630-553-7575
Website: www.yorkville.il.us

APPLICATION FOR PUBLIC HEARING SIGN

PERMIT NUMBER:	**DATE/TIME RECEIVED:**
SITE ADDRESS: 1700 Cannonball Trail	PARCEL NUMBER: 02-15-126-004
SUBDIVISION:	LOT/UNIT:

APPLICANT INFORMATION

NAME: Scott Osborn	TELEPHONE: ○ HOME ◉ BUSINESS (303) 618 9570
ADDRESS: 3720 S Dahlia St	E-MAIL: ○ HOME ○ BUSINESS sosborn@tpoint-e.com
CITY, STATE, ZIP: Denver, CO 80237	FAX:

SIGN INFORMATION

DATE OF PICK UP:	NUMBER OF SIGNS:
DATE OF PUBLIC HEARING:	SIGN RETURN DATE:

The undersigned hereby states that they have acquired Public Hearing Signs from the United City of Yorkville's Community Development Department and agrees to return said sign/s to Yorkville City Hall, 800 Game Farm Road, Yorkville, Illinois, immediately following the date of the public hearing.

Petitioner or Representative agrees to pay to the United City of Yorkville a deposit of $50 for each sign. The deposit will be returned to the petitioner when the public hearing sign/s have been returned to the City.

Petitioner or Representative further agrees to pay to the United City of Yorkville the full amount of the purchase price for each sign not returned to the United City of Yorkville within seven (7) days after the date of the public hearing.

Scott M. Bl
SIGNATURE/AUTHORIZED AGENT

2.9.23
DATE

DATE RETURNED: _____

RECEIVED BY: _____ PZC# _____

Landowner letter in lieu of form signature

Daniel B. Light
104 S. Wynstone Park Drive
North Barrington, IL 60010

February 8, 2023

Krysti Barksdale-Noble
Community Development Director
United City of Yorkville
800 Game Farm Road
Yorkville, IL 60560

Dear Ms. Barksdale-Noble,

Re: Solar Energy Development on Kendal County Parcels

I acquired Kendall County Parcels 02-15-126-004 (54.23 acres) and 02-10-300-017 (41.82 acres) on August 8, 2017 from First Midwest Trust through a Trustee's Deed recorded with the Kendall County Recorder's Office on August 31, 2017 (#201700013916).

On November 02, 2022, I executed two "Real Estate Lease Option Agreements" with Turning Point Energy affiliates TPE IL KE105, LLC and TPE IL KE106, LLC, both Delaware limited liability companies. The purpose of each of these Agreements is the future "construction, operation, maintenance, and decommissioning of a photovoltaic solar project" on each of the above-referenced parcels.

In consideration of the United City of Yorkville's permitting timeline and a desire to initiate and advance that process, I hereby authorize TPE IL KE105, LLC and TPE IL KE106, LLC and their affiliates to file applications with the United City of Yorkville for the following purposes:

1) Agreement Amendment for the withdrawal of the above-referenced parcels from the Bristol Ridge Planned Unit Development subject to an Annexation Agreement adopted by Yorkville Ordinance 2006-126; and
2) Rezoning of said parcels to "A-1 – Agricultural District"; and
3) Variance to allow for a minimal solar panel mounting height lower than 10 feet above ground level; and
4) Special Use for the construction, operation, maintenance, and decommissioning of a photovoltaic solar project on each of the above-referenced parcels; and

5) Any other necessary applications and/or forms related to the solar energy efforts described in items #1-4, above.

A December 5, 2022 email from Jason Engberg, Senior Planner, United City of Yorkville, to Scott Osborn, Project Developer, Turning Point Energy states as follows: "To ensure that the property does not lose any of its existing entitlements prior to the construction of the solar farm, we will add language to the amended agreement which will state that the rezone, special use, and amendment (if approved) will not go into effect until a certain date or until a building permit is issued for the solar farms." Consistent with this language, it is my intention that the existing entitlement on my parcels will not change until a building permit is issued for the proposed solar facilities and the options to lease the property to TPE IL KE105, LLC and TPE IL KE106 are exercised by the optionee.

Any correspondence regarding this authorization may be delivered to me at my business address above with copies to:

1) Shannon Light, 104 S. Wynstone Park Drive, North Barrington, IL 60010; and
2) Turning Point Energy, 3720 South Dahlia Street, Denver, CO 80237

Sincerely,

Daniel B. Light

STATE OF Illinois)
)
COUNTY OF LAKE)

On February 8, 2023, before me, Sheryl McConney, personally appeared the above-named Daniel B. Light, who acknowledged the foregoing instrument to be his free act and deed.

WITNESS my hand and official seal.

OFFICIAL SEAL
SHERRY L MCCONNEY
NOTARY PUBLIC - STATE OF ILLINOIS
MY COMMISSION EXPIRES:10/17/24

Notary Public

Sheryl L McConney

Printed Name:

My commission expires: 10/17/24

Exhibit A to Application Forms

Legal Description – TPE IL KE106, LLC (02-10-300-017)

Note: This legal description is from the Trustee's Deed dated August 8, 2017 between First Midwest Bank and Daniel B. Light; Recorded Kendall County, IL 8/31/2017 #201700013916

Legal Description:

That part of the following described parcels lying easterly of the centerline of Cannonball Trail:

The South ½ of the Southwest ¼ of Section 10, Township 37 North, Range 7 East of the Third Principal Meridian; also the South ½ of the Southeast ¼ of Section 10, Township 37 North, Range 7 East of the Third Principal Meridian lying Westerly of the West line of lands conveyed be Nelson C. Rider to Jerry W. Rider by Warranty Deed Dated October 15, 1911 and Recorded in Book 66 as Page 255 and Depicted in Plat Book 1 at Page 62; all in Kendall County, Illinois.

Exhibit B

ROBERTA SILAGYI IRRVOC TR
%ANDREW SILAGYI
8312 B GALENA RD
BRISTOL, IL, 60512

MICHAEL MIERWINSKI
1687 N CANNONBALL TRL
BRISTOL, IL, 60512

% L B CONSTRUCTION INC LIGHT DANIEL B
104 S WYNSTONE PARK DR
NORTH BARRINGTON, IL, 60010

DANIEL J KRAMER TR NO 100
% MTR FARMS
10735 CHICAGO RD
WATERMAN, IL, 60556

ROBERTA SILAGYI IRRVOC TR
% JEROME SILAGYI
606 INARED CT
MECHANICSBURG, PA, 17055

DANIEL B LIGHT
%LB CONSTRUCTION INC
104 S WYNSTONE PARK DR
BARRINGTON, IL, 60010

% L B CONSTRUCTION INC LIGHT DANIEL B
104 S WYNSTONE PARK DR
NORTH BARRINGTON, IL, 60010

DANIEL J KRAMER TR NO 100
% MTR FARMS
10735 CHICAGO RD
WATERMAN, IL, 60556

FOX VALLEY FAMILY YMCA INC
3875 ELDAMAIN RD
PLANO, IL, 60545

BLACKBERRY HILL CONGREGATION OF JEHOVAHS WITNESSES
1700 CANNONBALL TRL
YORKVILLE, IL, 60560

ROBERT VELAZQUEZ
1996 CANNONBALL TRL
BRISTOL, IL, 60512

DANIEL J KRAMER TR NO 100
% MTR FARMS
10735 CHICAGO RD
WATERMAN, IL, 60556

MICHAEL MIERWINSKI
1687 N CANNONBALL TRL
BRISTOL, IL, 60512

APPENDIX B – ZONING SITE PLAN



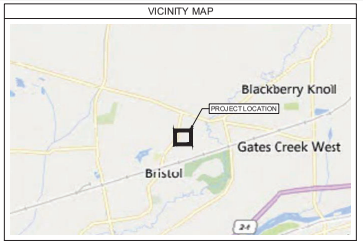
NORTH

GRAPHIC SCALE IN FEET
0 50 100 200

LEGEND

ROAD LABEL	IL-251
PROJECT BOUNDARY	
PROPERTY LINE PER GIS	
RIGHT OF WAY PER GIS	R/W
SETBACK	
EX. OVERHEAD ELECTRIC	EX OHE
EX. GRAVEL/PAVEMENT	
EX. UTILITY POLE	
EX. RESIDENCE/STRUCTURE	
EX. FLOW (DIRECTION AND SLOPE)	XX%
PR. SECURITY FENCE	X
PR. PANEL LIMITS	
PR. UNDERGROUND ELECTRIC	UGE
PR. OVERHEAD ELECTRIC	OHE
PR. ACCESS ROAD	
PR. UTILITY POLE	
PR. EQUIPMENT PAD	
PR. SOLAR ARRAY	
EX. WELL	W
WELL BUFFER	
SOIL BOUNDARY	
PR. STAGING AREA	
PR. LANDSCAPE BUFFER	

VICINITY MAP



SCALE 1" = 5000'

SITE DATA TABLE

PIN #	02-10-300-017
PROPERTY OWNER	DANIEL B LIGHT
SITE ADDRESS	1700 CANNONBALL TRAIL
LEGAL DESCRIPTION	41.83 AC TR LYG S ½ SEC 10-37-7, LYG E CTR/LN CANNONBALL TRL, CITY OF YORKVILLE
ZONING JURISDICTION	CITY OF YORKVILLE*
ZONING	PUD (UNDERLYING: R-2, R-3)
CURRENT LAND USE	FARMLAND WITHOUT BUILDINGS
PROPOSED USE	FREESTANDING SOLAR ENERGY SYSTEM
TOTAL PARCEL AREA	± 41.8 AC
PRELIMINARY DISTURBED AREA	± 32.1 AC
PRELIMINARY SOLAR AREA	± 27.7 AC
AGRICULTURAL ROW SETBACK	100'
AGRICULTURAL PROPERTY LINE SETBACK	50'
SOLAR SIDE YARD SETBACK	8'
SOLAR REAR YARD SETBACK	8'

*ZONING SITE PLAN IS BEING SUBMITTED FOR SPECIAL USE PERMIT TO CONSTRUCT/OPERATE A FREESTANDING SOLAR ENERGY SYSTEM

NOTES

1. THE PURPOSE OF THIS PLAN IS FOR SPECIAL USE PERMIT REVIEW AND APPROVAL BY KENDALL COUNTY TO CONSTRUCT A FREESTANDING SOLAR ENERGY SYSTEM.
2. THIS PLAN WAS PRODUCED UTILIZING GIS RESOURCES AND INFORMATION FROM MULTIPLE SOURCES, INCLUDING KENDALL COUNTY, CITY OF YORKVILLE, GOOGLE EARTH, AND USGS TOPOGRAPHIC INFORMATION.
3. SUBJECT PROPERTY DOES NOT LIE WITHIN A SPECIAL FLOOD HAZARD AS SHOWN ON THE FLOOD INSURANCE RATE MAP (COMMUNITY PANEL 17093C0035H) PUBLISHED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA).
4. THE LOCATIONS OF PROPOSED IMPROVEMENTS, INCLUDING BUT NOT LIMITED TO: FENCING, SOLAR ARRAY RACKING, INVERTER/TRANSFORMER PADS, OVERHEAD POLES AND LINES, ETC., SHOWN ARE APPROXIMATE AND ARE SUBJECT TO MODIFICATION DUE TO SITE CONDITIONS, ADDITIONAL PERMITTING REQUIREMENTS, EQUIPMENT SPECIFICATIONS, AND/OR OTHER CONSTRAINTS DURING FINAL ENGINEERING.
5. PROJECT AREA, INCLUDING CONSTRUCTION STAGING AREAS, WILL BE CLEARED AND GRUBBED AS NECESSARY, RETAINING PRE-DEVELOPMENT DRAINAGE PATTERNS TO THE BEST EXTENT POSSIBLE. CONSTRUCTION STAGING AND AREAS SUBJECT TO RUTTING DURING CONSTRUCTION WILL BE TEMPORARILY STABILIZED WITH GRAVEL. SOIL CONDITIONS AND EQUIPMENT LOADS WILL DETERMINE FINAL DESIGN.
6. ALL DIMENSIONS SHOWN ARE AT 90 DEGREES UNLESS OTHERWISE NOTED.
7. CONTRACTOR SHALL CALL AT LEAST 72 HOURS PRIOR TO BEGINNING CONSTRUCTION OR EXCAVATION TO HAVE EXISTING UTILITIES LOCATED. ADDITIONALLY, CONTRACTOR SHALL CONTACT ANY LOCAL UTILITIES THAT PROVIDE THEIR OWN LOCATOR SERVICES.
8. CONTRACTOR SHALL MAINTAIN ACCESS AND UTILITY SERVICES TO ANY REMAINING BUILDING(S) OR ADJACENT BUILDING(S) THROUGHOUT THE DEMOLITION AND CONSTRUCTION PHASES. EXISTING IMPROVEMENTS DAMAGED DURING CONSTRUCTION SHALL BE REPLACED/RESTORED TO THE SATISFACTION OF THE OWNER BY THE CONTRACTOR RESPONSIBLE FOR THE DAMAGE.
9. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE TO PROVIDE SIGNS, BARRICADES, WARNING LIGHTS, GUARD RAILS, AND EMPLOY FLAGGERS AS NECESSARY WHEN CONSTRUCTION ENDANGERS EITHER VEHICULAR OR PEDESTRIAN TRAFFIC. THESE DEVICES SHALL REMAIN IN PLACE UNTIL THE TRAFFIC MAY PROCEED NORMALLY AGAIN.
10. SITE WILL HAVE NO DEDICATIONS FOR OPEN SPACE, NATURAL AREA, HISTORIC BUILDING(S)/STRUCTURE(S), OR STORMWATER MANAGEMENT FACILITIES.
11. SITE WILL NOT INCLUDE WATER SOURCE OR SEWAGE DISPOSAL. APPROXIMATE LOCATION OF EXISTING WATER WELL LOCATIONS SHOWN PER THE ILLINOIS WATER WELL INTERACTIVE MAP ONLINE.
12. STORMWATER MANAGEMENT FACILITIES TO BE PROVIDED AS REQUIRED BY COUNTY AND/OR NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMITTING. REQUIREMENTS TO BE DETERMINED DURING FINAL ENGINEERING.
13. THE MAXIMUM HEIGHTS OF FREESTANDING SOLAR ENERGY SYSTEMS SHALL BE SUBJECT TO SPECIAL USE CONDITIONS.
14. THE MINIMUM CLEARANCE BETWEEN THE LOWEST POINT OF THE SYSTEM AND THE SURFACE ON WHICH THE SYSTEM IS MOUNTED IS 10 FT.
15. SOLAR PANELS WILL BE DESIGNED WITH ANTI-REFLECTIVE COATING TO MINIMIZE GLARE.
16. COLLECTION LINES WITHIN THE SOLAR FARM WILL BE LOCATED AND MAINTAINED UNDERGROUND.
17. THERE SHALL BE NO EXTERIOR LIGHTING.
18. SETBACKS SHOWN ON THIS PLAN ARE BASED ON YORKVILLE CODE OF ORDINANCES, SECTION 10-19-7 AND 10-9-5.
19. ALL NECESSARY PERMITS FOR SOIL EROSION CONTROL AND DRIVEWAY CONSTRUCTION WILL BE OBTAINED AS PART OF FINAL ENGINEERING AND PRIOR TO CONSTRUCTION
20. ALL UTILITY EQUIPMENT (METERS, TRANSFORMERS, ETC.) SHALL BE SCREENED WITH APPROPRIATE PLANTINGS IF LOCATED ON THE GROUND (PER CHAPTER 17 – FENCING AND SCREENING, SECTION 10-17-3 OF THE CITY OF YORKVILLE ORDINANCE)

SOILS DATA TABLE

MAP UNIT SYMBOL	MAP UNIT NAME	HYDROLOGIC SOIL GROUP
206A	THORP SILT LOAM, 0 TO 2 PERCENT SLOPES	C/D
325B	DRESDEN SILT LOAM, 0 TO 2 PERCENT SLOPES	B
369A	WAUPECAN SILT LOAM, 0 TO 2 PERCENT SLOPES	B
325A	DRESDEN SILT LOAM, 2 TO 4 PERCENT SLOPES	B
149A	BRENTON SILT LOAM, 0 TO 2 PERCENT SLOPES	B/D

No.	REVISIONS	DATE
1	ZONING SITE PLAN	08/01/2022

TurningPoint Energy

Kimley»Horn
© 2022 KIMLEY-HORN AND ASSOCIATES, INC.
570 LAKE COOK RD SUITE 200
DEERFIELD, IL 60015
WWW.KIMLEY-HORN.COM

KHA PROJECT 268173009
DATE 08/25/2021
SCALE AS SHOWN
DESIGNED BY SAF
DRAWN BY SAF
CHECKED BY APK

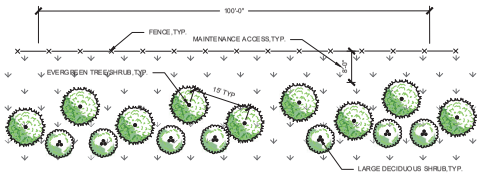
ZONING SITE PLAN

TPE IL KE106, LLC
KENDALL COUNTY, IL

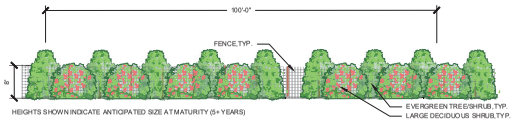
SHEET NUMBER
EX-1

Drawing name: K:\DFL_LEC\268173009_Turning Point Energy_KE106\3 Design\CAD\Exhibits\Zoning Site Plan\KE106_Zoning Site Plan.dwg 1 OF 1 Sep 15, 2022 3:07pm by Savannah.White
This document, together with the concepts and designs presented herein, as an instrument of service, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization and adaptation by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.

VEGETATIVE BUFFER

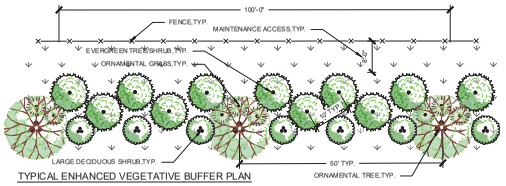


TYPICAL VEGETATIVE BUFFER PLAN

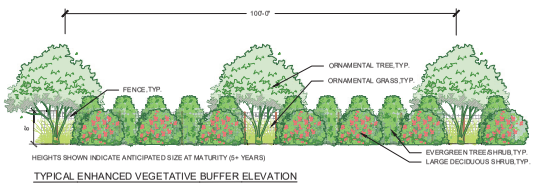


TYPICAL VEGETATIVE BUFFER ELEVATION

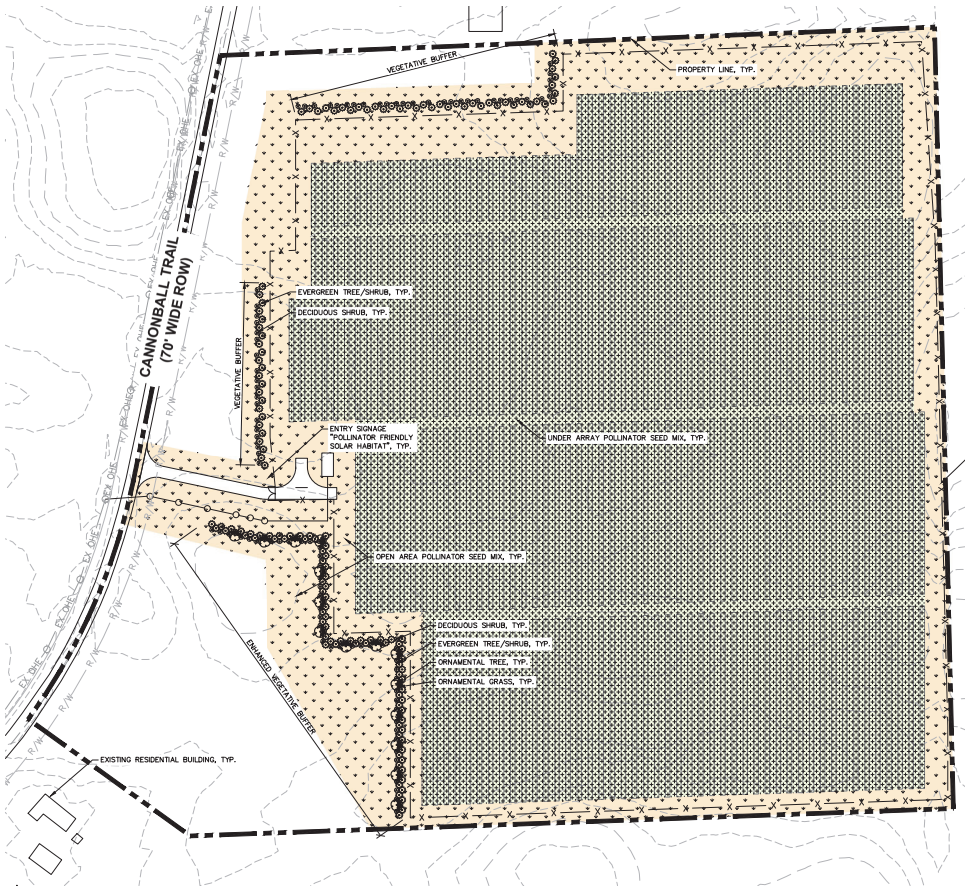
ENHANCED VEGETATIVE BUFFER



TYPICAL ENHANCED VEGETATIVE BUFFER PLAN



TYPICAL ENHANCED VEGETATIVE BUFFER ELEVATION



GRAPHIC SCALE IN FEET
0 50 100 200

NORTH

CONCEPT PLANT SCHEDULE

EVERGREEN TREE/SHRUB
SAWARA CYPRESS 'SOFT SERVE'
JUNIPERUS VIRGINIANA
JUNIPERUS CHINESIS 'MOUNTBATTEN'
PICEA PUNGENS 'FAT ALBERT'
TAXUS CUSPIDATA 'CAPITATA'
TAXUS X MEDIA 'HICKSII'
THUJA OCCIDENTALIS 'WOODWARDI'
-

ORNAMENTAL TREE
CORNUS X ALTERNIFOLIA
CARPINUS CAROLIANA
CERCIS CANADENSIS
MAGNOLIA VIRGINIANA
CRATAEGUS CRESGALLI
MALUS SUPPLEMENTAL SPECIES
-

ORNAMENTAL GRASS
MISCANTHUS SINENSIS
-

LARGE DECIDUOUS SHRUB
ARONIA ARBUTIFOLIA
CORNUS SERICEA CARDINAL
EUONYMUS ALATUS 'COMPACTUS'
ILEX VERTICILLATA
LINDERA BENZOIN
PHYSOCARPOS OPULIFOLIUS
SAMUCUS CANADENSIS
VIBURNUM DENTATUM
VIBURNUM LENTAGO 'MOHICAN'
VIBURNUM PRUNIFOLIUM
-

ARRAY AREA POLLINATOR SEED MIX
-

OPEN AREA POLLINATOR SEED MIX
-

VEGETATION MANAGEMENT NOTES

1. SOIL PH IS TO BE TESTED PRIOR TO AMENDMENT AND FINAL GRADING. LIME OR SULFUR IS TO BE ADDED IN APPROPRIATE QUANTITY TO BRING PH TO ACCEPTABLE LEVELS FOR SEED APPLICATION AS NEEDED.
2. IN AREAS OF SOIL AMENDMENT OR EXISTING AGRICULTURAL LAND, SOIL IS RECOMMENDED TO BE DISKED, CULTIVATED, AND ROLLED AS NEEDED.
3. SEED TO BE APPLIED WITH NURSE CROP PER SUPPLIER'S RECOMMENDATION.
4. THE INITIAL THREE YEARS WILL REQUIRE MORE FREQUENT MAINTENANCE AND MONITORING TO PROVIDE NATIVE PLANT ESTABLISHMENT INSTEAD OF INVASIVE WEEDS.
5. ANNUALLY, AT THE START OF SPRING, SITE SHOULD BE MOWED WITH A ROTARY MOWER AT A HEIGHT BETWEEN 4 AND 6 INCHES TO KNOCKDOWN STANDING VEGETATION FROM THE PREVIOUS SEASONS.
6. INTEGRATED WEED MANAGEMENT CONCEPTS WILL BE USED TO CONTROL NOXIOUS AND INVASIVE WEEDS. CHEMICAL, CULTURAL, MECHANICAL, AND BIOLOGICAL CONTROLS MAY BE USED BASED ON WEED PRESSURE, TIMING, AND VEGETATIVE GROWTH.
7. FINAL TREE SELECTION WILL BE BASED ON AVAILABILITY DURING INSTALLATION.
8. ALL SITES SHALL BE PREPARED FOR SEEDING BY WEED CONTROL MEASURES APPROPRIATE TO THE SITE PRIOR TO ANTICIPATED FINAL SEEDING.
9. ALL SITES SHALL BE ACTIVE SEEDED AND SHALL NOT BE PRE-PLANTED, TREATED, OR INCLUDED WITH THE USE OF INSECTICIDES.

ARRAY AREA POLLINATOR SEED MIX

26%	SCHIZACHYRIUM SCOPARIUM	LITTLE BLUESTEM
10%	BOUTELOUA CURTIPENDULA	SIDEOATS GRAMA
8%	SPOROBOLUS HETEROLEPIS	PRAIRIE DROPSEED
5%	CAREX BICKNELLII	COPPER-SHOULDERED OVAL SEDGE
5.2%	COREOPSIS LANCEOLATA	SAND COREOPSIS
4.8%	SYMPHYOTRICHUM LAEVE	SMOOTH BLUE ASTER
4%	SYMPHYOTRICHUM ERICOIDES	HEATH ASTER
3.5%	DALEA PURPUREA	PURPLE PRAIRIE CLOVER
3.5%	GERANIUM MACULATUM	WILD GERANIUM
3%	ALLIUM CERNUUM ROTH	NODDING WILD ONION
3%	VERONICASTRUM VIRGINICUM	CULVER'S ROOT
1.8%	DESMODIUM CANADENSES	SHOWY TICK TREFOIL
1.7%	SPIRAEA ALBA DU ROI	MEADOWSWEET
1.6%	ZIZIA AUREA	GOLDEN ALEXANDERS
1.5%	ECHINACEA PURPUREA	PURPLE CONEFLOWER
1.4%	SOLIDAGO SPECIOSA	SHOWY GOLDENROD
1.2%	PYCNANTHEMUM VIRGINIANUM	COMMON MOUNTAIN MINT
1.2%	EUPATORIUM PERFOLIATUM	BONESET
1.2%	OENOTHERA BIENNIS	EVENING PRIMROSE
1.2%	SILPHIUM PERFOLIATUM	CUP PLANT
1.2%	RUDBECKIA HIRTA	BLACKEYED SUSAN
1.1%	HERACLEUM MAXIMUM	COMMON COWPARSNIP
1.1%	LUPINUS PERENNIS V. OCCIDENTALIS	WILD LUPINE
1%	RATIBIDA PINNATA	YELLOW PRAIRIE CONEFLOWER
1%	LIATRIS ASPERA MICHX	ROUGH BLAZING STAR
0.9%	ANGELICA ATROPURPUREA	ANGELICA
0.8%	CACALIA ATRIPLICIFOLIUM	PALE INDIAN PLANTAIN
0.8%	LOBELIA SIPHILITICA	BLUE LOBELIA
0.8%	PENSTEMON HIRSUTUS	HAIRY BEARDTONGUE
0.8%	ASCLEPAIS TUBEROSA	BUTTERFLY WEED
0.7%	ANEMONE CANADENSIS	CANADA ANEMONE
0.6%	SOLIDAGO NEMORALIS	GRAY GOLDENROD
0.4%	CEANOTHUS AMERICANUS	NEW JERSEY TEA

SEEDING RATE: 25 LB PER ACRE
SEED WITH COVER CROP OF OATS, JAPANESE MILLET, WINTER PEA, OR ANNUAL RYE DEPENDENT ON SEASON AT A RATE OF 30 LB PER ACRE.

SPECIFIED MIX SUBJECT TO AVAILABILITY DURING TIME OF CONSTRUCTION, OR APPROVED EQUAL.

OPEN AREA POLLINATOR SEED MIX

25%	SCHIZACHYRIUM SCOPARIUM	LITTLE BLUESTEM
10%	BOUTELOUA CURTIPENDULA	SIDEOATS GRAMA
6%	SPOROBOLUS HETEROLEPIS	PRAIRIE DROPSEED
5.5%	ELYMUS CANADENSIS	CANADA WILDRYE
5.2%	ECHINACEA PURPUREA	PURPLE CONEFLOWER
5%	DALEA PURPUREA	PURPLE PRAIRIE CLOVER
4.3%	COREOPSIS LANCEOLATA	LANCELEAF COREOPSIS
3.5%	RUDBECKIA HIRTA	BLACKEYED SUSAN
3%	ALLIUM CERNUUM	NODDING WILD ONION
2.2%	SOLIDAGO NEMORALIS	GRAY GOLDENROD
2.1%	SPIRAEA ALBA DU ROI	MEADOWSWEET
2%	RATIBIDA PINNATA	YELLOW PRAIRIE CONEFLOWER
2%	ROSA SETIGERA MICHX	MICHIGAN ROSE
1.8%	SOLIDAGO SPECIOSA	SHOWY GOLDENROD
1.8%	SYMPHYOTRICHUM LAEVE	SMOOTH BLUE ASTER
1.6%	CEANOTHUS AMERICANUS	NEW JERSEY TEA
1.5%	GERANIUM MACULATUM	WILD GERANIUM
1.5%	LIATRIS ASPERA MICHX	ROUGH BLAZING STAR
1.4%	SOLIDAGO RIDDELLII	RIDDELL'S GOLDENROD
1.4%	SYMPHYOTRICHUM ERICOIDES	HEATH ASTER
1.3%	PENSTEMON HIRSUTUS	HAIRY BEARDTONGUE
1.2%	LOBELIA SIPHILITICA	BLUE LOBELIA
1.2%	ASCLEPAIS TUBEROSA	BUTTERFLY WEED
1.2%	ASCLEPIAS INCARNATA	SWAMP MILKWEED
1.2%	ZIZIA AUREA	GOLDEN ALEXANDERS
1.1%	PENSTEMON DIGITALIS	TALL WHITE BEARDTONGUE
1%	ANEMONE CANADENSIS	CANADA ANEMONE
1%	AQUILEGIA CANADENSIS	COLUMBINE
1%	BAPTISIA BRACTEATA VAR LEUCOPHAEA	WILD INDIGO
1%	LUPINUS PERENNIS V. OCCIDENTALIS	WILD LUPINE
1%	MONARDA FISTULOSA	WILD BERGAMOT
1%	MONARDA PUNCTATA	HORSE MINT

SEEDING RATE: 25 LB PER ACRE
SEED WITH COVER CROP OF OATS, JAPANESE MILLET, WINTER PEA, OR ANNUAL RYE DEPENDENT ON SEASON AT A RATE OF 30 LB PER ACRE.

SPECIFIED MIX SUBJECT TO AVAILABILITY DURING TIME OF CONSTRUCTION, OR APPROVED EQUAL.

No.	REVISIONS	DATE
1	ZONING SITE PLAN	06/01/2022

TurningPoint Energy

Kimley»Horn

© 2022 KIMLEY-HORN AND ASSOCIATES, INC.
570 LAKE COOK RD SUITE 200
DEERFIELD, IL 60015
WWW.KIMLEY-HORN.COM

KHA PROJECT	268173009
DATE	08/25/2021
SCALE	AS SHOWN
DESIGNED BY	SAF
DRAWN BY	SAF
CHECKED BY	APK

PRELIMINARY LANDSCAPE PLAN

TPE IL KE106, LLC

KENDALL COUNTY, IL

SHEET NUMBER
L1.0

Drawing name: K:\CHS_LEC\268173009_Turning Point Energy_KE106\2 Design\CAD\Exhibits\Zoning Site Plan\KE106_Landscape Plan.dwg 1 OF 1 (2) Sep 13, 2022 5:18pm by Chris.Wilson
This document, together with the concepts and designs presented herein, as an instrument of service, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization and adaptation by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.

Illinois Solar Site Pollinator Habitat Planning Form

Use this form as a draft before completing the *Illinois Planned Pollinator Habitat on Solar Sites Scorecard* online

In Between and Under Solar Panels

1. PLANNED PLANT DIVERSITY IN ROWS & UNDER SOLAR ARRAY (choose up to 2)
   - ☐ 4-6 species +5 pts
   - ☐ 7 or More species +8 pts
   - ☑ All Native Species (minimum 4 species) +10 pts

Perimeter and Buffer Area

2. VEGETATIVE BUFFER PLANNED ADJACENT TO THE SOLAR SITE (choose all that apply)
   - ☑ Buffer planned outside of array fencing +5 pts
   - ☐ Buffer is 30-49ft wide measured from array fencing +5 pts
   - ☑ Buffer is at least 50ft wide measured from array fencing +10 pts
   - ☑ Buffer has Native shrubs/trees that provide food for wildlife +5 pts

3. SEEDS USED FOR NATIVE PERIMETER & BUFFER AREAS (choose all that apply)
   - ☑ Mixes are seeded using at least 20 seeds per square foot of Pure Live Seed or 40 Seeds per square foot on slopes > 5% +10 pts
   - ☐ All seeds are from a source within 150 miles of site +5 pts
   - ☐ At least 2% milkweed cover is planned to be established from seeds/plants +5 pts

4. PLANNED # OF NATIVE SPECIES IN SITE PERIMETER & BUFFER AREA (species with more than 1% cover)(choose 1)
   - ☐ 5-10 species +2 pts
   - ☐ 10-15 species +5 pts
   - ☐ 16-20 species +10 pts
   - ☑ >20 species +15 pts

Exclude invasive and non-native plant species from total

5. PLANNED PERCENT OF PERIMETER & BUFFER AREA DOMINATED BY NATIVE PLANT SPECIES (choose 1)
   - ☐ 26- 50 % +2 pts
   - ☐ 51-75 % +10 pts
   - ☑ More than 75% +15 pts

Whole Site

6. PLANNED PERCENT OF SITE VEGETATION COVER TO BE DOMINATED BY DESIRABLE WILDFLOWERS (choose 1)
   - ☑ 26- 50 % +2 pts
   - ☐ 51-75 % +10 pts
   - ☐ More than 75% +15 pts

7. PLANNED SEASONS WITH AT LEAST THREE BLOOMING NATIVE SPECIES PRESENT (choose all that apply)
   - ☑ Spring (April-May) +5 pts
   - ☑ Summer (June-August) +5 pts
   - ☑ Fall (September-October) +5 pts

8. HABITAT SITE PREPARATION PRIOR TO IMPLEMENTATION (choose all that apply)
   - ☑ Soil preparation done to promote germination and reduce erosion as appropriate for the site. +10 pts
   - ☑ Measures taken to control weeds prior to seeding +10 pts
   - ☐ None -10 pts

9. AVAILABLE HABITAT COMPONENTS WITHIN 0.25 MILES (choose all that apply)
   - ☑ Native bunch grass for bee nesting +2 pts
   - ☑ Native trees/shrubs for bee nesting +2 pts
   - ☑ Clean, perennial water sources +2 pts
   - ☐ Created habitat nesting features +2 pts

10. SITE PLANNING AND MANAGEMENT(choose all that apply)
    - ☑ Detailed establishment and management plan developed +10 pts
    - ☑ Signage legible at forty or more feet stating “pollinator friendly solar habitat” +3 pts

11. INSECTICIDE RISK (choose all that apply)
    - ☐ Planned on-site use of insecticide or pre-planting seed/plant treatment (excluding buildings/electrical boxes, etc.) -40 pts
    - ☐ Communication/registration with local chemical applicators or on www.fieldwatch.com to prevent drift +5 pts

Total Points: 126

Meets Preliminary Pollinator Standards - 85
Provides Exceptional Habitat - 110 and higher

Owner: Turning Point Energy
Vegetation Consultant: Kimley-Horn
Project Location: 1700 Cannonball Trail, Yorkville IL
Project Size: 41.8 **acres**
Final Seeding Date: _____

This form is designed (with the help of the Solar Site Pollinator Guidelines found on IDNR’s website) to guide owners or managers of solar sites to meet the requirements to be able to claim a site is pollinator friendly according to the “Pollinator Friendly Solar Site Act (525 ILCS 55)”. This form is for company records only and does not grant the title of a Pollinator Friendly Solar Site until the “Illinois Planned Pollinator Habitat on Solar Sites Scorecard” is completed with a score of 85 or higher on IDNR’s website. This preliminary recognition is good for 3yrs, after which the “Established Pollinator Habitat on Solar Sites Scorecard” will need to be completed every 5 years to maintain recognition as a Pollinator Friendly Solar Site.

ILLINOIS DEPARTMENT OF NATURAL RESOURCES

12/3/2019

APPENDIX C – DECOMMISSIONING PLAN

TPE IL KE106, LLC Community Solar Project Decommissioning Plan

TPE IL KE106, LLC has prepared the following plan to fulfill local requirements and assumes that the Project will be constructed in accordance with all permits and approvals.

1.0 Project Description

The TPE IL KE106, LLC Community Solar Project is an approximately 5 MW AC solar farm located on parcel 02-10-300-017, at 1700 Cannonball Trail, Bristol IL, 60512 in Kendall County (the "Project"). The Project is to be constructed on approximately 28 acres. The purpose of the Project is the generation of renewable solar electricity. The Project will be interconnected to the Commonwealth Edison ("ComEd") electric distribution grid at the site entrance, just off Cannonball Trail.

The estimated useful Project lifetime is 25-40 years, or more. The following list is a summary of the Project features:

- Approximately 5 MW AC total solar array consisting of silicon solar panels
- Driven post or ground screw foundations and steel and aluminum racking system
- 8' Security fence surrounding the array perimeter
- Inverters and transformers for power conditioning
- Concrete equipment pads for inverter and/or switchgear locations
- Copper and aluminum wire
- Underground conduit at the array location
- Overhead poles and wires from the array location to utility poles
- Gravel access roads
- Metal security gates at array location
- Miscellaneous electrical equipment

2.0 Decommissioning Plan

The Project has an anticipated operation life of 25 to 40 years or longer if maintenance is continued. At the end of operational life of the Project, the Project will be safely dismantled using conventional construction equipment, rather than being demolished or otherwise disposed of. Decommissioning shall include stabilization of the site and the removal of all solar collectors, cabling, electrical components, fencing and any other associated equipment. The Project consists of numerous materials that can be resold or recycled for significant scrap value, including steel, aluminum, glass, copper and plastics. Often, current market salvage values of a Project exceed estimated decommissioning and site restoration expenses.

2.1 Temporary Erosion Control

Temporary erosion and sedimentation control best management practices will be used during the decommissioning phase of the Project. Control features will be regularly inspected during the decommissioning phase and removed at the end at the process. All decommissioning activities will conform with local and state regulations.

2.2 Material Removal Process

The decommission process will consist of the following general steps:

2.2.1 Project shall be disconnected safely from the power grid and all equipment shall be switched to off position

2.2.2 PV modules shall be disconnected, packaged, and returned to manufacturer or appropriate facility for recycling or resold for use in other projects

2.2.3 Above and underground cabling shall be removed and sent to an appropriate recycling facility

2.2.4 Inverters will be disconnected from modules and shipped intact to an approved electrical equipment recycler

2.2.5 Racking materials shall be dismantled, removed, and recycled off-site at an approved recycler

2.2.6 Fencing will be dismantled, removed, and recycled off-site at an approved recycler

2.2.7 Grade slabs will be broken and removed and disposed of in compliance with local and state regulations

2.2.8 All remaining electrical and support equipment will be dismantled and recycled or disposed of in compliance with local and state regulations

2.2.9 Site access roads will be removed and recycled. Once the road material is removed, the compacted soil beneath and surrounding the access road shall be scarified to a minimum depth of 18 inches

2.2.10 The stie shall be restabilized once all utilities, equipment, and site features have been removed from the site

2.3 PV Module Removal

Solar photovoltaic modules used in the Project are manufactured within regulatory requirements for toxicity based on Toxicity Characteristic Leaching Procedure (TCLP). The solar panels are not considered hazardous waste. The panels used in the Project will contain silicon, glass, and aluminum, which have value for recycling. Solar panels have a warranty of 20 – 25 years and useful life of 35 – 50 years. The most realistic outcome for solar modules is re-use in other generation

projects. Modules will be sold for re-use or dismantled and packaged per manufacturer or approved recyclers specifications and shipped to an approved off-site recycler.

2.4 Electric Wire Removal

Electric wire made from copper or aluminum has value for recycling. DC wiring can be removed manually from the panels to the inverter. Underground wire in the array will be pulled and removed from the ground. Overhead cabling for the interconnection will be removed from poles. All wire will be sent to an approved off-site recycler.

2.5 Electrical Equipment Removal

Inverters, panels, transformers, switchgear and other electrical equipment will be dismantled, packaged, and removed from the site per manufactures specifications for removal, decontamination, disposal or recycling. Any dielectric fluids present in transformer, or other electric equipment will be removed, packaged, and sent to an approved waste facility.

2.6 Racking and Fencing removal

All racking and fencing material will be broken down into manageable units and removed from Project and sent to an approved recycler. All racking posts driven into the ground will be pulled and removed.

2.7 Concrete Slab Removal

Concrete slabs used as equipment pads will be broken and removed. Clean concrete will be crushed and disposed of off-site and or recycled and reused either on or off-site.

2.8 Access Road Removal

Gravel from on-site access roads shall be removed and recycled if requested by the Landowner or Required under an AIMA. Once the gravel is removed, the soil below the gravel and the soil along compacted dirt access roads shall be scarified a depth of 18-inches and blended as noted in the Site Restoration section below.

2.9 Landscaping

Unless required to remain in place by the Land Owner or an AIMA agreement, all vegetative landscaping and screening installed as part of the Project will remain in place. Landscape areas will be restored as noted in the Site Stabilizaiton section below.

2.10 Final Site Walkthrough

A final site walkthrough will be conducted to remove debris and/or trash generated within the site during the decommissioning process and will include removal and proper disposal of any debris that may have been wind-blown to areas outside the immediate footprint of the Project being removed.

2.11 Site Stabilization

Once removal of all project equipment is complete, all areas of the project site that were traversed by vehicles and construction and/or decommission equipment that exhibit compaction and rutting shall be restored. All prior agricultural land shall be ripped at least 18 inches deep or the extent practicable and all pasture and woodland shall be ripped at least 12 inches deep or to the extent practicable. The existence of drain tile lines or underground utilities may necessitate less ripping depth. Once this is complete, seed will be planted if desired (in consultation with landowners).

3.0 Future Land Use

The site will be restored and reclaimed to approximately the pre-construction condition in conformance with the site lease agreement and the Agricultural Impact Mitigation Agreement (AIMA). It is assumed that the site will be returned to agricultural use after decommissioning, and appropriate measures will be implemented to achieve said use.

4.0 Decommissioning Terms

The Project shall be decommissioned withing six(6) months of the end of the Project's operational life. At completion of the decommissioning phase as described in this document, and expiration of the site lease, the land will be returned to the owner in a stabilized condition.

Decommissioning security financing shall be required by the county in order to assure the proper decommissioning of the site and in no instance shall the financial security be less than $1,000 per acre. This security financing should be in the form of an irrevocable letter of credit or cash placed in a county escrow account. The county board may, in its sole discretion, agree to accept security, or a portion thereof, in another form such as a bond or corporate guarantee. The Final decommissioning plan and financial security must be presented to and accepted by the Kendall County Board prior to the issuance of a building permit for the Project. An updated decommissioning plan shall be submitted to the county every three years.

APPENDIX D – WETLAND DELINEATION (LEVEL 1)

MEMORANDUM

To:	Michelle Carpenter *Turning Point Energy*
From:	Ashley Payne *Kimley-Horn and Associates, Inc.*
Date:	July 22, 2022
Subject:	*Bristol Township, Illinois – KE106 Level 1 Wetland Investigation Memorandum*

INTRODUCTION

Kimley-Horn was contracted to review the KE106 project site for potential wetlands. See Figure 1 for project location and Figure 2 for project site boundary. The project site is located in Bristol Township, Kendall County, Illinois. A review of available background data was completed to assist in determining if any potential aquatic resources are present within the project site.

AVAILABLE BACKGROUND DATA:

USGS Topographical Map

A review of the USGS topographical Map did not identify any wetlands or waterbodies within the project site. The USGS Topographical Map is Figure 3.

National Wetlands Inventory

A review of the National Wetlands Inventory (NWI) identified zero wetlands within the project site. The NWI is included in Attachment A.

USGS National Hydrography Data (NHD Data)

A review of the USGS National Hydrography Data (NHD data) was completed. No linear waterway features or waterbodies were identified within the project site. The information is included in Attachment A.

Kendall County Soil Survey

A review of the Kendall County soil survey via Websoil survey identified two soil types that are considered hydric soil. Approximately 2% of the project site is mapped at a hydric rating of 95%. The remainder of the site is mapped at a predominantly non-hydric rating below 5%. The soil survey is included in Attachment B.

DNR Public Waters Inventory

A review of the Illinois DNR (IL DNR) Public Waters Inventory was completed. No IL DNR Public Waters were identified within the project site. The information is included in Attachment C.

2-foot Contours

Two-foot contours were reviewed to determine if any wetland areas or drainage swales are present on the site. The site is fairly flat and slopes west. Several low areas were identified within the project site along the eastern boundary and in the central portion of the site. The 2-ft contours are included in Attachment D.

FEMA 100-Year Floodplain

The Federal Emergency Management Agency (FEMA) National Flood Hazard Layer (NFHL) Viewer was reviewed to determine if any FEMA 100-year floodplain is located within the project site. Based on the NFHL Viewer, the project site is not located within a FEMA 100-year floodplain. The FEMA 100-year floodplain is included in Attachment E.

Previous Site Disturbance

Historic aerials from 1993 to 2021 were reviewed to determine previous land use and disturbance on the site (Attachment F). The site has been used for agricultural purposes since at least 1993.

Year	Land Use	3-month Antecedent Precipitation Conditions	Comments
1993	Agricultural	Normal	Site consists of cropped agricultural field. No areas of stunted or stressed crops visible.
2002	Agricultural	Drier than Normal	Same comment as above.
2007	Agricultural	Normal	Same comment as above.
2008	Agricultural	Wetter than Normal	Same comment as above.
2010	Agricultural	Wetter than Normal	Same comment as above.
2011	Agricultural	Normal	Same comment as above.
2013	Agricultural	Wetter than Normal	Site consists of cropped agricultural field. Crop stress visible in several low areas throughout site.
2015	Agricultural	Normal	Site consists of cropped agricultural field. No areas of stunted or stressed crops visible.
2017	Agricultural	Normal	Same comment as above.
2019	Agricultural	Normal	Site consists of cropped agricultural field. Crop stress visible in the northeast corner of site.
2021	Agricultural	Normal	Site consists of cropped agricultural field. No areas of stunted or stressed crops visible.

No areas of continued stunted or stressed vegetation or inundation were visible on the reviewed historic aerials. No potential wetlands or aquatic resources are visible within the project site.

RECOMMENDATIONS:

Mapped hydric soil is present within the project limits; however, no mapped wetlands were identified within the site. Based on the historic review, no continued stunted or stressed vegetation is visible during the growing season within the site. No wetlands are anticipated to be found within the project site.

Figures



Kimley»Horn

Figure 1. Project Location
Bristol Township, Kendall County
Turning Point Energy

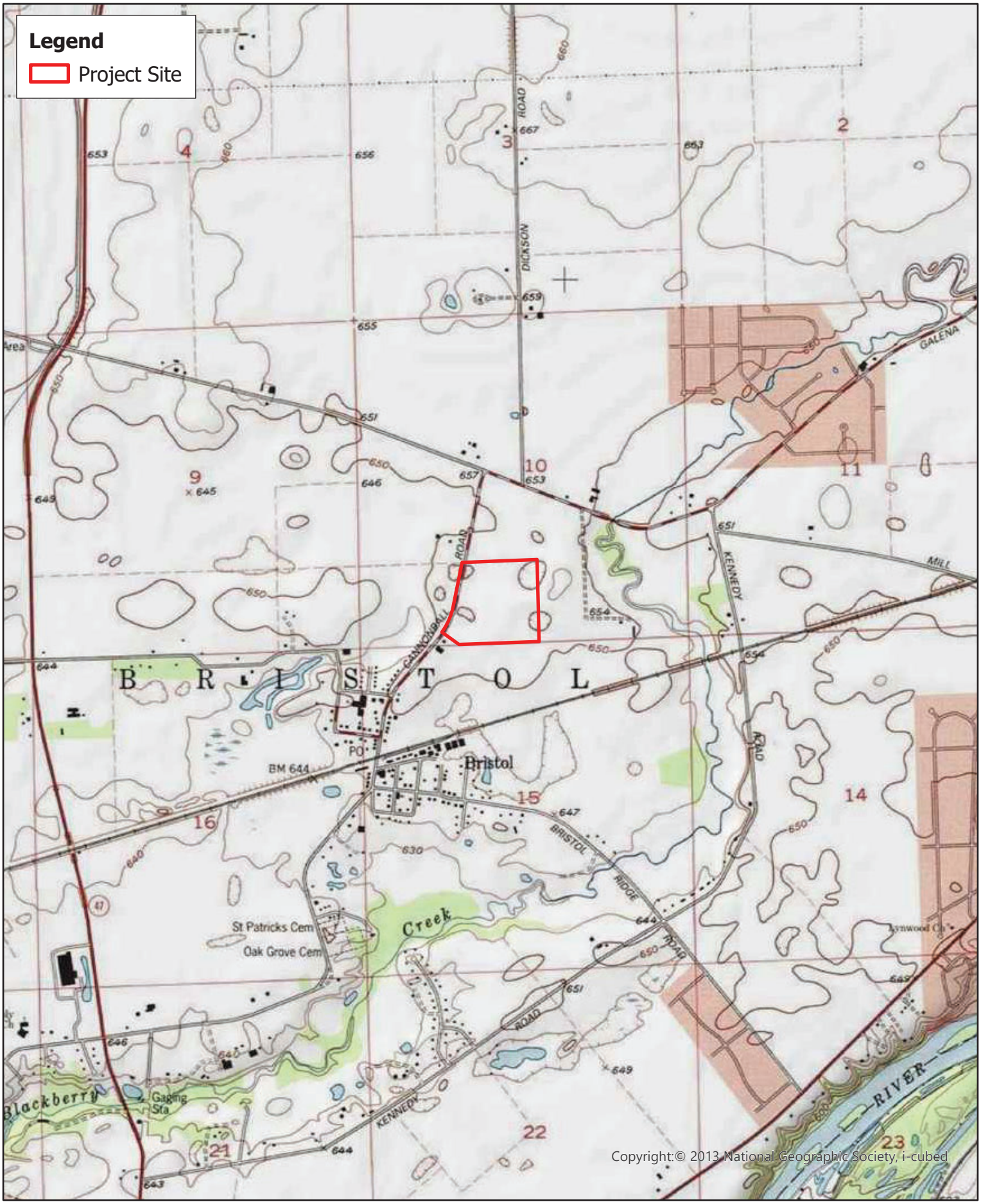


Kimley»Horn

0 250 500 Feet

N

Figure 2. Project Site Boundary
Bristol Township, Kendall County
Turning Point Energy



Kimley»Horn

0 1,000 2,000 Feet

N

Figure 3. USGS Topographical Map
Bristol Township, Kendall County
Turning Point Energy

ATTACHMENT A

National Wetlands Inventory and NHD Data



Kimley»Horn

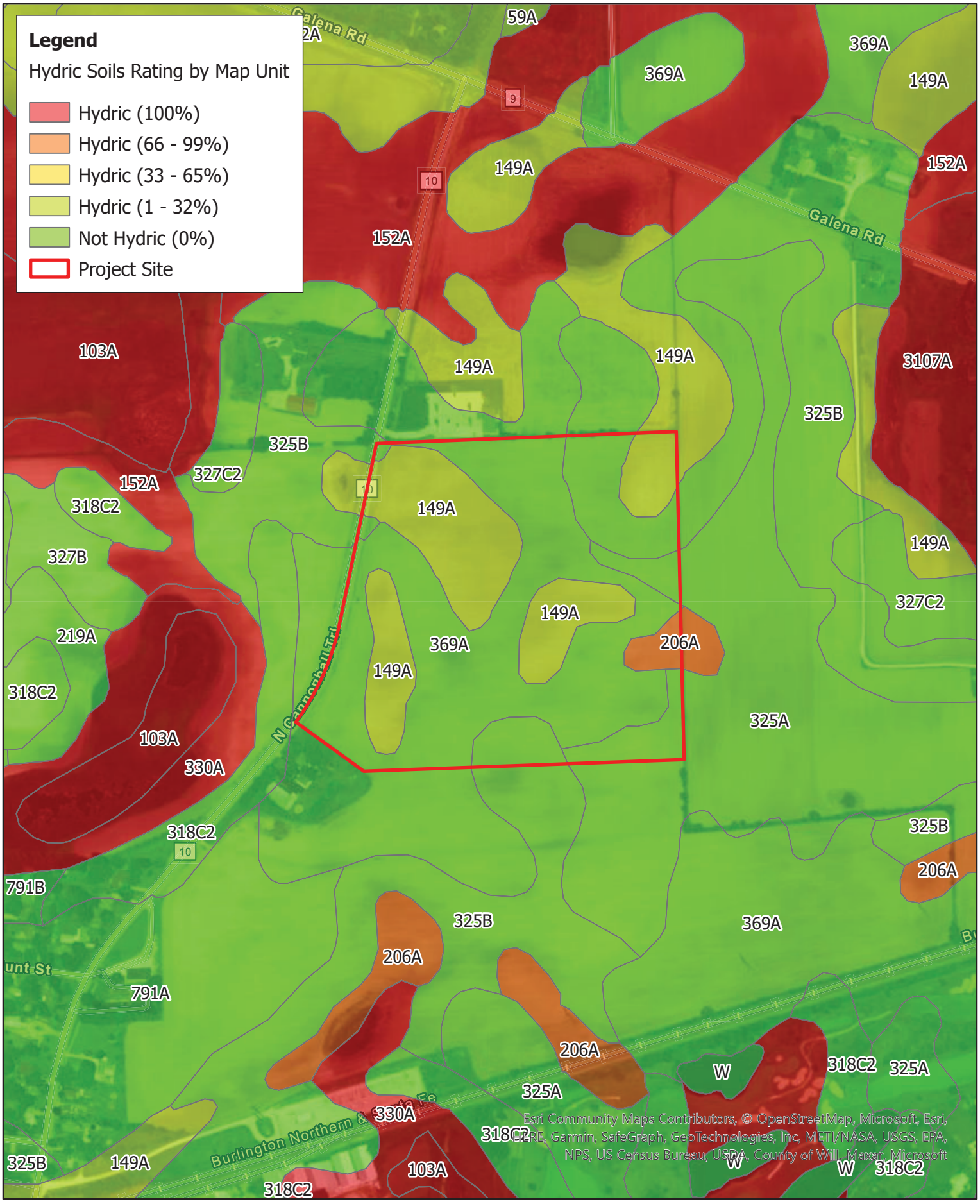
0 250 500 US Feet

N

National Wetlands Inventory (NWI) and NHD Map
Bristol Township, Kendall County
Turning Point Energy

ATTACHMENT B

Hydric Soils Map



Kimley»Horn

0 250 500 US Feet

N

Hydric Soils Map
Bristol Township, Kendall County
Turning Point Energy

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- Hydric (100%)
- Hydric (66 to 99%)
- Hydric (33 to 65%)
- Hydric (1 to 32%)
- Not Hydric (0%)
- Not rated or not available

Soil Rating Lines
- Hydric (100%)
- Hydric (66 to 99%)
- Hydric (33 to 65%)
- Hydric (1 to 32%)
- Not Hydric (0%)
- Not rated or not available

Soil Rating Points
- Hydric (100%)
- Hydric (66 to 99%)
- Hydric (33 to 65%)
- Hydric (1 to 32%)
- Not Hydric (0%)
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Kendall County, Illinois
Survey Area Data: Version 18, Aug 31, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 18, 2020—Jul 3, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydric Rating by Map Unit

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
149A	Brenton silt loam, 0 to 2 percent slopes	3	12.7	30.3%
206A	Thorp silt loam, 0 to 2 percent slopes	95	0.8	2.0%
325A	Dresden silt loam, 0 to 2 percent slopes	0	2.6	6.2%
325B	Dresden silt loam, 2 to 4 percent slopes	0	4.9	11.6%
369A	Waupecan silt loam, 0 to 2 percent slopes	0	20.9	49.9%
Totals for Area of Interest			**41.8**	**100.0%**

Description

This rating indicates the percentage of map units that meets the criteria for hydric soils. Map units are composed of one or more map unit components or soil types, each of which is rated as hydric soil or not hydric. Map units that are made up dominantly of hydric soils may have small areas of minor nonhydric components in the higher positions on the landform, and map units that are made up dominantly of nonhydric soils may have small areas of minor hydric components in the lower positions on the landform. Each map unit is rated based on its respective components and the percentage of each component within the map unit.

The thematic map is color coded based on the composition of hydric components. The five color classes are separated as 100 percent hydric components, 66 to 99 percent hydric components, 33 to 65 percent hydric components, 1 to 32 percent hydric components, and less than one percent hydric components.

In Web Soil Survey, the Summary by Map Unit table that is displayed below the map pane contains a column named 'Rating'. In this column the percentage of each map unit that is classified as hydric is displayed.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register, 1994). Under natural conditions, these soils are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established (Federal Register, 2002). These criteria are used to identify map unit components that normally are associated with wetlands. The criteria used are selected estimated soil properties that are described in "Soil Taxonomy" (Soil Survey Staff, 1999) and "Keys to Soil Taxonomy" (Soil Survey Staff, 2006) and in the "Soil Survey Manual" (Soil Survey Division Staff, 1993).

If soils are wet enough for a long enough period of time to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils are specified in "Field Indicators of Hydric Soils in the United States" (Hurt and Vasilas, 2006).

References:

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18.

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service. U.S. Department of Agriculture Handbook 436.

Soil Survey Staff. 2006. Keys to soil taxonomy. 10th edition. U.S. Department of Agriculture, Natural Resources Conservation Service.

Rating Options

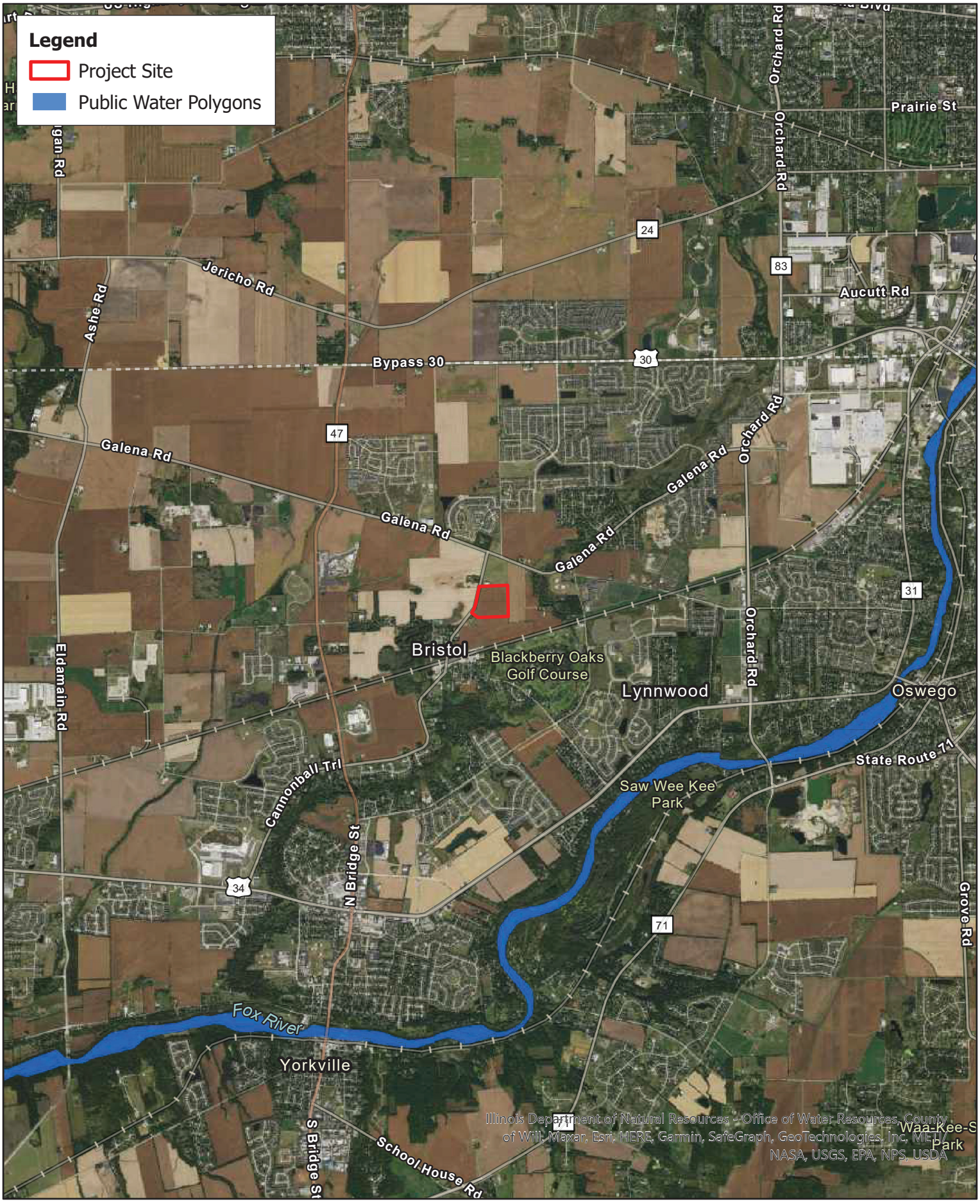
Aggregation Method: Percent Present

Component Percent Cutoff: None Specified

Tie-break Rule: Lower

ATTACHMENT C

DNR Public Waters



Kimley»Horn

0 0.5 1 Miles

N

IL DNR Public Waters Map
Bristol Township, Kendall County
Turning Point Energy

ATTACHMENT D

2-ft Contours



Kimley»Horn

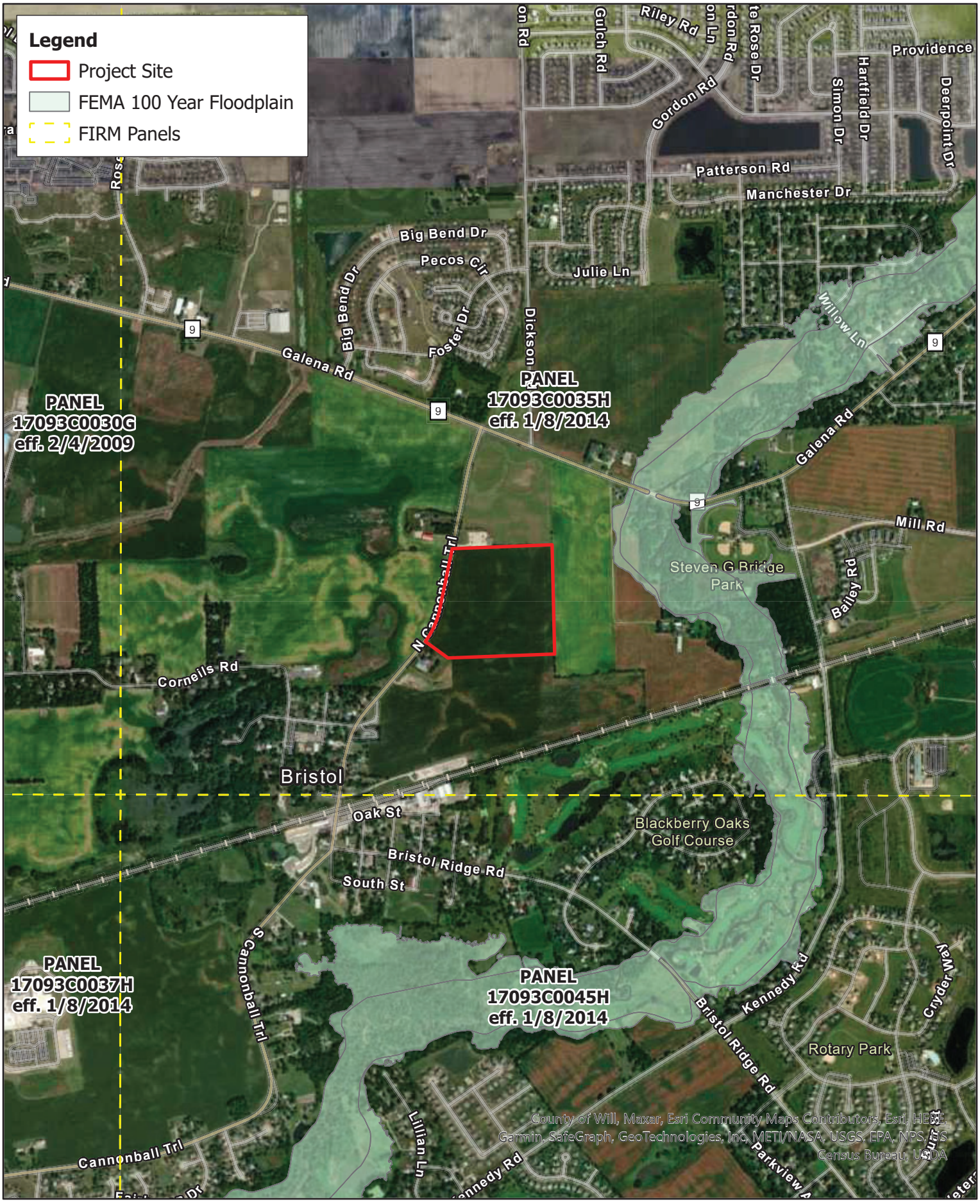
0 250 500 US Feet

N

2-ft Contours Map
Bristol Township, Kendall County
Turning Point Energy

ATTACHMENT E

FEMA 100 Year Floodplain



Kimley»Horn

0 750 1,500 US Feet

N

FEMA 100-Year Floodplain Map
Bristol Township, Kendall County
Turning Point Energy

ATTACHMENT F

Historic Aerials



Kimley»Horn

0 125 250 US Feet

N

Historic Aerial Map (March 1993)
Bristol Township, Kendall County
Turning Point Energy



Kimley»Horn

0 125 250 US Feet

N

Historic Aerial Map (February 2002)
Bristol Township, Kendall County
Turning Point Energy



Kimley»Horn

0 125 250 US Feet

N

Historic Aerial Map (October 2007)
Bristol Township, Kendall County
Turning Point Energy



Kimley»Horn

0 125 250 US Feet

N

Historic Aerial Map (April 2008)
Bristol Township, Kendall County
Turning Point Energy



Kimley»Horn

0 125 250 US Feet

N

Historic Aerial Map (June 2010)
Bristol Township, Kendall County
Turning Point Energy



Kimley»Horn

0 125 250 US Feet

N

Historic Aerial Map (September 2011)
Bristol Township, Kendall County
Turning Point Energy



Kimley»Horn

0 125 250 US Feet

N

Historic Aerial Map (April 2013)
Bristol Township, Kendall County
Turning Point Energy



Kimley»Horn

0 125 250 US Feet

N

Historic Aerial Map (April 2015)
Bristol Township, Kendall County
Turning Point Energy



Kimley»Horn

0 125 250 US Feet

N

Historic Aerial Map (September 2017)
Bristol Township, Kendall County
Turning Point Energy



Kimley»Horn

0 125 250 US Feet

N

Historic Aerial Map (October 2019)
Bristol Township, Kendall County
Turning Point Energy



Kimley»Horn

0 125 250 US Feet

N

Historic Aerial Map (May 2021)
Bristol Township, Kendall County
Turning Point Energy

APPENDIX E – ENVIRONMENTAL CONSTRAINTS MEMORANDUM

MEMORANDUM

To:	Michelle Carpenter *Turning Point Energy*
From:	Ashley Payne *Kimley-Horn and Associates, Inc.*
Date:	July 22, 2022
Subject:	*Bristol Township, Illinois – KE106 Desktop Environmental Review and Limited Wetland Assessment*

INTRODUCTION

Kimley-Horn was contracted to review the KE106 project site for potential environmental constraints. See Figure 1 for project location and Figure 2 for the project site. The project site is located in Bristol Township, Kendall County, Illinois. The site is located in Sections 10 and 15 of Township 37N, Range 7E. Kimley-Horn reviewed available background data to assist in determining if there are any potential environmental constraints for the site.

ENVIRONMENTAL CONSTRAINTS:

Level 1 (Desktop) Wetlands Assessment

Kimley-Horn reviewed available topographic mapping, the National Wetlands Inventory (NWI), the National Hydrography Dataset (NHD), LiDAR, soil survey data, public waters, and aerial photography to identify potential wetlands or surface waters within the site vicinity.

USGS Topographical Map

A review of the USGS topographical Map identified undeveloped land within the site. The USGS topographical map is shown on Figure 3.

National Wetlands Inventory

A review of the National Wetlands Inventory (NWI) identified zero wetlands within the project site. The NWI is included in Figure 4.

USGS National Hydrography Dataset (NHD Data)

A review of the USGS National Hydrography Dataset (NHD data) was completed. No linear waterway features or waterbodies were identified within the site. The information is included in Figure 4.

2-ft LiDAR Contours

Two-foot contours were reviewed to determine if any wetland areas or drainage swales are present on the site. The site is fairly flat and slopes west. Several low areas were identified within the project site along the eastern boundary and in the central portion of the site. The 2-ft contours are included in Figure 5.

Kendall County Soil Survey

A review of the Kendall County soil survey via Websoil survey identified two soil types that are considered hydric soil. Approximately 2% of the project site is mapped at a hydric rating of 95%. The remainder of the site is mapped at a predominantly non-hydric rating below 5%. The soil survey is included in Figure 6.

DNR Public Waters Inventory

A review of the Illinois DNR (IL DNR) Public Waters Inventory was completed. No IL DNR Public Waters were identified within the project site. The information is included in Figure 7.

Previous Site Disturbance

Historic aerials from 1993 to 2021 were reviewed to determine previous land use and disturbance on the site (Attachment A). No areas of continued stunted or stressed vegetation or inundation were visible on the reviewed historic aerials.

Year	Land Use	3-month Antecedent Precipitation Conditions	Comments
1993	Agricultural	Normal	Site consists of cropped agricultural field. No areas of stunted or stressed crops visible.
2002	Agricultural	Drier than Normal	Same comment as above.
2007	Agricultural	Normal	Same comment as above.
2008	Agricultural	Wetter than Normal	Same comment as above.
2010	Agricultural	Wetter than Normal	Same comment as above.
2011	Agricultural	Normal	Same comment as above.
2013	Agricultural	Wetter than Normal	Site consists of cropped agricultural field. Crop stress visible in several low areas throughout site.
2015	Agricultural	Normal	Site consists of cropped agricultural field. No areas of stunted or stressed crops visible.
2017	Agricultural	Normal	Same comment as above.
2019	Agricultural	Normal	Site consists of cropped agricultural field. Crop stress visible in the northeast corner of site.
2021	Agricultural	Normal	Site consists of cropped agricultural field. No areas of stunted or stressed crops visible.

Desktop Wetlands Assessment

Based on the Level 1 (Desktop) Wetlands Assessment, Kimley-Horn identified no potential wetlands within the project site.

USFWS Federally Listed Threatened and Endangered Species

Kimley-Horn conducted a preliminary review of the potential for federally listed threatened, endangered, and proposed species to occur within the site or be affected by the proposed project for the purposes of due diligence in complying with the Endangered Species Act (ESA). A list of the threatened, endangered, and proposed species, and designated critical habitat that could occur in Kendall County was obtained and evaluated from the United States Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) online planning tool. Habitat descriptions for the identified species were compared to the habitat within or near the site. An official species list dated July 22, 2022 was generated by IPaC and transmitted to Kimley-Horn on behalf of the Illinois-Iowa Ecological Services Field Office. The official species list is included in Attachment B. Five federally listed species has been identified within the site vicinity. The species are identified below in Table 1.

Table 1. USWFS Listed Threatened and Endangered Species

Species	Status	Preferred Habitat	Proposed Impacts
Myotis sodalis (Indiana Bat)	Endangered	During summer, Indiana Bats roost under loose bark or in hallows and cavities of mature trees in the floodplain forest or savanna habitats adjacent to riparian corridors. In winter, Indiana bats hibernate in caves.	No preferred habitat identified within the site; therefore, no impacts are anticipated.
Myotis septentrionalis (Northern Long-Eared Bat) (NLEB)	Threatened	During summer, NLEB roost singly or in colonies underneath bark, in cavities, or in crevices of both live and dead trees. This bat uses tree species based on suitability to retain bark or provide cavities or crevices. It has also been found, rarely, roosting in structures like barns and sheds. Northern long-eared bats spend winter hibernating in caves and mines.	No preferred habitat identified within the site; therefore, no impacts are anticipated.
Platanthera leucophaea (Eastern Prairie Fringed Orchid)	Threatened	Includes prairies; wetlands, including sedge meadows, marshes, and bogs; grassy environments with optimal sun.	No preferred habitat identified within the site; therefore, no impacts are anticipated.
Danaus plexippus (Monarch butterfly)	Candidate	The monarch butterfly requires grassland habitats where milkweed and flowers are present.	Minimal preferred habitat may appear within the site. The area is primarily active

Species	Status	Preferred Habitat	Proposed Impacts
			farmland. No adverse impacts anticipated.
Bombus affinis (Rusty Patched Bumble Bee) (RPBB)	Endangered	The RPBB prefers grasslands with flowering plants from April through October, underground and abandoned rodent cavities or clumps of grasses above ground as nesting sites, and undisturbed soil for hibernating queens to overwinter.	The site is located predominantly within a USFWS low-potential RPBB zone. Approximately 5% of the site is in a RPBB high-potential zone. The site is primarily active farmland providing minimal habitat for the RPBB. No adverse impacts anticipated.

Migratory Birds

According to the IPaC resource list, thirteen migratory species on the Birds of Conservation Concern (BCC) list have been identified within the site.

The Migratory Bird Treaty Act (MBTA) makes it illegal for anyone to "take, possess, import, export, transport, sell, purchase, barter, or offer for sale, purchase, or barter, any migratory bird, or the parts, nests, or eggs of such a bird except under the terms of a valid permit issued pursuant to Federal regulations by the USFWS". Typically, if active nests of bird species protected by the MBTA are identified, the USFWS recommends avoiding tree clearing or nest removal until at least the peak of the nesting season (generally March through August) has passed or until the nest is abandoned.

The U.S. Department of the Interior, Office of the Solicitor, published a memorandum (M-37050) dated December 22, 2017 regarding the MBTA and how "incidental take" is viewed by the Department. The memorandum analyzes whether the MBTA prohibits the accidental or "incidental" taking or killing of migratory birds. "Incidental take" is take that results from an activity, but is not the purpose of that activity. In this memorandum, the Department of the Interior concluded that "the MBTA's prohibition on pursuing, hunting, taking, capturing, killing, or attempting to do the same applies only to direct and affirmative purposeful actions that reduce migratory birds, their eggs, or their nests, by killing or capturing, to human control." Therefore, according to the Department of the Interior, the MBTA does not prohibit "incidental take." Courts have different opinions and decisions with respect to including or excluding "incidental take" when considering the prohibitions under the MBTA. In 2015, the Fifth Circuit in United States v. Citgo Petroleum Corp. issued an opinion that agreed with the Eighth and Ninth circuits that a taking is limited to deliberate acts done directly and intentionally to migratory birds. Therefore, the Fifth Circuit decided that the MBTA only prohibits intentional take and does not prohibit incidental take. This decision by the Fifth Circuit set precedent within the Fifth Circuit's jurisdiction.

On January 7, 2021, the USFWS published a final rule ("MBTA rule") defining the scope of the MBTA which excluded incidental take of migratory birds from being unlawful. This interpretation of the MBTA was effective as of March 8, 2021. On May 7, 2021, the USFWS proposed to revoke the January 7, 2021 final regulation and opened a public comment period which closed on June 7, 2021. On September 29, 2021, the U.S. Department of Interior announced a series of actions to unwind the most recent rulemaking in an effort "to ensure that the MBTA conserves birds today and into the

future." On October 4, 2021, the USFWS published a final rule revoking the most recent rule enacted by the Trump Administration that limited the scope of the MBTA. According to the Federal Register, the final MBTA revocation rule will go into effect on December 3, 2021. It is our understanding that as of December 3, 2021, incidental take would be enforceable under the MBTA; however, currently given that the purpose of the site is to develop a solar project, incidental take is currently not enforceable (as of the date of this report).

In addition, on October 4, 2021, the USFWS published an Advanced Notice of Proposed Rulemaking announcing the intent to solicit public comments and information to help develop proposed regulations that would establish a permitting system to authorize the incidental take of migratory birds in certain circumstances. The USFWS issued a Director's Order establishing criteria for the types of conduct that will be a priority for enforcement activities with respect to incidental take of migratory birds.

It should be noted that the regulatory climate with respect to the MBTA is changing; however, it is our understanding that as of December 3, 2021 incidental take of migratory birds will be liable under the MBTA. This should be considered until a rulemaking process is complete.

Kimley-Horn downloaded the Trust Resources Report Migratory Bird List from the IPaC online planning tool. The IPaC results are included in Attachment B. Kimley-Horn conducted a preliminary desktop review of the potential for migratory bird habitat (focusing primarily on trees and shrubs) to occur on the proposed site or be affected by the proposed site for the purposes of due diligence in complying with the MBTA. The desktop review revealed the presence of minimal potential migratory bird habitat within the site. It is our understanding that as of December 3, 2021, incidental take would be enforceable under the MBTA; however, currently given that the purpose of the project is to develop a solar project, incidental take is currently not enforceable (as of the date of this report).

Illinois Department of Natural Resources (IDNR) State Listed Threatened, Endangered, and Species of Special Concern

The IDNR identified no state Illinois Natural Area Inventory sites, dedicated Illinois Nature Preserves, or registered Land and Water Reserves in the vicinity of the site. The IDNR identified protected resources that may be in the vicinity of the project location; however, the IDNR determined that adverse effects are unlikely. IDNR Consultation Letter is included in Attachment B.

Historic Resources Database Review

Kimley-Horn reviewed the Illinois Historic Preservation Division (IHPD) database for known historic resources within the project vicinity. According to the IHPD database, the project area contains no previously identified archaeological sites (see Attachment C). There are 18 previously identified archaeological sites and 8 archaeological surveys completed within 0.5 miles of the site. The identified sites are not listed in the National Register of Historic Places. According to the Historic & Architectural Resources Geographic Information System (HARGIS), the site does not contain previously identified historic buildings or sites and no buildings have been previously recorded within 0.5 miles of the site. The results of the IHPD review are sensitive in nature and should not be shared publicly. Correspondence with the Illinois State Historic Preservation Office (SHPO) is ongoing and results are pending.

CONCLUSIONS

Based on the information reviewed, Kimley-Horn has identified minimal environmental constraints that could require additional planning.

Based on the Level 1 (Desktop) Wetlands Assessment, Kimley-Horn identified no potential wetlands within the project site.

Minimal potential suitable habitat for listed federal species was observed within the site. If tree clearing or structure demolition is anticipated, it is recommended to occur from November 1st – March 31st, which is outside of the active bat season. The IDNR determined that adverse effects to state listed species or protected resources are unlikely.

No impacts to known IHPD-listed resources are anticipated. Correspondence with the Illinois State Historic Preservation Office (SHPO) is ongoing and results are pending.

Figures



Kimley»Horn

Figure 1. Project Location
Bristol Township, Kendall County
Turning Point Energy

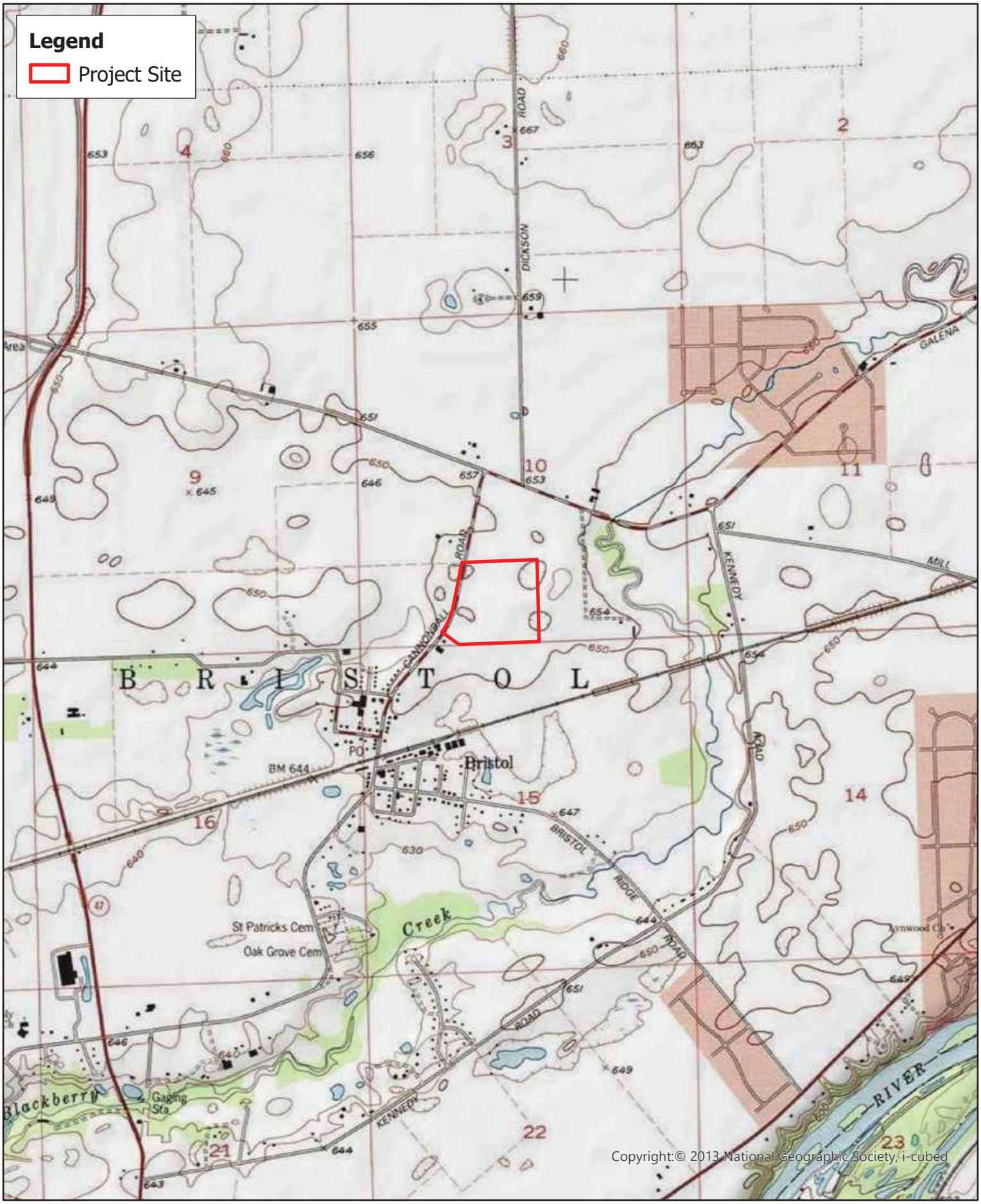


Kimley»Horn

0 250 500 Feet

N

Figure 2. Project Site Boundary
Bristol Township, Kendall County
Turning Point Energy



Kimley»Horn

0 1,000 2,000 Feet

N

Figure 3. USGS Topographical Map
Bristol Township, Kendall County
Turning Point Energy



Kimley»Horn

0 250 500 US Feet

N

Figure 4. NWI and NHD Map
Bristol Township, Kendall County
Turning Point Energy

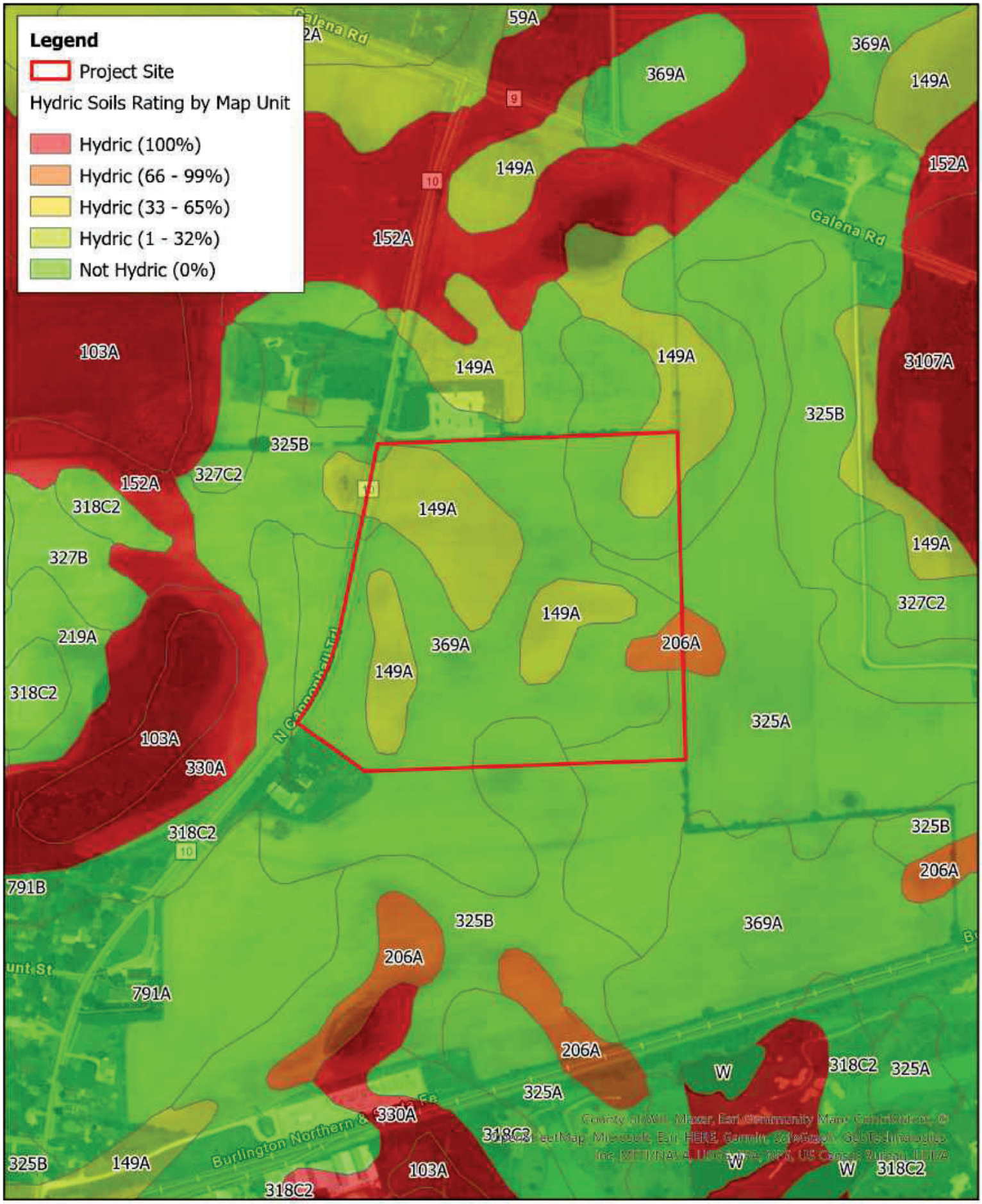


Kimley»Horn

0 250 500 US Feet

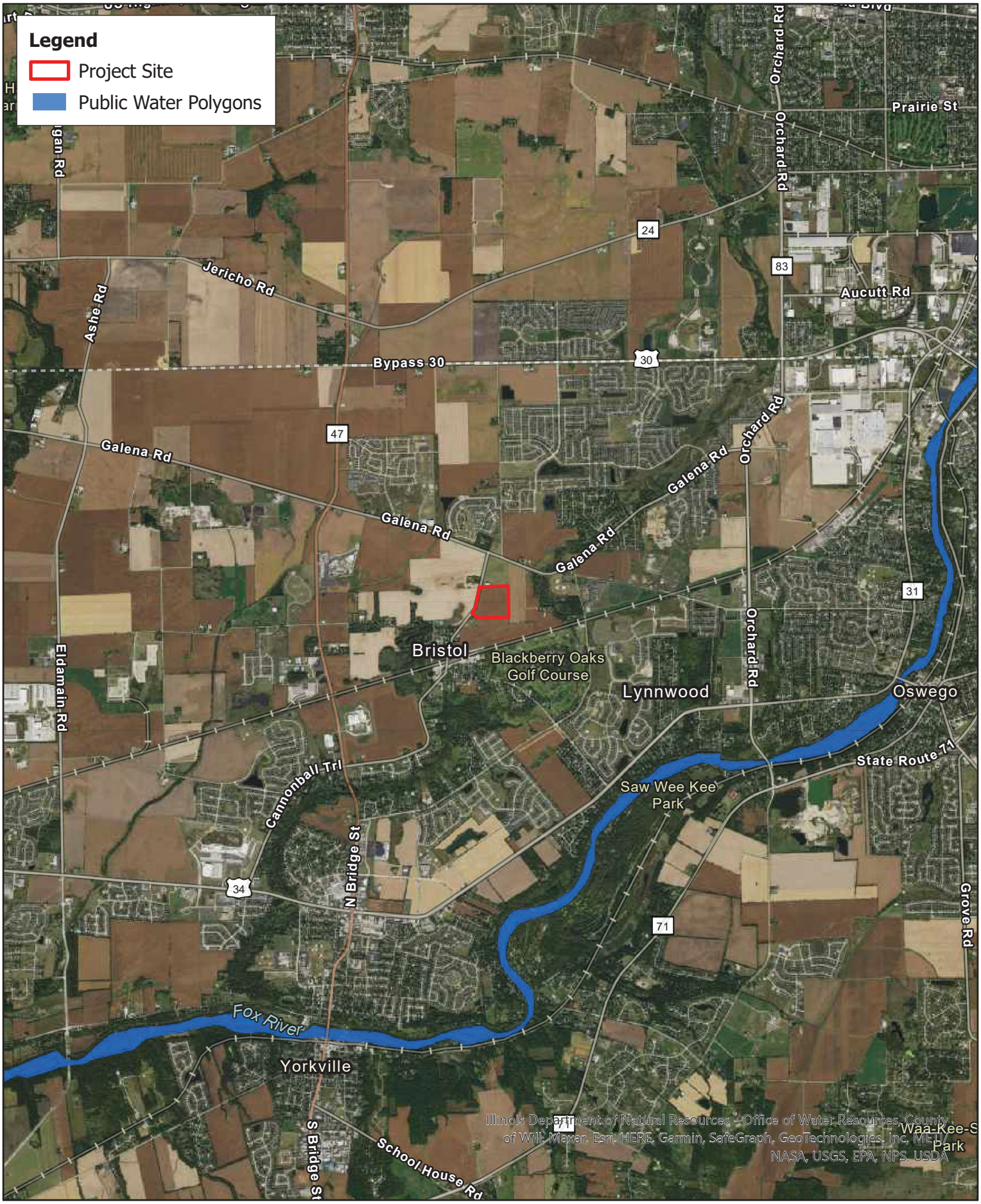
N

Figure 5. 2-ft Contours Map
Bristol Township, Kendall County
Turning Point Energy



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Figure 6. Hydric Soils Map
Bristol Township, Kendall County
Turning Point Energy



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0 0.5 1 Miles

N

Figure 7. IL DNR Public Waters Map
Bristol Township, Kendall County
Turning Point Energy

ATTACHMENT A

Historic Aerials



Kimley»Horn

0 125 250 US Feet

N

Historic Aerial Map (March 1993)
Bristol Township, Kendall County
Turning Point Energy



Kimley»Horn

0 125 250 US Feet

N

Historic Aerial Map (February 2002)
Bristol Township, Kendall County
Turning Point Energy



Kimley»Horn

0 125 250 US Feet

N

Historic Aerial Map (October 2007)
Bristol Township, Kendall County
Turning Point Energy



Kimley»Horn

0 125 250 US Feet

N

Historic Aerial Map (April 2008)
Bristol Township, Kendall County
Turning Point Energy



Kimley»Horn

0 125 250 US Feet

N

Historic Aerial Map (June 2010)
Bristol Township, Kendall County
Turning Point Energy



Kimley»Horn

0 125 250 US Feet

N

Historic Aerial Map (September 2011)
Bristol Township, Kendall County
Turning Point Energy



Kimley»Horn

0 125 250 US Feet

N

Historic Aerial Map (April 2013)
Bristol Township, Kendall County
Turning Point Energy



Kimley»Horn

0 125 250 US Feet

N

Historic Aerial Map (April 2015)
Bristol Township, Kendall County
Turning Point Energy



Kimley»Horn

0 125 250 US Feet

N

Historic Aerial Map (September 2017)
Bristol Township, Kendall County
Turning Point Energy



Kimley»Horn

0 125 250 US Feet

N

Historic Aerial Map (October 2019)
Bristol Township, Kendall County
Turning Point Energy



Kimley»Horn

0 125 250 US Feet

N

Historic Aerial Map (May 2021)
Bristol Township, Kendall County
Turning Point Energy

ATTACHMENT B

Species Resources

IPaC **U.S. Fish & Wildlife Service**

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

NOT FOR CONSULTATION

Project information

NAME

KE106

LOCATION

Kendall County, Illinois



DESCRIPTION

None

Local office

Illinois-Iowa Ecological Services Field Office

(309) 757-5800
(309) 757-5807

Illinois & Iowa Ecological Services Field Office
1511 47th Ave
Moline, IL 61265-7022

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Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Log in to IPaC.
2. Go to your My Projects list.
3. Click PROJECT HOME for this project.
4. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

---

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of

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Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS
Indiana Bat *Myotis sodalis* Wherever found There is **final** critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/5949	Endangered
Northern Long-eared Bat *Myotis septentrionalis* Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9045	Threatened

Insects

NAME	STATUS
Monarch Butterfly *Danaus plexippus* Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9743	Candidate
Rusty Patched Bumble Bee *Bombus affinis* Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9383	Endangered

Flowering Plants

NAME	STATUS
Eastern Prairie Fringed Orchid *Platanthera leucophaea* Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/601	Threatened

Critical habitats

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Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern https://www.fws.gov/program/migratory-birds/species
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

NOT FOR CONSULTATION

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)
American Golden-plover Pluvialis dominica This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
Bald Eagle Haliaeetus leucocephalus This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Oct 15 to Aug 31
Black-billed Cuckoo Coccyzus erythropthalmus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9399	Breeds May 15 to Oct 10
Bobolink Dolichonyx oryzivorus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 20 to Jul 31

NOT FOR CONSULTATION

Cerulean Warbler Dendroica cerulea — Breeds Apr 21 to Jul 20
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/2974

Eastern Whip-poor-will Antrostomus vociferus — Breeds May 1 to Aug 20
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Henslow's Sparrow Ammodramus henslowii — Breeds May 1 to Aug 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/3941

Kentucky Warbler Oporornis formosus — Breeds Apr 20 to Aug 20
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Lesser Yellowlegs Tringa flavipes — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9679

Prothonotary Warbler Protonotaria citrea — Breeds Apr 1 to Jul 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Red-headed Woodpecker Melanerpes erythrocephalus — Breeds May 10 to Sep 10
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Rusty Blackbird Euphagus carolinus — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

Short-billed Dowitcher Limnodromus griseus — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9480

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Wood Thrush *Hylocichla mustelina* Breeds May 10 to Aug 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (■)

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)

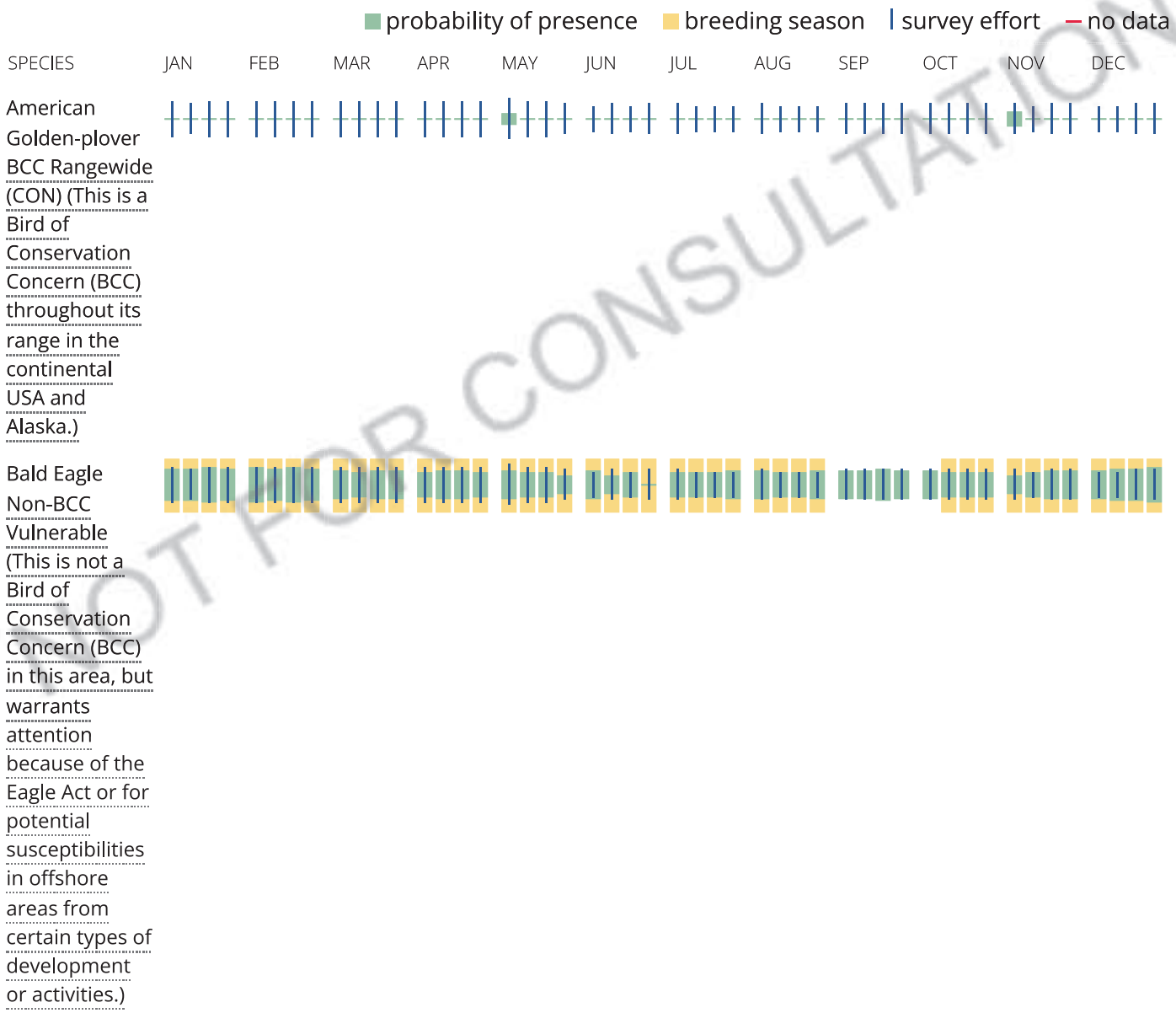
NOT FOR CONSULTATION

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

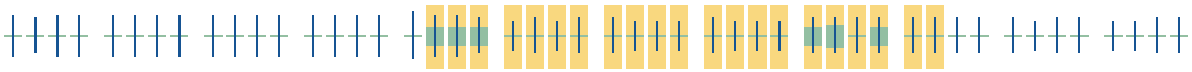
No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

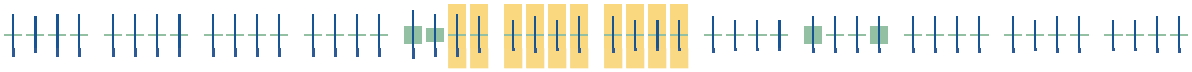


NOT FOR CONSULTATION

Black-billed Cuckoo BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



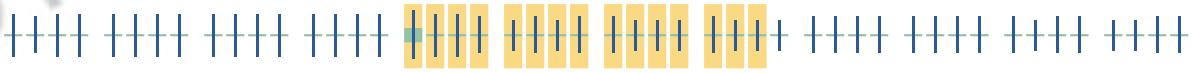
Bobolink BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Cerulean Warbler BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

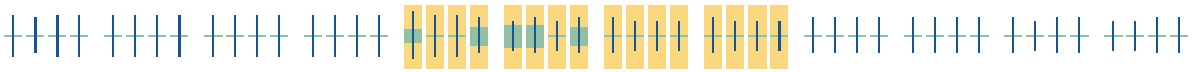


Eastern Whip-poor-will BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

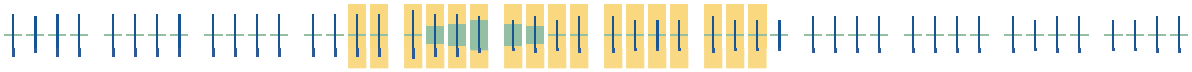


NOT FOR CONSULTATION

Henslow's Sparrow BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



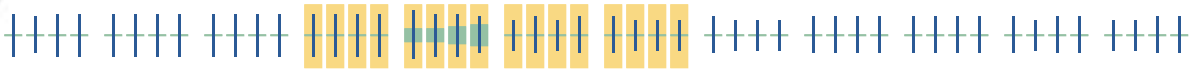
Kentucky Warbler BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



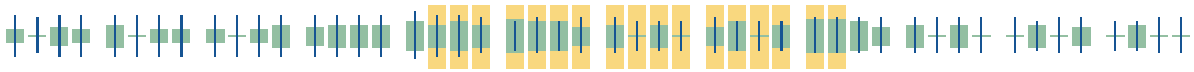
Lesser Yellowlegs BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Prothonotary Warbler BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



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Red-headed Woodpecker BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Rusty Blackbird BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)



Short-billed Dowitcher BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Wood Thrush BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

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Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the AKN Phenology Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin

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Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn

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more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Coastal Barrier Resources System

Projects within the John H. Chafee Coastal Barrier Resources System (CBRS) may be subject to the restrictions on federal expenditures and financial assistance and the consultation requirements of the Coastal Barrier Resources Act (CBRA) (16 U.S.C. 3501 et seq.). For more information, please contact the local Ecological Services Field Office or visit the CBRA Consultations website. The CBRA website provides tools such as a flow chart to help determine whether consultation is required and a template to facilitate the consultation process.

THERE ARE NO KNOWN COASTAL BARRIERS AT THIS LOCATION.

Data limitations

The CBRS boundaries used in IPaC are representations of the controlling boundaries, which are depicted on the official CBRS maps. The boundaries depicted in this layer are not to be considered authoritative for in/out determinations close to a CBRS boundary (i.e., within the "CBRS Buffer Zone" that appears as a hatched area on either side of the boundary). For projects that are very close to a CBRS boundary but do not clearly intersect a unit, you may contact the Service for an official determination by following the instructions here: https://www.fws.gov/service/coastal-barrier-resources-system-property-documentation

Data exclusions

CBRS units extend seaward out to either the 20- or 30-foot bathymetric contour (depending on the location of the unit). The true seaward extent of the units is not shown in the CBRS data, therefore projects in the offshore areas of units (e.g., dredging, breakwaters, offshore wind energy or oil and gas projects) may be subject to CBRA even if they do not intersect the CBRS data. For additional information, please contact CBRA@fws.gov.

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Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

WETLAND INFORMATION IS NOT AVAILABLE AT THIS TIME

This can happen when the National Wetlands Inventory (NWI) map service is unavailable, or for very large projects that intersect many wetland areas. Try again, or visit the NWI map to view wetlands at this location.

NOT FOR CONSULTATION

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also

been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

NOT FOR CONSULTATION

EcoCAT
Ecological Compliance Assessment Tool

Applicant:	Turning Point Energy	*IDNR Project Number:*	2300084
Contact:	Scott Osborn	*Date:*	07/05/2022
Address:	3720 S Dahlia St Denver, CO 80237	*Alternate Number:*	26817300X
Project:	Turning Point Energy KE106		
Address:	1700 Cannonball Drive , Bristol		

Description: The proposed project includes the development of a 5-megawatt AC solar photovoltaic system on a single parcel of land located at 1700 Cannonball Trail, Bristol, IL 60512. The project includes land in the Residential 2 and 3 zoning districts.

Natural Resource Review Results

Consultation for Endangered Species Protection and Natural Areas Preservation (Part 1075)

The Illinois Natural Heritage Database shows the following protected resources may be in the vicinity of the project location:

Mottled Sculpin *(Cottus bairdii)*

An IDNR staff member will evaluate this information and contact you to request additional information or to terminate consultation if adverse effects are unlikely.

Location

The applicant is responsible for the accuracy of the location submitted for the project.

County: Kendall

Township, Range, Section:
37N, 7E, 10
37N, 7E, 15



IL Department of Natural Resources Contact
Adam Rawe
217-785-5500
Division of Ecosystems & Environment

Government Jurisdiction
IL Environmental Protection Agency
Terri LeMasters
1020 North Grand Avenue East
Springfield, Illinois 62794 -9276

Disclaimer

The Illinois Natural Heritage Database cannot provide a conclusive statement on the presence, absence, or condition of natural resources in Illinois. This review reflects the information existing in the Database at the time of this inquiry, and should not be regarded as a final statement on the site being considered, nor should it be a substitute for detailed site surveys or field surveys required for environmental assessments. If additional protected resources are encountered during the project's implementation, compliance with applicable statutes and regulations is required.

Terms of Use

By using this website, you acknowledge that you have read and agree to these terms. These terms may be revised by IDNR as necessary. If you continue to use the EcoCAT application after we post changes to these terms, it will mean that you accept such changes. If at any time you do not accept the Terms of Use, you may not continue to use the website.

1. The IDNR EcoCAT website was developed so that units of local government, state agencies and the public could request information or begin natural resource consultations on-line for the Illinois Endangered Species Protection Act, Illinois Natural Areas Preservation Act, and Illinois Interagency Wetland Policy Act. EcoCAT uses databases, Geographic Information System mapping, and a set of programmed decision rules to determine if proposed actions are in the vicinity of protected natural resources. By indicating your agreement to the Terms of Use for this application, you warrant that you will not use this web site for any other purpose.

2. Unauthorized attempts to upload, download, or change information on this website are strictly prohibited and may be punishable under the Computer Fraud and Abuse Act of 1986 and/or the National Information Infrastructure Protection Act.

3. IDNR reserves the right to enhance, modify, alter, or suspend the website at any time without notice, or to terminate or restrict access.

Security

EcoCAT operates on a state of Illinois computer system. We may use software to monitor traffic and to identify unauthorized attempts to upload, download, or change information, to cause harm or otherwise to damage this site. Unauthorized attempts to upload, download, or change information on this server is strictly prohibited by law.

Unauthorized use, tampering with or modification of this system, including supporting hardware or software, may subject the violator to criminal and civil penalties. In the event of unauthorized intrusion, all relevant information regarding possible violation of law may be provided to law enforcement officials.

Privacy

EcoCAT generates a public record subject to disclosure under the Freedom of Information Act. Otherwise, IDNR uses the information submitted to EcoCAT solely for internal tracking purposes.

Illinois Department of
Natural Resources
One Natural Resources Way Springfield, Illinois 62702-1271
http://dnr.state.il.us

JB Pritzker, Governor
Colleen Callahan, Director

July 05, 2022

Scott Osborn
Turning Point Energy
3720 S Dahlia St
Denver, CO 80237

RE: Turning Point Energy KE106
Project Number(s): 2300084 [26817300X]
County: Kendall

Dear Applicant:

This letter is in reference to the project you recently submitted for consultation. The natural resource review provided by EcoCAT identified protected resources that may be in the vicinity of the proposed action. The Department has evaluated this information and concluded that adverse effects are unlikely. Therefore, consultation under 17 Ill. Adm. Code Part 1075 is terminated.

This consultation is valid for two years unless new information becomes available that was not previously considered; the proposed action is modified; or additional species, essential habitat, or Natural Areas are identified in the vicinity. If the project has not been implemented within two years of the date of this letter, or any of the above listed conditions develop, a new consultation is necessary.

The natural resource review reflects the information existing in the Illinois Natural Heritage Database at the time of the project submittal, and should not be regarded as a final statement on the site being considered, nor should it be a substitute for detailed site surveys or field surveys required for environmental assessments. If additional protected resources are encountered during the project's implementation, you must comply with the applicable statutes and regulations. Also, note that termination does not imply IDNR's authorization or endorsement of the proposed action.

Please contact me if you have questions regarding this review.

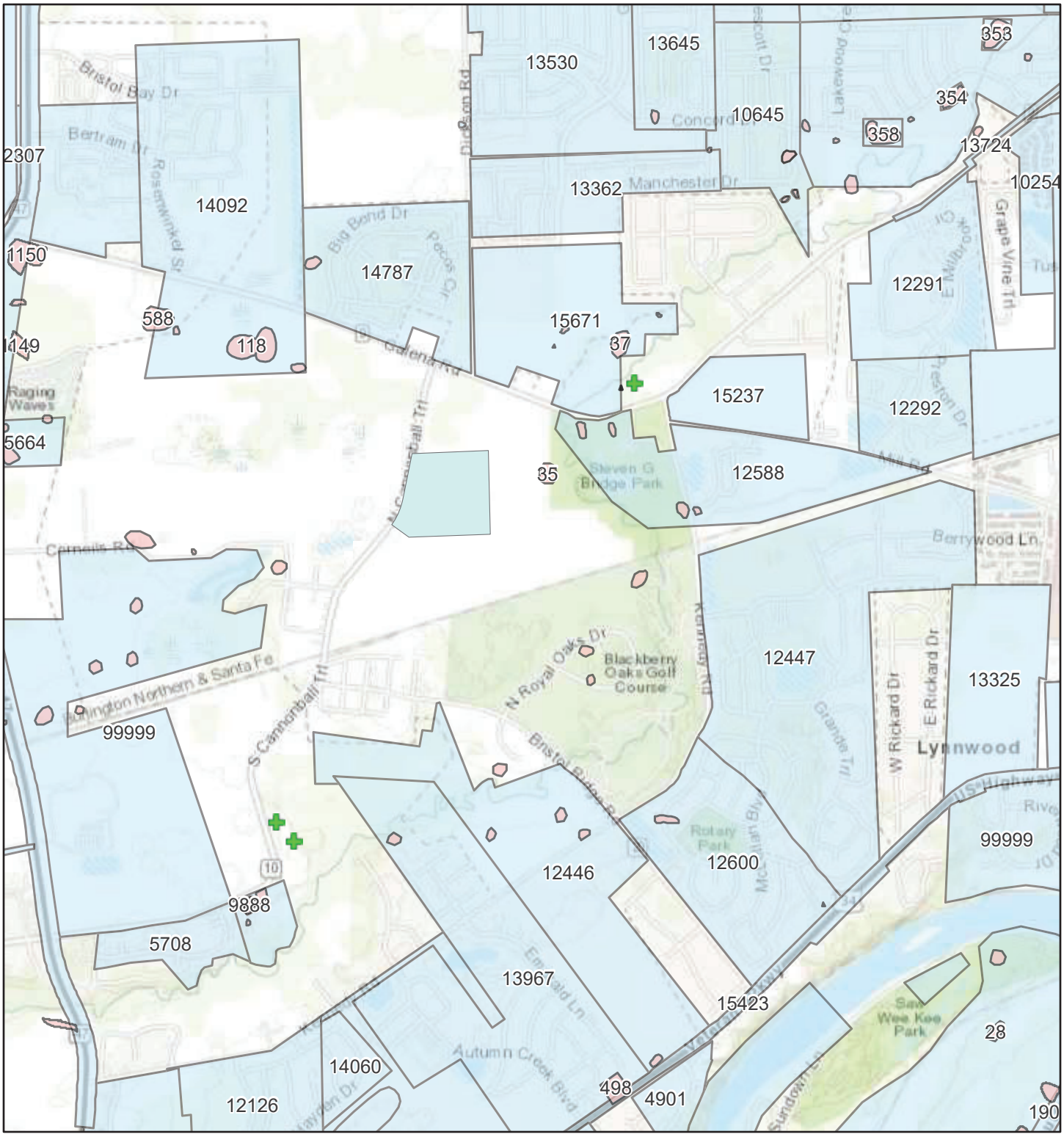
Adam Rawe

Adam Rawe
Division of Ecosystems and Environment
217-785-5500

ATTACHMENT C

Historic Resources

Project Site



IHPD Cultural Resources Map

- Project Site
- IAS Sites
- Surveys
- ISM Cemeteries

1:36,112

0 0.23 0.45 0.9 mi

0 0.35 0.7 1.4 km

Esri Canada, Esri, HERE, Garmin, GeoTechnologies, Inc., USGS, METI/NASA, EPA, USDA

ArcGIS Web AppBuilder
Turning Point Energy (KE106)

APPENDIX F – IDNR ECOCAT

Illinois Department of
Natural Resources

One Natural Resources Way Springfield, Illinois 62702-1271
http://dnr.state.il.us

JB Pritzker, Governor
Colleen Callahan, Director

July 05, 2022

Scott Osborn
Turning Point Energy
3720 S Dahlia St
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Please contact me if you have questions regarding this review.

Adam Rawe

Adam Rawe
Division of Ecosystems and Environment
217-785-5500

EcoCAT
Ecological Compliance Assessment Tool

ILLINOIS DEPARTMENT OF NATURAL RESOURCES

Applicant: Turning Point Energy
Contact: Scott Osborn
Address: 3720 S Dahlia St
Denver, CO 80237

IDNR Project Number: 2300084
Date: 07/05/2022
Alternate Number: 26817300X

Project: Turning Point Energy KE106
Address: 1700 Cannonball Drive , Bristol

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The Illinois Natural Heritage Database shows the following protected resources may be in the vicinity of the project location:

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County: Kendall

Township, Range, Section:
37N, 7E, 10
37N, 7E, 15



IL Department of Natural Resources Contact
Adam Rawe
217-785-5500
Division of Ecosystems & Environment

Government Jurisdiction
IL Environmental Protection Agency
Terri LeMasters
1020 North Grand Avenue East
Springfield, Illinois 62794 -9276

Disclaimer

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Privacy

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APPENDIX G – SHPO CONCURRENCE

June 6, 2022

Illinois State Historic Preservation Office
Illinois Department of Natural Resources
Attn: Review & Compliance
1 Old State Capitol
Springfield, Illinois 62701

RE: ***Illinois State Historic Preservation Office Project Review***
Turning Point Energy (KE106)
1700 Cannonball Trail, Bristol County, IL

To whom it may concern:

Kimley-Horn and Associates, Inc. is requesting your review of the completed Illinois State Historic Preservation Office Project Review application for a proposed development. We have been contracted by Turning Point Energy to investigate the site at 1700 Cannonball Trail in Kendall County, IL. The proposed project site is approximately 42 acres and is farmland. The following items are enclosed with this letter:

- SHPO Permit Application
- USGS Map
- Aerial Exhibit

In addition to the information listed above, a HARGIS map has been included. The required information to go along with the HARGIS map is as follows:

Is this property
Listed on the National Register: Yes__. No_X_
Within a Local Historic District: Yes___ No_X_
A Local Landmark: Yes___ No_X_
Survey ranking, if not designated: _____

If you have any questions or concerns, please feel free to contact me via phone phone (630.487.3449) or email (jason.cooper@kimley-horn.com).

Sincerely,

Jason Cooper

Project Engineer, P.E.

Kimley-Horn and Associates, Inc.

ILLINOIS STATE HISTORIC PRESERVATION OFFICE PROJECT REVIEW

State Agency Historic Resource Preservation Act
(Ill. Rev. Stat. 1989, Ch. 127, Pas 133c21, et seq.)

PROJECT CHARACTERISTICS

Project Title: Turning Point Energy (KE105) KHA Project Number 268173008

Project Address or Municipality: 15 Cannonball Trail, Bristol IL 60512

County: Kendall USGS 7.5' Quadrangle: Yorkville

Sec: 15 Twp: 37 N Range: 7 E

APPLICANT/DEVELOPER

TPE IL KE105, LLC
Name

TPE IL KE105
Company Name

3720 S Dahlia St
Address

Denver, CO 80237
City, State Zip + four

781-325-2884
Telephone

CONSULTING ENGINEER

Jason Cooper
Name

Kimley-Horn and Associates
Company Name

4201 Winfield Road, Suite 600.
Address

Warrenville, IL 60555
City, State Zip + four

630-487-5550
Telephone

Project Scope

Construction of a solar farm with the associated access roads and utilities.

Acreage and or Lineal Foot:

Project Type

☐ Public Land ☒ Private Land ☐ Public Undertaking ☒ Private Undertaking

Extent of Project Ground Disturbance

Construction of a new solar farm, access roads, and utilities will occur. Existing buildings/structures within the project limits are to remain and will not be impacted.

Previous Disturbance to Project Area:

The site currently consists of agricultural land.

PERMITTING

From which State Agencies or funding sources will permit, license, approvals or funds be obtained or required

(check appropriate boxes)?

☒ IDOT-Division of Water Resources ☒ IEPA Water Pollution Control ☐ IEPA Public Water Supplies ☐ Other: IDNR

Federal Agencies from which permits, licenses, approvals, or funds may be required (i.e., Corps, HUD) ☒ US Army Corps of Engineers

This review process does not exempt your project from compliance with Section 106 of the National Historic Preservation Act of 1966, as amended.

Mandatory Enclosures:

1. USGS 7.5' topographic map or city map clearly indicating project area and street address (if available).
2. Current photographs (no photocopies) of all standing structures; if building is over 40 years old include interior photographs.
3. If this project has been previously reviewed by SHPO, include all pertinent correspondence.
4. Any known historical information, i.e., is structure significant in the community or is it associated with an individual of significance.
5. The names of state and/or federal agencies and entities that are providing funding, licenses, permits, or approvals for your project.
6. Previously assigned SHPO log numbers associated with your project (if any)

U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

The National Map US Topo

YORKVILLE QUADRANGLE
ILLINOIS
7.5-MINUTE SERIES



Produced by the United States Geological Survey
North American Datum of 1983 (NAD83)
World Geodetic System of 1984 (WGS84). Projection and
1 000-meter grid:Universal Transverse Mercator, Zone 16T
This map is not a legal document. Boundaries may be
generalized for this map scale. Private lands within government
reservations may not be shown. Obtain permission before
entering private lands.

Imagery.....NAIP, August 2019 - August 2019
Roads.....U.S. Census Bureau, 2017
Names.....GNIS, 1980 - 2021
Hydrography.....National Hydrography Dataset, 2003 - 2018
Contours.....National Elevation Dataset, 2019
Boundaries.....Multiple sources; see metadata file 2018 - 2019
Public Land Survey System.....BLM, 2020
Wetlands.....FWS National Wetlands Inventory Not Available

3°18' 59 MILS
0°57' 17 MILS
UTM GRID AND 2019 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

U.S. National Grid
100,000 - m Square ID
CM
Grid Zone Designation 16T

SCALE 1:24 000
1 0.5 0 KILOMETERS 1 2
1000 500 0 METERS 1000 2000
1 0.5 0 MILES 1
1000 0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10000 FEET

CONTOUR INTERVAL 10 FEET
NORTH AMERICAN VERTICAL DATUM OF 1988

This map was produced to conform with the
National Geospatial Program US Topo Product Standard.

ILLINOIS
QUADRANGLE LOCATION

1	2	3
4		5
6	7	8

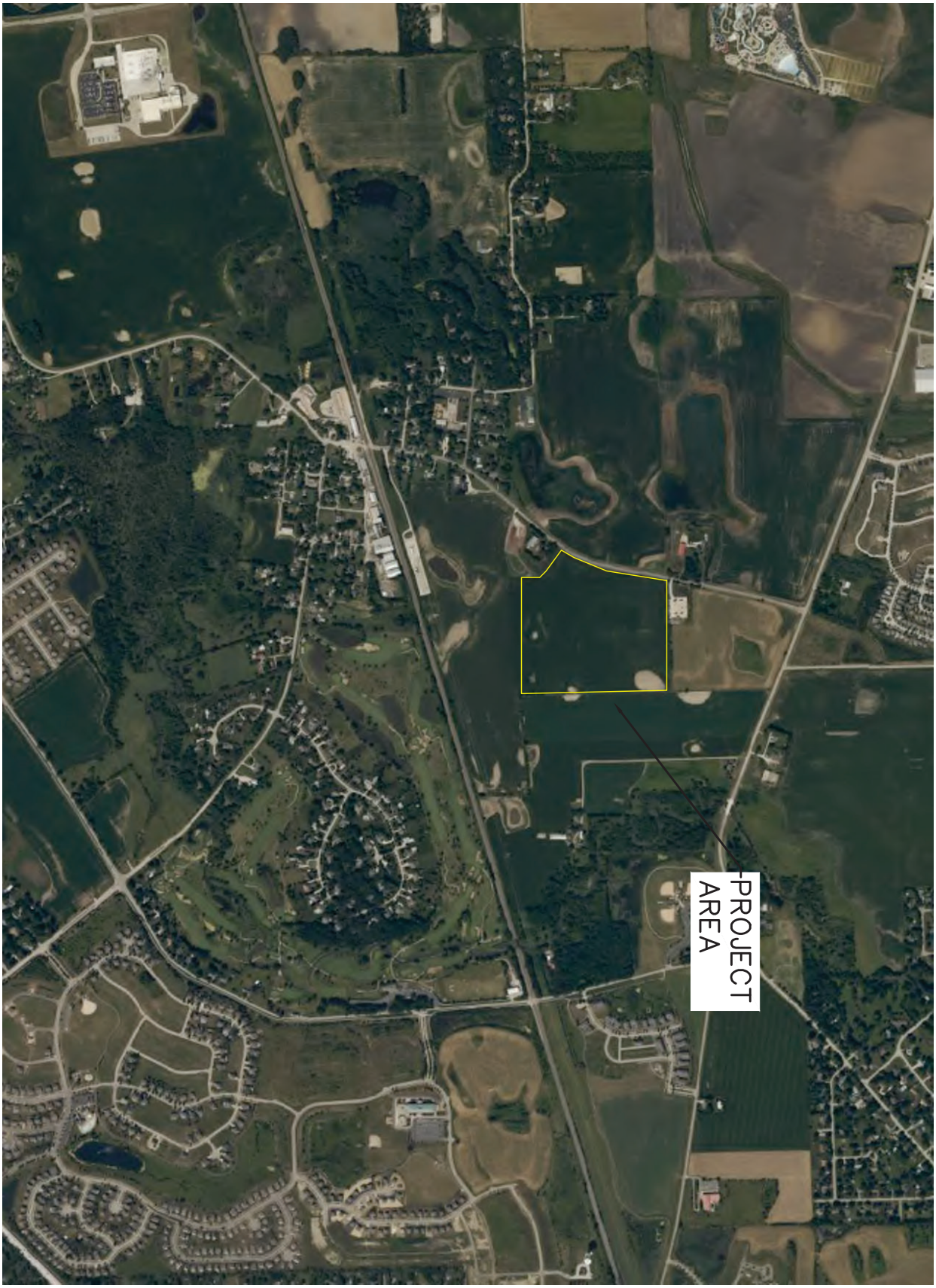
ADJOINING QUADRANGLES
1 Big Rock
2 Sugar Grove
3 Aurora North
4 Plano
5 Aurora South
6 Newark
7 Plattville
8 Yorkville SE

ROAD CLASSIFICATION
Expressway
Secondary Hwy
Ramp
Local Connector
Local Road
4WD
Interstate Route
US Route
State Route

YORKVILLE, IL
2021

MSA 7 0 4 0 0 1 0 6 0 5 0 4 2
NGA REF NO. USGSX24K014

Plotted By:—— July 1, 2022 10:24:19 AM \\Kimley-horn.com\ATX_CHS\CHS_LDEV\285173000_Turning Point Energy_KE105\8 Permits & Apps\BHPO\Attachments\Aerial Map.dwg
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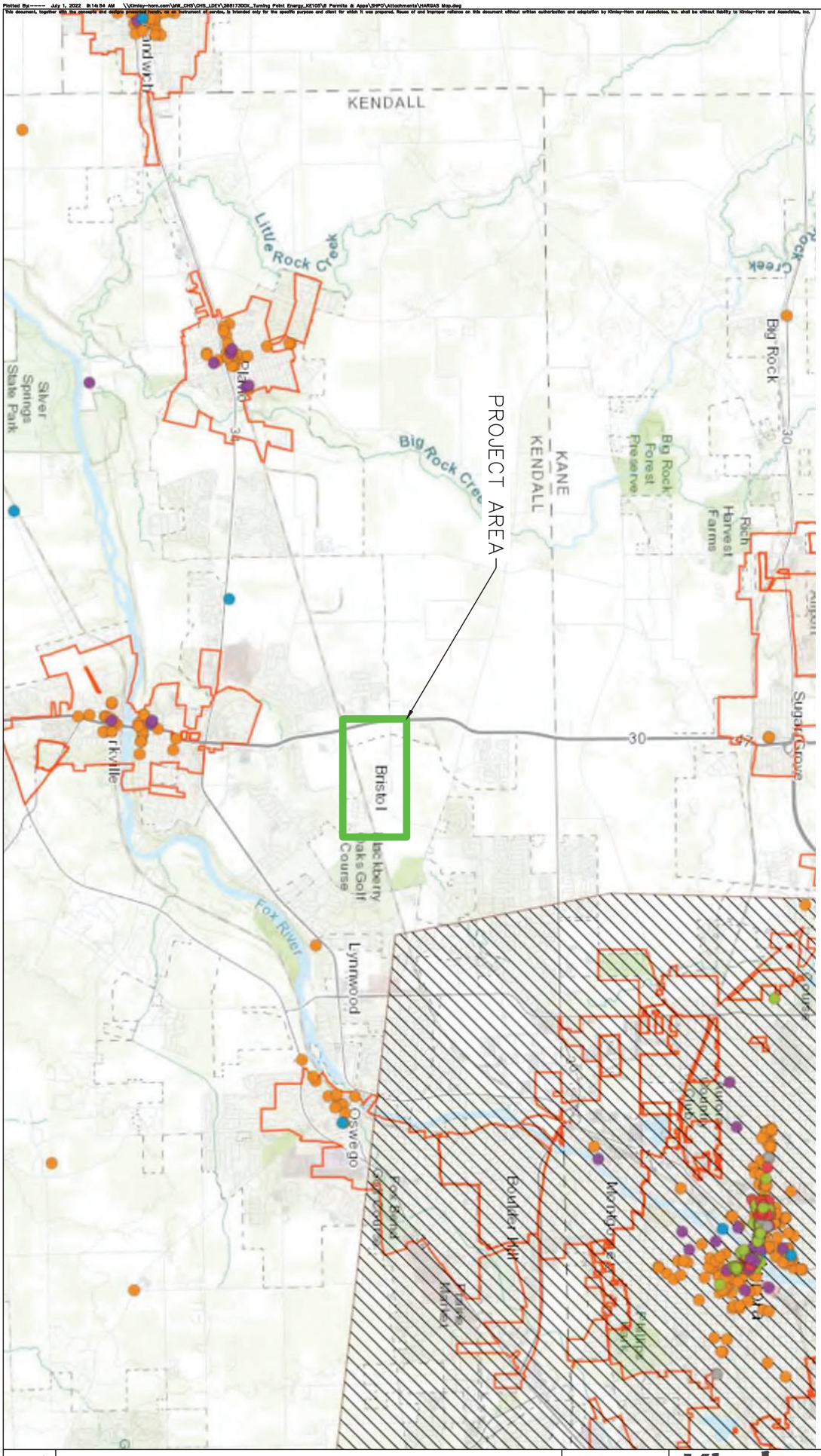
AERIAL MAP (N.T.S)

15 Cannonball Trail
Bristol IL, 60512

Kimley»Horn

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PHONE: 630-487-5550 WWW.KIMLEY-HORN.COM

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HARGIS MAP (N.T.S)

15 Cannonball Trail
Bristol IL, 60512

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APPENDIX H – NRI APPLICATION & REPORT

Kendall County Soil & Water Conservation District

7775A Route 47, Yorkville, Illinois 60560 • (630)553-5821 extension 3

www.kendallswcd.org

NATURAL RESOURCE INFORMATION (NRI) REPORT APPLICATION

Petitioner: Jason Cooper
Address: 570 Lake Cook Rd, Suite 200
City, State, Zip: Deerfield, IL 60015
Phone Number: (630) 487 3449
Email: Jason-Cooper@kimley-horn.com

Contact Person: Scott Osborn
3720 S Dahlia St
Denver, CO 80237
(303-618-9570
sosborn@tpoint-e.com

Please select: How would you like to receive a copy of the NRI Report? ☒ Email ☐ Mail

Site Location & Proposed Use

Township Name Yorkville Township 37 N, Range 7 E, Section(s) 15
Parcel Index Number(s) 02-10-300-017
Project or Subdivision Name TPE IL KE106, LLC Number of Acres 41.84
Current Use of Site Agricultural Land Proposed Use Freestanding Solar Energy System
Proposed Number of Lots 1 Proposed Number of Structures 1
Proposed Water Supply N/A Proposed type of Wastewater Treatment N/A
Proposed type of Storm Water Management BMP

Type of Request

- ☐ Change in Zoning from PUD (R-2, R-3) to Special Use
- ☐ Variance (Please describe fully on separate page)
- ☒ Special Use Permit (Please describe fully on separate page)

Name of County or Municipality the request is being filed with: City of Yorkville

In addition to this completed application form, please including the following to ensure proper processing:

- ☐ **Plat of Survey/Site Plan** – showing location, legal description and property measurements
- ☐ **Concept Plan** - showing the locations of proposed lots, buildings, roads, stormwater detention, open areas, etc.
- ☐ If available: topography map, field tile map, copy of soil boring and/or wetland studies
- ☐ **NRI fee** (Please make checks payable to Kendall County SWCD)

The NRI fees, as of July 1, 2010, are as follows:

Full Report: $375.00 for five acres and under, plus $18.00 per acre for each additional acre or any fraction thereof over five.
Executive Summary Report: $300.00 (KCSWCD staff will determine when a summary or full report will be necessary.)

Fee for first five acres and under	$ 375.00
37 Additional Acres at $18.00 each	$ 666.00
Total NRI Fee	**$ 1041.00**

NOTE: Applications are due by the 1st of each month to be on that month's SWCD Board Meeting Agenda. Once a completed application is submitted, please allow 30 days for inspection, evaluation and processing of this report.

I (We) understand the filing of this application allows the authorized representative of the Kendall County Soil and Water Conservation District (SWCD) to visit and conduct an evaluation of the site described above. The completed NRI report expiration date will be 3 years after the date reported.

_____ July 28, 2022
Petitioner or Authorized Agent **Date**

This report will be issued on a nondiscriminatory basis without regard to race, color, religion, national origin, age, sex, handicap or marital status.

FOR OFFICE USE ONLY

NRI#_____ Date initially rec'd _____ Date all rec'd _____ Board Meeting _____
Fee Due $_____ Fee Paid $ _____ Check #_____ Over/Under Payment _____Refund Due_____



NORTH

GRAPHIC SCALE IN FEET
0 50 100 200

LEGEND

ROAD LABEL	IL-251
PROJECT BOUNDARY	
PROPERTY LINE PER GIS	
RIGHT OF WAY PER GIS	R/W
SETBACK	
EX. OVERHEAD ELECTRIC	EX OHE
EX. GRAVEL/PAVEMENT	
EX. UTILITY POLE	
EX. RESIDENCE/STRUCTURE	
EX. FLOW (DIRECTION AND SLOPE)	XX%
PR. SECURITY FENCE	X
PR. PANEL LIMITS	
PR. UNDERGROUND ELECTRIC	UGE
PR. OVERHEAD ELECTRIC	OHE
PR. ACCESS ROAD	
PR. UTILITY POLE	
PR. EQUIPMENT PAD	
PR. SOLAR ARRAY	
EX. WELL	W
WELL BUFFER	
SOIL BOUNDARY	
PR. STAGING AREA	

VICINITY MAP



SCALE 1" = 5000'

SITE DATA TABLE

PIN #	02-10-300-017
PROPERTY OWNER	DANIEL B LIGHT
SITE ADDRESS	1700 CANNONBALL TRAIL
LEGAL DESCRIPTION	41.83 AC TR LYG S ½ SEC 10-37-7, LYG E CTR/LN CANNONBALL TRL, CITY OF YORKVILLE
ZONING JURISDICTION	CITY OF YORKVILLE*
ZONING	PUD (UNDERLYING: R-2, R-3)
CURRENT LAND USE	FARMLAND WITHOUT BUILDINGS
PROPOSED USE	FREESTANDING SOLAR ENERGY SYSTEM
TOTAL PARCEL AREA	± 41.8 AC
PRELIMINARY DISTURBED AREA	± 32.1 AC
PRELIMINARY SOLAR AREA	± 27.7 AC
ROW SETBACK	50'
SIDE YARD SETBACK	8'
REAR YARD SETBACK	8'

*ZONING SITE PLAN IS BEING SUBMITTED FOR SPECIAL USE PERMIT TO CONSTRUCT/OPERATE A FREESTANDING SOLAR ENERGY SYSTEM

NOTES

1. THE PURPOSE OF THIS PLAN IS FOR SPECIAL USE PERMIT REVIEW AND APPROVAL BY KENDALL COUNTY TO CONSTRUCT A FREESTANDING SOLAR ENERGY SYSTEM.
2. THIS PLAN WAS PRODUCED UTILIZING GIS RESOURCES AND INFORMATION FROM MULTIPLE SOURCES, INCLUDING KENDALL COUNTY, CITY OF YORKVILLE, GOOGLE EARTH, AND USGS TOPOGRAPHIC INFORMATION.
3. SUBJECT PROPERTY DOES NOT LIE WITHIN A SPECIAL FLOOD HAZARD AS SHOWN ON THE FLOOD INSURANCE RATE MAP (COMMUNITY PANEL 17093C0035H) PUBLISHED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA).
4. THE LOCATIONS OF PROPOSED IMPROVEMENTS, INCLUDING BUT NOT LIMITED TO: FENCING, SOLAR ARRAY RACKING, INVERTER/TRANSFORMER PADS, OVERHEAD POLES AND LINES, ETC., SHOWN ARE APPROXIMATE AND ARE SUBJECT TO MODIFICATION DUE TO SITE CONDITIONS, ADDITIONAL PERMITTING REQUIREMENTS, EQUIPMENT SPECIFICATIONS, AND/OR OTHER CONSTRAINTS DURING FINAL ENGINEERING.
5. PROJECT AREA, INCLUDING CONSTRUCTION STAGING AREAS, WILL BE CLEARED AND GRUBBED AS NECESSARY, RETAINING PRE-DEVELOPMENT DRAINAGE PATTERNS TO THE BEST EXTENT POSSIBLE. CONSTRUCTION STAGING AND AREAS SUBJECT TO RUTTING DURING CONSTRUCTION WILL BE TEMPORARILY STABILIZED WITH GRAVEL. SOIL CONDITIONS AND EQUIPMENT LOADS WILL DETERMINE FINAL DESIGN.
6. ALL DIMENSIONS SHOWN ARE AT 90 DEGREES UNLESS OTHERWISE NOTED.
7. CONTRACTOR SHALL CALL AT LEAST 72 HOURS PRIOR TO BEGINNING CONSTRUCTION OR EXCAVATION TO HAVE EXISTING UTILITIES LOCATED. ADDITIONALLY, CONTRACTOR SHALL CONTACT ANY LOCAL UTILITIES THAT PROVIDE THEIR OWN LOCATOR SERVICES.
8. CONTRACTOR SHALL MAINTAIN ACCESS AND UTILITY SERVICES TO ANY REMAINING BUILDING(S) OR ADJACENT BUILDING(S) THROUGHOUT THE DEMOLITION AND CONSTRUCTION PHASES. EXISTING IMPROVEMENTS DAMAGED DURING CONSTRUCTION SHALL BE REPLACED/RESTORED TO THE SATISFACTION OF THE OWNER BY THE CONTRACTOR RESPONSIBLE FOR THE DAMAGE.
9. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE TO PROVIDE SIGNS, BARRICADES, WARNING LIGHTS, GUARD RAILS, AND EMPLOY FLAGGERS AS NECESSARY WHEN CONSTRUCTION ENDANGERS EITHER VEHICULAR OR PEDESTRIAN TRAFFIC. THESE DEVICES SHALL REMAIN IN PLACE UNTIL THE TRAFFIC MAY PROCEED NORMALLY AGAIN.
10. SITE WILL HAVE NO DEDICATIONS FOR OPEN SPACE, NATURAL AREA, HISTORIC BUILDING(S)/STRUCTURE(S), OR STORMWATER MANAGEMENT FACILITIES.
11. SITE WILL NOT INCLUDE WATER SOURCE OR SEWAGE DISPOSAL. APPROXIMATE LOCATION OF EXISTING WATER WELL LOCATIONS SHOWN PER THE ILLINOIS WATER WELL INTERACTIVE MAP ONLINE.
12. STORMWATER MANAGEMENT FACILITIES TO BE PROVIDED AS REQUIRED BY COUNTY AND/OR NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMITTING. REQUIREMENTS TO BE DETERMINED DURING FINAL ENGINEERING.
13. THE MAXIMUM HEIGHTS OF FREESTANDING SOLAR ENERGY SYSTEMS SHALL BE SUBJECT TO SPECIAL USE CONDITIONS.
14. THE MINIMUM CLEARANCE BETWEEN THE LOWEST POINT OF THE SYSTEM AND THE SURFACE ON WHICH THE SYSTEM IS MOUNTED IS 10 FT.
15. SOLAR PANELS WILL BE DESIGNED WITH ANTI-REFLECTIVE COATING TO MINIMIZE GLARE.
16. COLLECTION LINES WITHIN THE SOLAR FARM WILL BE LOCATED AND MAINTAINED UNDERGROUND.
17. THERE SHALL BE NO EXTERIOR LIGHTING.
18. SETBACKS SHOWN ON THIS PLAN ARE BASED ON YORKVILLE CODE OF ORDINANCES, SECTION 10-19-7.
19. ALL NECESSARY PERMITS FOR SOIL EROSION CONTROL AND DRIVEWAY CONSTRUCTION WILL BE OBTAINED AS PART OF FINAL ENGINEERING AND PRIOR TO CONSTRUCTION

SOILS DATA TABLE

MAP UNIT SYMBOL	MAP UNIT NAME	HYDROLOGIC SOIL GROUP
206A	THORP SILT LOAM, 0 TO 2 PERCENT SLOPES	C/D
325B	DRESDEN SILT LOAM, 0 TO 2 PERCENT SLOPES	B
369A	WAUPECAN SILT LOAM, 0 TO 2 PERCENT SLOPES	B
325A	DRESDEN SILT LOAM, 2 TO 4 PERCENT SLOPES	B
149A	BRENTON SILT LOAM, 0 TO 2 PERCENT SLOPES	B/D

No.	REVISIONS	DATE

turningPoint Energy

Kimley»Horn

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570 LAKE COOK RD SUITE 200
DEERFIELD, IL 60015
WWW.KIMLEY-HORN.COM

KHA PROJECT 268173009
DATE 07/22/2021
SCALE AS SHOWN
DESIGNED BY SAF
DRAWN BY SAF
CHECKED BY APK

ZONING SITE PLAN

TPE IL KE106, LLC

KENDALL COUNTY, IL

SHEET NUMBER
EX-1

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Drawing name: K:\DFS_LEC\268173009_Turning Point Energy_KE106\2 Design\CAD\Exhibits\Zoning Site Plan\KE106_Zoning Site Plan.dwg 1 OF 1 JUL 22, 2022 2:17pm by EmilyKolanic

U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

The National Map US Topo

YORKVILLE QUADRANGLE
ILLINOIS
7.5-MINUTE SERIES



Produced by the United States Geological Survey

North American Datum of 1983 (NAD83)
World Geodetic System of 1984 (WGS84). Projection and
1 000-meter grid:Universal Transverse Mercator, Zone 16T
This map is not a legal document. Boundaries may be
generalized for this map scale. Private lands within government
reservations may not be shown. Obtain permission before
entering private lands.

Imagery.....NAIP, August 2019 - August 2019
Roads.....U.S. Census Bureau, 2017
Names.....GNIS, 1980 - 2021
Hydrography.....National Hydrography Dataset, 2003 - 2018
Contours.....National Elevation Dataset, 2019
Boundaries.....Multiple sources; see metadata file 2018 - 2019
Public Land Survey System.....BLM, 2020
Wetlands.....FWS National Wetlands Inventory Not Available

3°18' 58 MILS
0°32' 17 MILS

UTM GRID AND 2019 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

U.S. National Grid
100,000 - m Square ID
CM
Grid Zone Designation 16T

SCALE 1:24 000

1 0.5 0 KILOMETERS 1 2
1000 500 0 METERS 1000 2000
1 0.5 0 MILES 1
1000 0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10000 FEET

CONTOUR INTERVAL 10 FEET
NORTH AMERICAN VERTICAL DATUM OF 1988

This map was produced to conform with the
National Geospatial Program US Topo Product Standard.

ILLINOIS
QUADRANGLE LOCATION

1	2	3
4		5
6	7	8

ADJOINING QUADRANGLES

1 Big Rock
2 Sugar Grove
3 Aurora North
4 Plano
5 Aurora South
6 Newark
7 Plattville
8 Yorkville SE

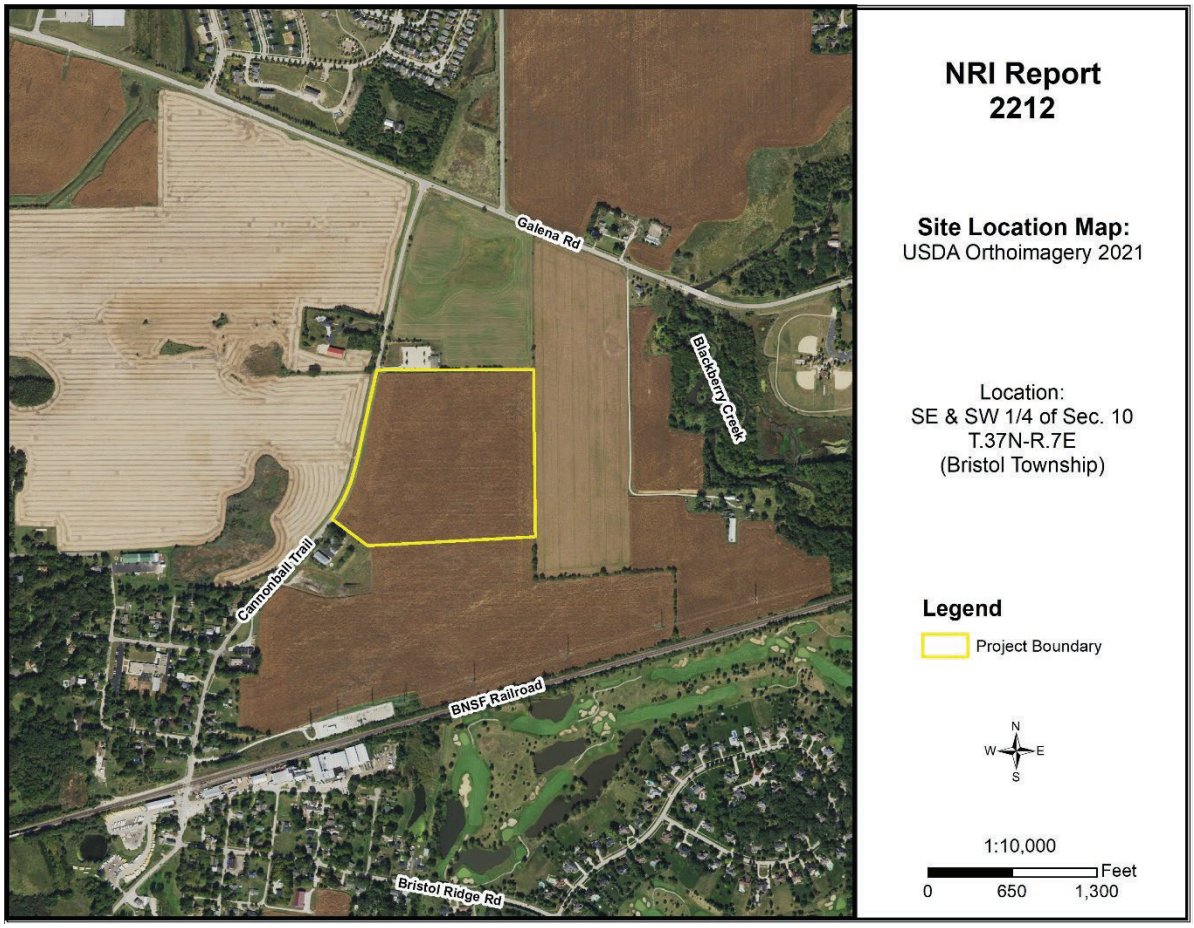
ROAD CLASSIFICATION

Expressway — Local Connector
Secondary Hwy — Local Road
Ramp — 4WD
Interstate Route — US Route — State Route

YORKVILLE, IL
2021

MSN 7024001080150442
NGA REF NO. USGS24K014144

NATURAL RESOURCE INFORMATION (NRI) EXECUTIVE SUMMARY REPORT: #2212



Aug. 2022

Petitioner: TPE IL KE106, LLC

Contact: TPE IL KE106, LLC

Prepared By:

Kendall County Soil & Water Conservation District

7775A Route 47
Yorkville, Illinois 60560
Phone: (630) 553-5821 x3
Fax: (630) 553-7442
www.kendallswcd.org

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EXECUTIVE SUMMARY

Natural Resource Information Report Number	#2212
Petitioner	TPE IL KE106, LLC
Contact Person	TPE IL KE106, LLC
County or Municipality the Petition is Filed With	City of Yorkville
Location of Parcel	SE & SW ¼ of Section 10, Township 37 North, Range 7 East (Bristol Township) of the 3rd Principal Meridian
Project or Subdivision Name	TPE IL KE106, LLC Solar Development
Existing Zoning & Land Use	R-2, R-3 PUD Residential Planned Unit Development; Agricultural field
Proposed Zoning & Land Use	R-2, R-3 PUD Residential Planned Unit Development Special Use; Freestanding Solar Energy System
Proposed Water Source	N/A
Proposed Type of Sewage Disposal System	N/A
Proposed Type of Storm Water Management	Specifics not provided
Size of Site	(+/-) 41.84
Land Evaluation Site Assessment Score	Land Evaluation: 93; Site Assessment: N/A

NATURAL RESOURCE CONSIDERATIONS

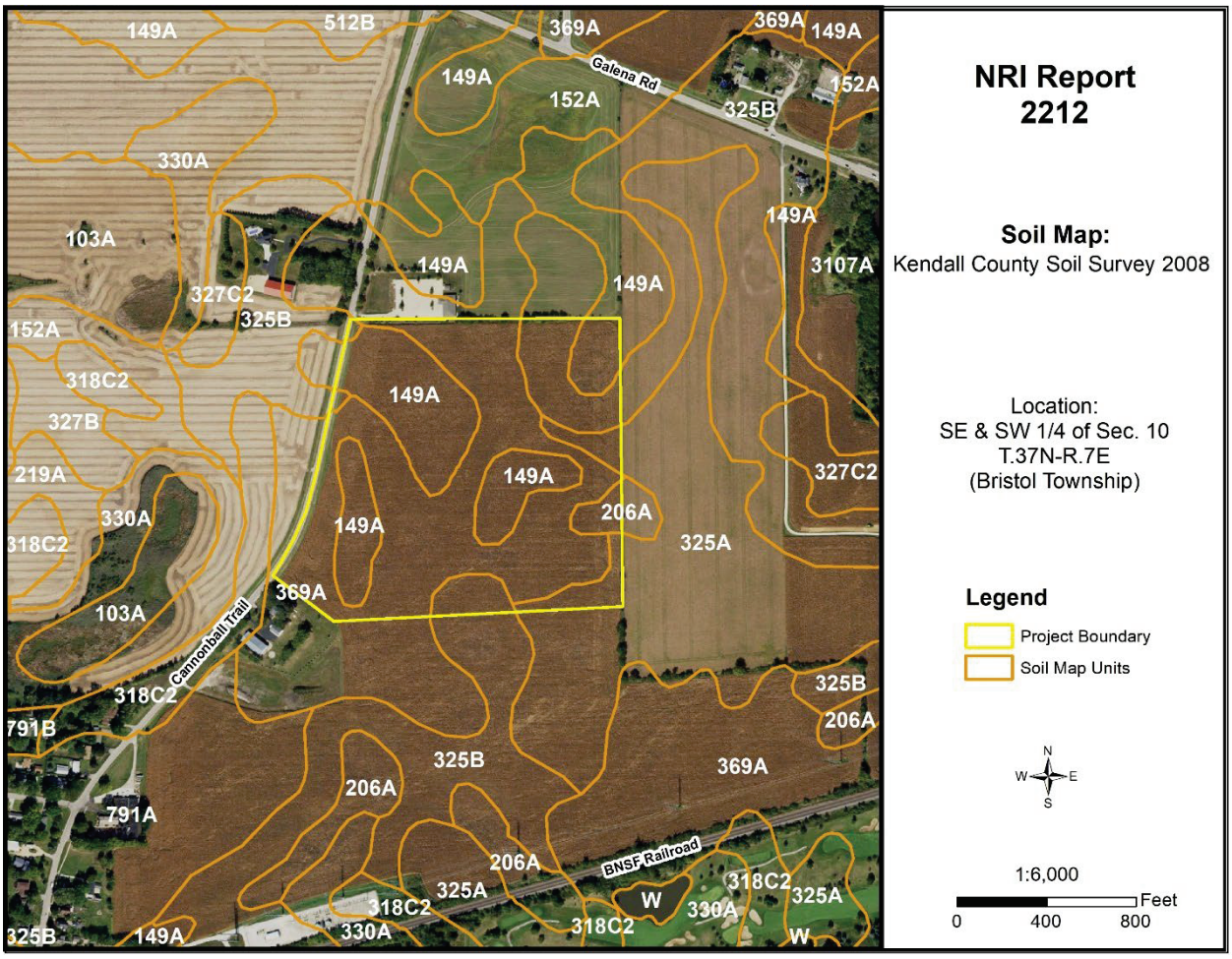


Figure 1: Soil Map

SOIL INFORMATION

Based on information from the United States Department of Agriculture-Natural Resources Conservation Service (USDA-NRCS) 2008 Kendall County Soil Survey, this parcel is shown to contain the following soil types (please note this does not replace the need for or results of onsite soil testing; if completed, please refer to onsite soil test results for planning/engineering purposes):

Table 1: Soils Information

Map Unit	Soil Name	Drainage Class	Hydrologic Group	Hydric Designation	Farmland Designation
149A	Brenton silt loam, 0-2% slopes	Somewhat Poorly Drained	B/D	Non-Hydric, Hydric Inclusions Likely	Prime Farmland
206A	Thorp silt loam, 0-2% slopes	Poorly Drained	C/D	Hydric	Prime Farmland if Drained
325A	Dresden silt loam, 0-2% slopes	Well Drained	B	Non-Hydric	Prime Farmland
325B	Dresden silt loam, 2-4% slopes	Well Drained	B	Non-Hydric	Prime Farmland
369A	Waupecan silt loam, 0-2% slopes	Well Drained	B	Non-Hydric	Prime Farmland

Hydrologic Soil Groups – Soils have been classified into four (A, B, C, D) hydrologic groups based on runoff characteristics due to rainfall. If a soil is assigned to a dual hydrologic group (A/D, B/D or C/D), the first letter is for drained areas and the second letter is for undrained areas.

- **Hydrologic group A:** Soils have a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.
- **Hydrologic group B:** Soils have a moderate infiltration rate when thoroughly wet, consist chiefly of moderately deep to deep, moderately well drained to well drained soils that have a moderately fine to moderately coarse texture. These soils have a moderate rate of water transmission.
- **Hydrologic group C:** Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.
- **Hydrologic group D:** Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

Hydric Soils – A hydric soil is one that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part of the soil profile that supports the growth or regeneration of hydrophytic vegetation. Soils with hydric inclusions have map units dominantly made up of non-hydric soils that may have inclusions of hydric soils in the lower positions on the landscape. Of the soils found onsite, one is classified as hydric soil (206A Thorp silt loam), three are classified as non-hydric soil (325A & 325B Dresden silt loam and 369A Waupecan silt loam), and one is classified as non-hydric soil with hydric inclusions likely (149A Brenton silt loam).

Prime Farmland – Prime farmland is land that has the best combination of physical and chemical characteristics for agricultural production. Prime farmland soils are an important resource to Kendall County and some of the most productive soils in the United States occur locally. Of the soils found onsite, four are designated as prime farmland (149A Brenton silt loam, 325A & 325B Dresden silt loam, and 369A Waupecan silt loam) and one is designated as prime farmland if drained (206A Thorp silt loam).

Soil Water Features – Table 2, below, gives estimates of various soil water features that should be taken into consideration when reviewing engineering for a land use project.

Table 2: Water Features

Map Unit	Hydrologic Group	Surface Runoff	Water Table	Ponding	Flooding
149A	B/D	Low	January - May **Upper Limit**: 1.0'-2.0' **Lower Limit:** 6.0' June – December **Upper Limit: --** **Lower Limit:** --	January – December **Surface Water Depth**: -- **Duration**: -- **Frequency**: --	January – December **Duration**: -- **Frequency**: None

Map Unit	Hydrologic Group	Surface Runoff	Water Table	Ponding	Flooding
206A	C/D	Negligible	January - May **Upper Limit**: 0.0'-1.0' **Lower Limit:** 6.0' June – December **Upper Limit: --** **Lower Limit:** --	January – May **Surface Water Depth:** 0.0'-0.5' **Duration**: Brief (2 to 7 days) **Frequency**: Frequent June – December **Surface Water Depth**: -- **Duration**: -- **Frequency**: --	January – December **Duration**: -- **Frequency**: None
325A	B	Low	January – December **Upper Limit: --** **Lower Limit**: --	January – December **Surface Water Depth**: -- **Duration**: -- **Frequency**: --	January – December **Duration**: -- **Frequency**: None
325B	B	Low	January – December **Upper Limit: --** **Lower Limit**: --	January – December **Surface Water Depth**: -- **Duration**: -- **Frequency**: None	January – December **Duration**: -- **Frequency**: None
369A	B	Low	January – December **Upper Limit: --** **Lower Limit**: --	January – December **Surface Water Depth**: -- **Duration**: -- **Frequency**: None	January – December **Duration**: -- **Frequency**: None

Surface Runoff – Refers to the loss of water from an area by flow over the land surface. Surface runoff classes are based upon slope, climate and vegetative cover and indicates relative runoff for very specific conditions (it is assumed that the surface of the soil is bare and that the retention of surface water resulting from irregularities in the ground surface is minimal). The surface runoff classes are identified as: negligible, very low, low, medium, high, and very high.

Months – The portion of the year in which a water table, ponding, and/or flooding is most likely to be a concern.

Water Table – Water table refers to a saturated zone in the soil and the data indicates, by month, depth to the top (upper limit) and base (lower limit) of the saturated zone in most years. These estimates are based upon observations of the water table at selected sites and on evidence of a saturated zone (grayish colors or mottles (redoximorphic features)) in the soil. Note: A saturated zone that lasts for less than a month is not considered a water table.

Ponding – Ponding is standing water in a closed depression. Unless a drainage system is installed, the water is removed only by percolation, transpiration, or evaporation. Duration is expressed as very brief (less than 2 days), brief (2 to 7 days), long (7 to 30 days), very long (more than 30 days). Frequency is expressed as none (ponding is not probable), rare (unlikely but possible under unusual weather conditions), occasional (occurs, on average, once or less in 2 years) and frequent (occurs, on average, more than once in 2 years).

Flooding – Temporary inundation of an area caused by overflowing streams, by runoff from adjacent slopes, or by tides. Water standing for short periods after rainfall or snowmelt is not considered flooding, and water standing in swamps and marshes is considered ponding rather than flooding. Duration is expressed as brief (2 to 7 days) and frequent meaning that it is likely to occur often under normal weather conditions.

SOIL LIMITATIONS

According to the USDA-NRCS, soil properties influence the development of sites, including the selection of the site, the design of the structure, construction, performance after construction and maintenance. This report gives ratings for proposed uses in terms of limitations and restrictive features. The tables list only the most restrictive features. Ratings are based on the soil in an undisturbed state, that is, no unusual modification occurs other than that which is considered normal practice for the rated use. Even though soils may have limitations, an engineer may alter soil features or adjust building plans for a structure to compensate for most degrees of limitations. The final decision in selecting a site for a particular use generally involves weighing the costs for site preparation and maintenance.

- **Not Limited**: Indicates that the soil has features that are very favorable for the specified use; good performance and low maintenance can be expected.
- **Somewhat Limited**: Indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation; fair performance and moderate maintenance can be expected.
- **Very Limited**: Indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures; poor performance and high maintenance can be expected.

Limitations are listed below for solar arrays (soil-based and ballast anchor systems), shallow excavations, lawns/landscaping, and local roads & streets. Please note this information is based on soils in an undisturbed state as compiled for the USDA-NRCS 2008 Soil Survey of Kendall County, IL and the Kendall County Subdivision Control Ordinance; this does not replace the need for site specific soil testing or results of onsite soil testing.

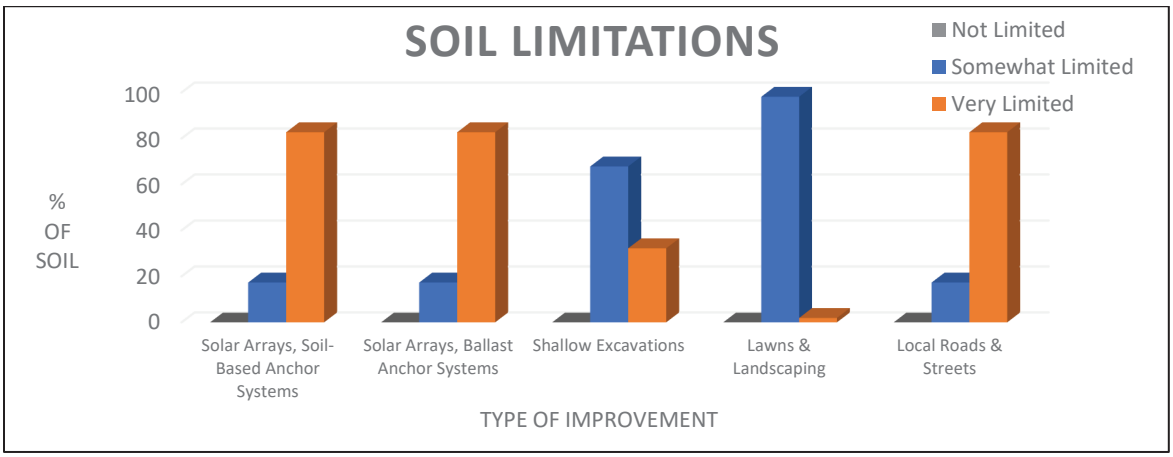
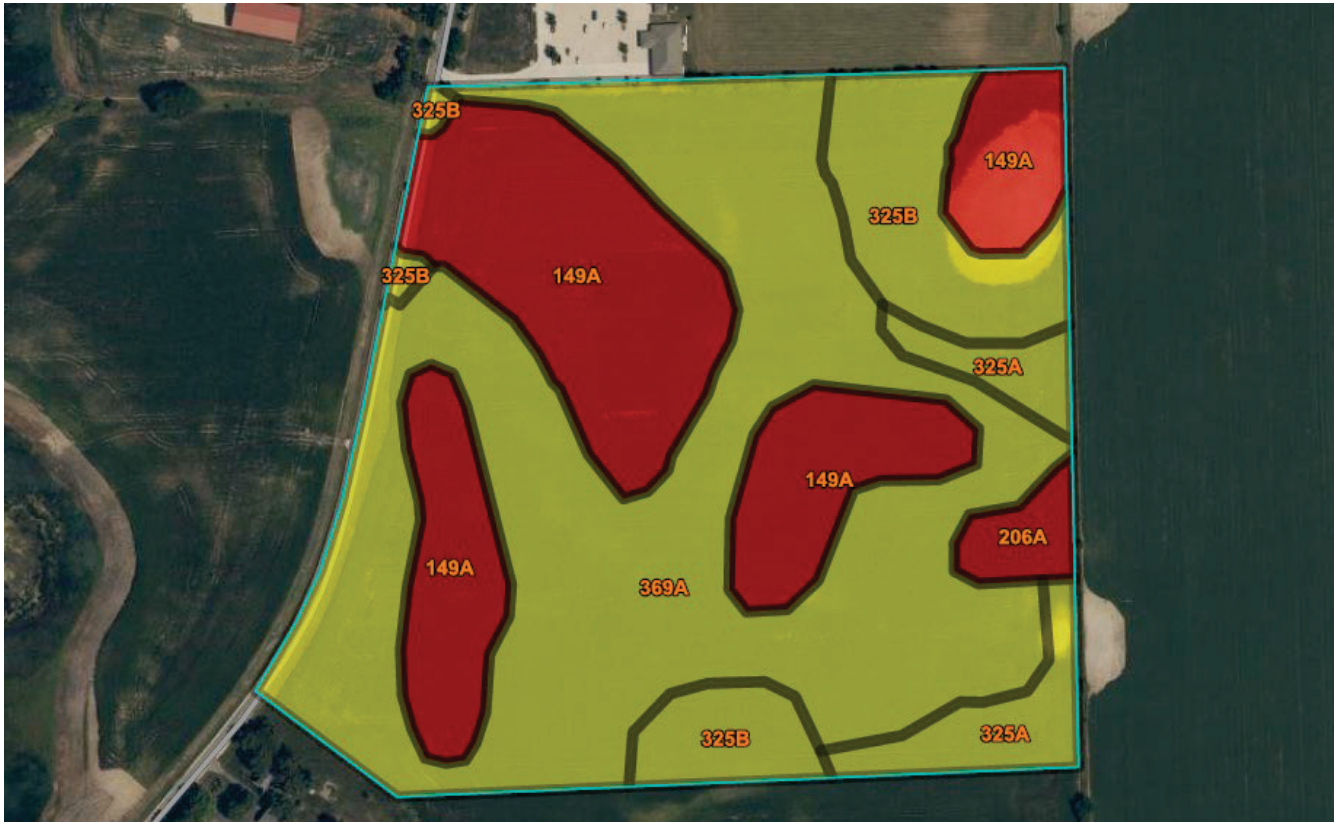


Figure 2: Soil Limitations

Table 3: Building Limitations

Soil Type	Solar Arrays, Soil-Based Anchor Systems	Solar Arrays, Ballast Anchor Systems	Shallow Excavations	Lawns & Landscaping	Local Roads & Streets	Acres	%
149A	**Very Limited:** Frost action Low strength Steel corrosion Depth to saturated zone Hillslope position	**Very Limited:** Frost action Low strength Depth to saturated zone Hillslope position	**Very Limited:** Depth to saturated zone Dusty Unstable excavation walls	**Somewhat Limited:** Depth to saturated zone Dusty	**Very Limited:** Frost action Low strength Depth to saturated zone Shrink-swell	12.7	30.3%
206A	**Very Limited:** Ponding Depth to saturated zone Frost action Low strength Steel corrosion	**Very Limited:** Ponding Depth to saturated zone Frost action Low strength Slope shape across	**Very Limited**: Ponding Depth to saturated zone Dusty Unstable excavation walls	**Very Limited:** Ponding Depth to saturated zone Dusty	**Very Limited:** Ponding Depth to saturated zone Frost action Low strength Shrink-swell	0.8	1.9%
325A	**Somewhat Limited:** Steel corrosion Frost action Hillslope position Shrink-swell Low strength	**Somewhat Limited:** Frost action Hillslope position Low strength	**Somewhat Limited:** Dusty Unstable excavation walls	**Somewhat Limited:** Dusty	**Somewhat Limited:** Frost action Shrink-swell Low strength	2.3	5.6%
325B	**Somewhat Limited:** Steel corrosion Frost action Hillslope position Slope shape across Shrink-swell	**Somewhat Limited:** Frost action Hillslope position Slope shape across	**Somewhat Limited:** Dusty Unstable excavation walls	**Somewhat Limited:** Dusty	**Somewhat Limited:** Frost action Shrink-swell	4.8	11.6%
369A	**Very Limited:** Frost action Low strength Steel corrosion Hillslope position Shrink-swell	**Very Limited:** Frost action Low strength Hillslope position	**Somewhat Limited:** Dusty Unstable excavation walls	**Somewhat Limited:** Dusty	**Very Limited:** Frost action Low strength Shrink-swell	21.1	50.5%
% Very Limited	**82.7%**	**82.7%**	**32.2%**	**1.9%**	**82.7%**		



NRI Report
2212

Map of Building Limitations: Solar Arrays (Soil-Based & Ballast Anchor Systems) and Local Roads & Streets (Paved & Unpaved)
Natural Resources Conservation Service Web Soil Survey

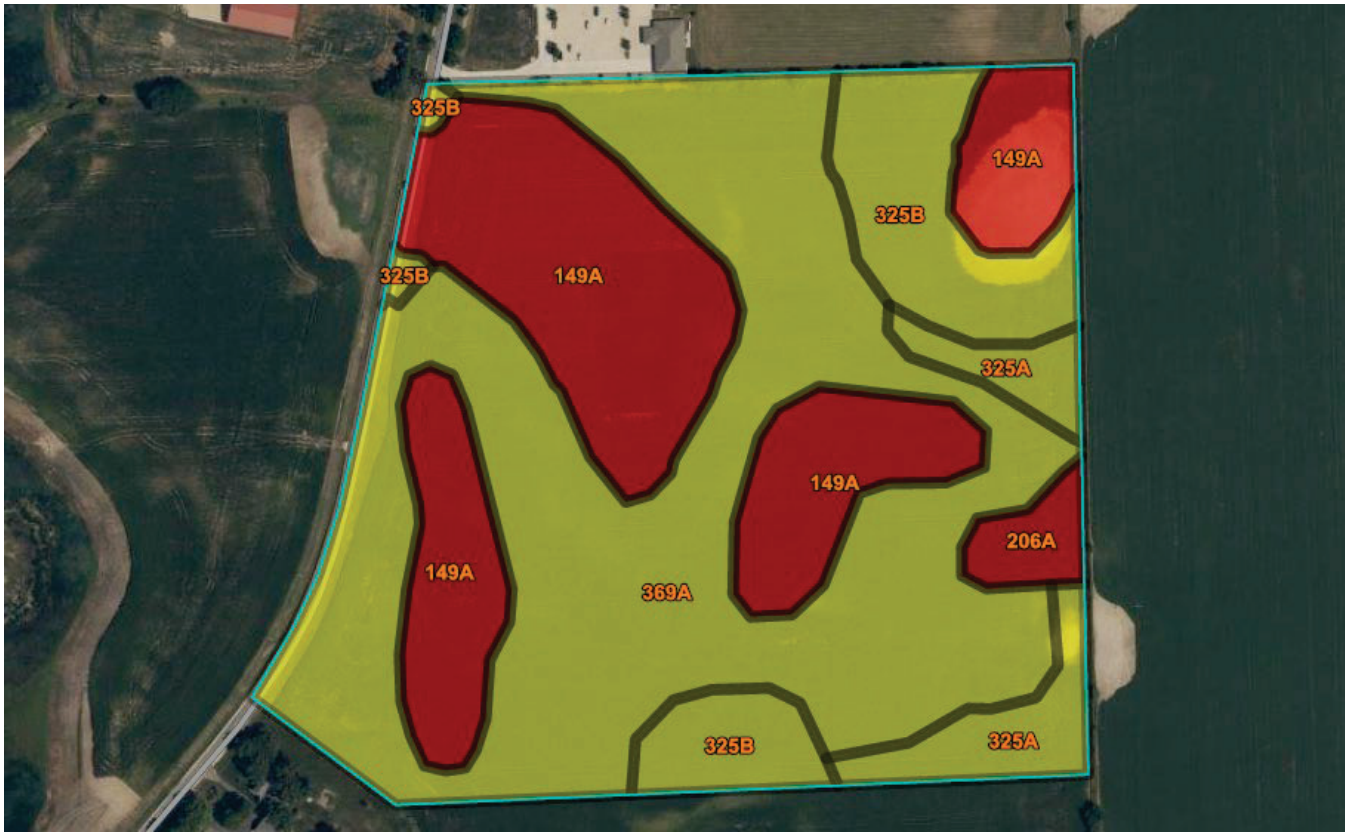
Location:
SE & SW ¼ Sec. 10,
T.37N-R.7E
(Bristol Township)

Legend

Soil Rating Polygons
- Very limited
- Somewhat limited
- Not limited
- Not rated or not available

N
W E
S

Figure 3A: Map of Building Limitations – Solar Arrays (Soil-Based & Ballast Anchor Systems) and Lawns & Landscaping



NRI Report
2212

Map of Building Limitations:
Shallow Excavations
Natural Resources
Conservation Service Web
Soil Survey

Location:
SE & SW ¼ Sec. 10,
T.37N-R.7E
(Bristol Township)

Legend

Soil Rating Polygons
- Very limited
- Somewhat limited
- Not limited
- Not rated or not available

N
W E
S

Figure 3B: Map of Building Limitations – Shallow Excavations

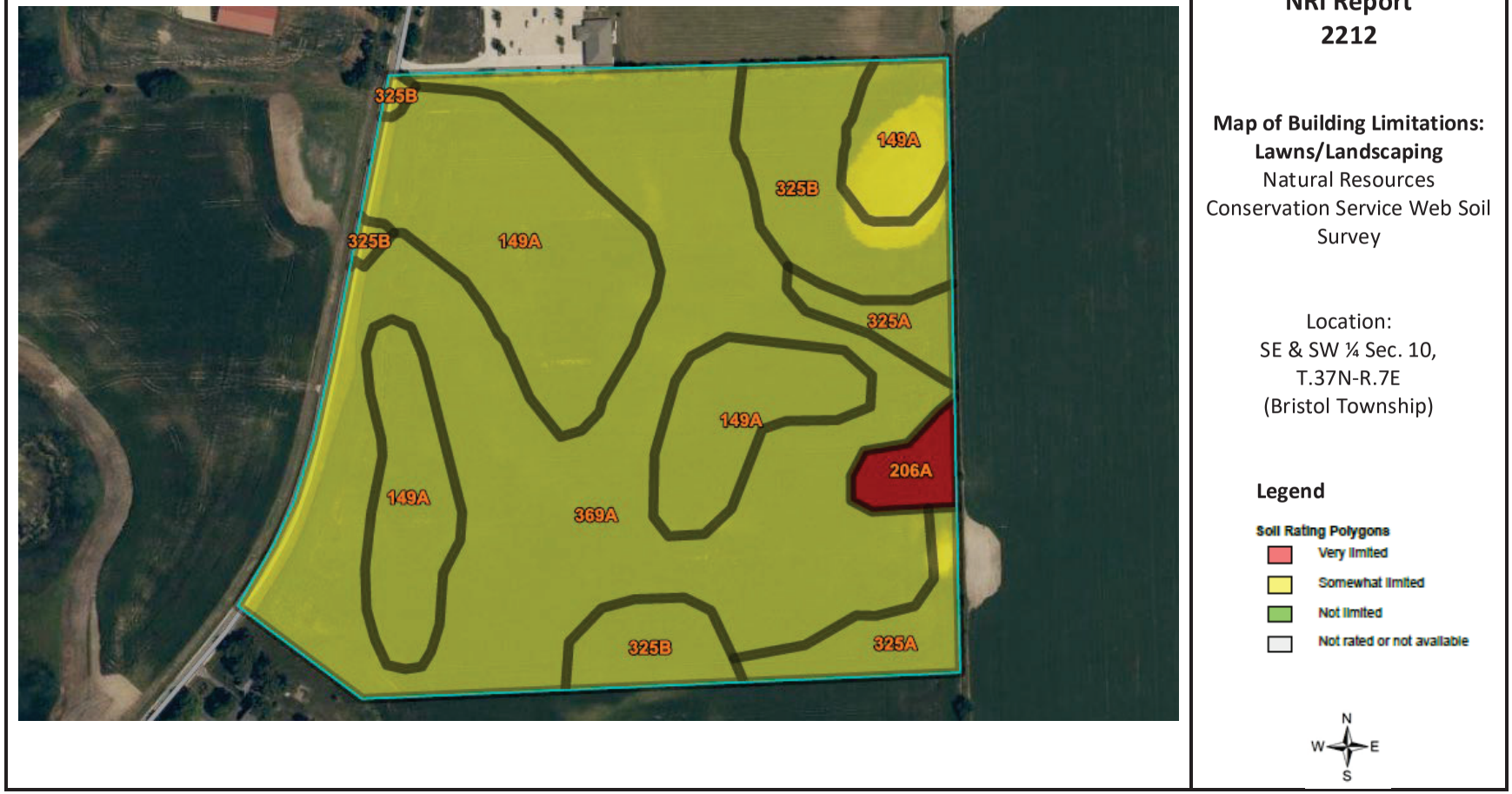


Figure 3C: Map of Building Limitations – Lawns/Landscaping

KENDALL COUNTY LAND EVALUATION AND SITE ASSESSMENT (LESA)

Decision-makers in Kendall County use the Land Evaluation and Site Assessment (LESA) system to determine the suitability of a land use change and/or a zoning request as it relates to agricultural land. The LESA system was developed by the United States Department of Agriculture-Natural Resources Conservation Service (USDA-NRCS) and takes into consideration local conditions such as physical characteristics of the land, compatibility of surrounding land-uses, and urban growth factors. The LESA system is a two-step procedure that includes:

- **Land Evaluation (LE)**: The soils of a given area are rated and placed in groups ranging from the best to worst suited for a stated agriculture use, cropland, or forestland. The best group is assigned a value of 100 and all other groups are assigned lower values. The Land Evaluation value accounts for 1/3 of the total score and is based on data from the Kendall County Soil Survey. The Kendall County Soil and Water Conservation District is responsible for this portion of the LESA system.
- **Site Assessment (SA)**: The site is numerically evaluated according to important factors that contribute to the quality of the site. Each factor selected is assigned values in accordance with the local needs and objectives. The Site Assessment value is based on a 200-point scale and accounts for 2/3 of the total score. The Kendall County LESA Committee is responsible for this portion of the LESA system.
  Please Note: A land evaluation (LE) score will be compiled for every project parcel. However, when a parcel is located within municipal planning boundaries, a site assessment (SA) score is not compiled as the scoring factors are not applicable. As a result, only the LE score is available, and a full LESA score is unavailable for the parcel.

Table 4: Land Evaluation Computation

Soil Type	Value Group	Relative Value	Acres	Product (Relative Value x Acres)
149A	1	100	12.7	1,270.0
206A	3	87	0.8	69.6
325A	4	79	2.3	181.7
325B	4	79	4.8	379.2
369A	2	94	21.1	1,983.4
Totals			**41.8**	**3,883.9**
LE Calculation			(Product of relative value / Total Acres) 3,883.9 / 41.8 = 92.9	
LE Score			**LE = 93**	

The Land Evaluation score for this site is 93, indicating that this site is currently designated as land that is well suited for agricultural uses considering the Land Evaluation score is above 80.

The full LESA Score is unavailable for the proposed project site since it is within municipal planning boundaries. However, the Land Evaluation score for this site is 93, indicating that the site is well suited for agricultural uses. Note: Selecting the project site with the lowest total points will generally protect the best farmland located in the most viable areas and maintain and promote the agricultural industry in Kendall County. If the project is agricultural in nature, however, a higher score may provide an indication of the suitability of the project as it relates to the compatibility with existing agricultural land use.

WETLANDS

The U.S. Fish & Wildlife Service's National Wetland Inventory map indicates that mapped wetlands/waters are not present on the proposed project site. To determine if a wetland is present, a wetland delineation specialist, who is recognized by the U.S. Army Corps of Engineers, should determine the exact boundaries and value of the wetlands.

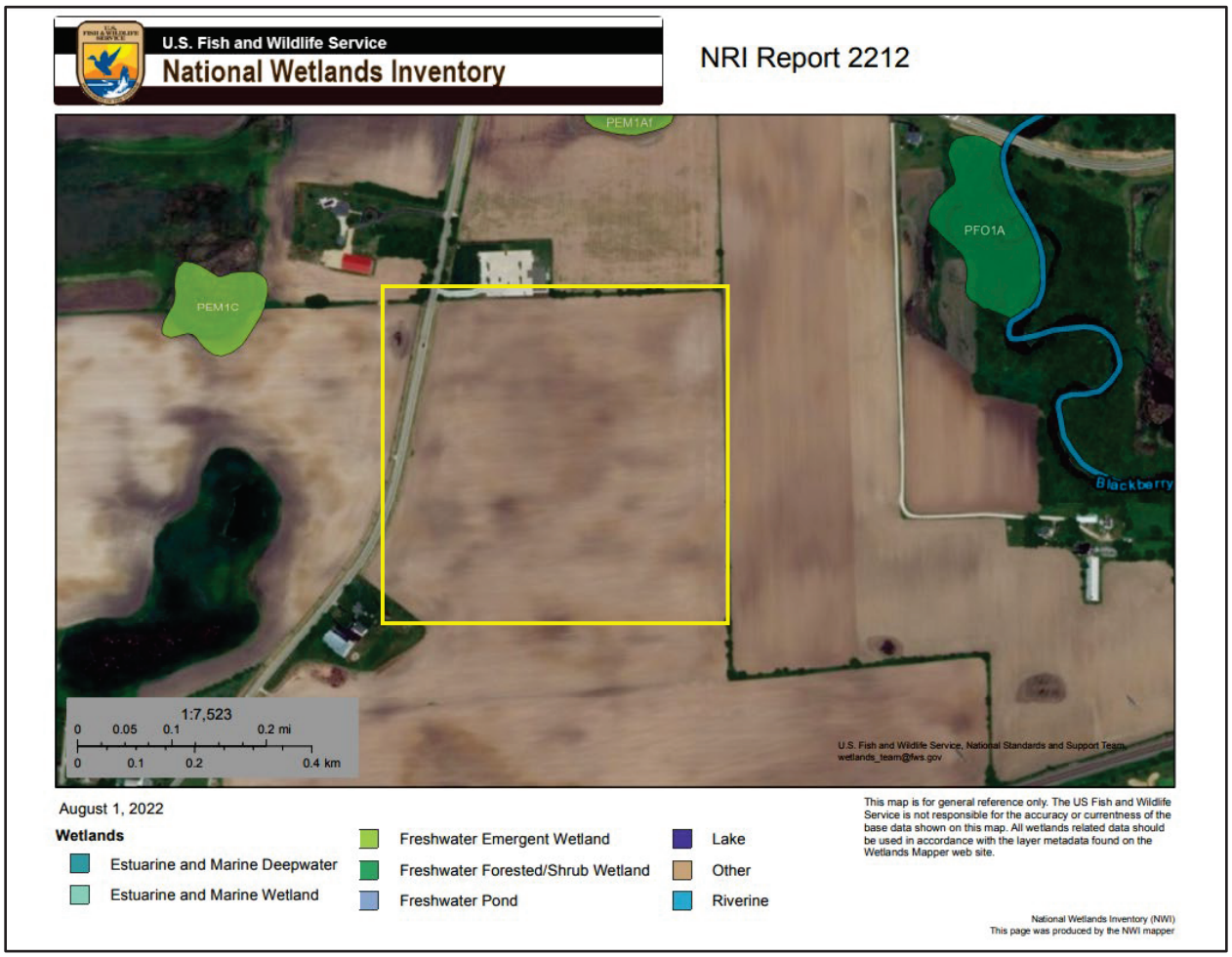


Figure 4: Wetland Map – USFWS National Wetland Inventory

FLOODPLAIN

The Federal Emergency Management Agency's (FEMA) Digital Flood Insurance Rate Map (DFIRM) for Kendall County, Community Panel No. 17093C0035H (effective date January 8, 2014) was reviewed to determine the presence of floodplain and floodway areas within the project site. According to the map, the parcel is located outside of the 100-year floodplain. It is mapped as Zone X, an area of minimal flood hazard.

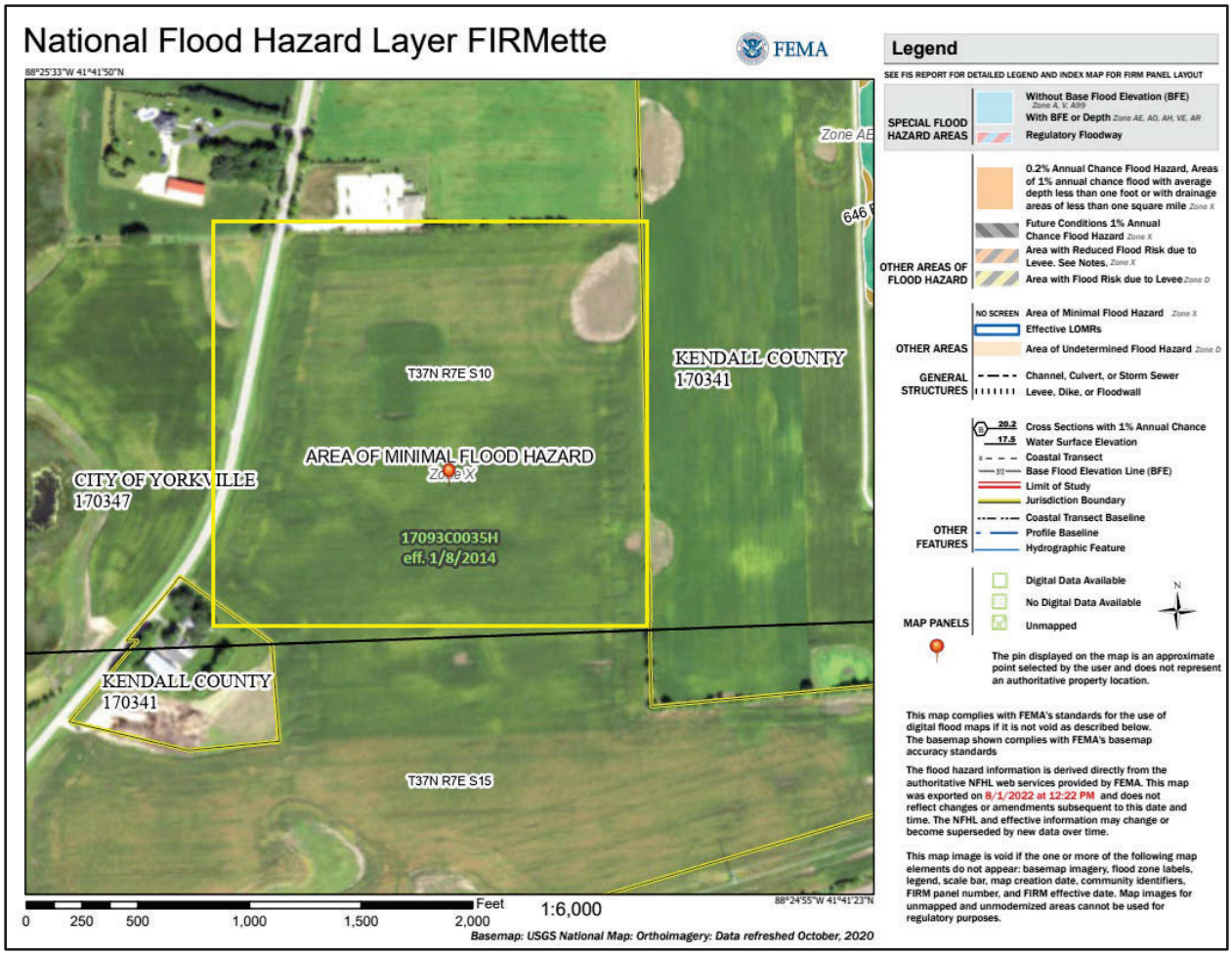


Figure 5: FEMA Floodplain Map

SEDIMENT AND EROSION CONTROL

Development on this site should include an erosion and sediment control plan in accordance with local, state, and federal regulations. Soil erosion on construction sites is a resource concern because suspended sediment from areas undergoing development is a primary nonpoint source of water pollution. Please consult the *Illinois Urban Manual* (https://illinoisurbanmanual.org/) for appropriate best management practices.

LAND USE FINDINGS

The Kendall County Soil and Water Conservation District (SWCD) Board has reviewed the proposed site plans for Petitioner TPE IL KE106, LLC. The petitioner is requesting a Special Use Permit on one parcel (Parcel Index Number 02- 10-300-017) to construct a freestanding solar energy system within Bristol Township of Kendall County located in the SE and SW ¼ of Section 10, Township 37N, and Rage 7E of the 3rd Principal Meridian.

TPE IL submitted this project (TPE IL KE106) for review in conjunction with another solar project (TPE IL KE105) on a nearby parcel (Parcel Index Number 02-15-126-004). Both projects were reviewed by Kendall County SWCD. A full NRI report was prepared for project TPE IL KE105 (NRI Report 2211). Since much of the soils and natural resources information for this project were similar to project TPE IL KE105, it was determined that an Executive Summary Report was appropriate. Please reference NRI Report 2211 for additional natural resources information. Based on the information provided by the petitioner and a review of natural resource related data available to the Kendall County SWCD, the SWCD Board presents the following information.

The Kendall County SWCD has always had the opinion that Prime Farmland should be preserved whenever feasible. Of the soils found onsite, all are designated as prime farmland. A land evaluation (LE), which is a part of the Land Evaluation and Site Assessment (LESA), was conducted on this parcel. The soils on this parcel scored a 93 out of a possible 100 points indicating that the soils are well suited for agricultural uses. A site assessment (SA) was not completed on this parcel. When a parcel is located within municipal planning boundaries, a site assessment score is not compiled as the scoring factors are not applicable.

Soils found on the project site are rated for specific uses and can have potential limitations for development. Soil types with severe limitations do not preclude the ability to develop the site for the proposed use, but it is important to note the limitation that may require soil reclamation, special design/engineering, or maintenance to obtain suitable soil conditions to support development with significant limitations. This report indicates that for soils located on the parcel, 83% are very limited for solar arrays (soil-based & ballast anchor systems) and local roads/streets (paved & unpaved), 32% are very limited for shallow excavations, and 2% are very limited for lawns/landscaping. The remaining land has soils that are considered somewhat limited for these types of developments/uses. This information is based on the soil in an undisturbed state. If the scope of the project may include the use of onsite septic systems, please consult with the Kendall County Health Department.

This site is located within the Fox River Watershed and the East Run – Blackberry Creek sub watershed. This development should include a soil erosion and sediment control plan to be implemented during construction. Sediment may become a primary non-point source of pollution; eroded soils during the construction phase can create unsafe conditions on roadways, degrade water quality and destroy aquatic ecosystems lower in the watershed.

For intense use it is recommended that a drainage tile survey be completed on the parcel to locate subsurface drainage tile. That survey should be taken into consideration during the land use planning process. Drainage tile expedites drainage and facilitates farming. It is imperative that these drainage tiles remain undisturbed. Impaired tile may affect a few acres or hundreds of acres of drainage.

The information that is included in this Natural Resources Information Report is to assure that the Land Developers take into full consideration the limitations of the land that they wish to develop. Guidelines and recommendations are also a part of this report and should be considered in the planning process. The Natural Resource Information Report is required by the Illinois Soil and Water Conservation District Act (Ill. Complied Statues, Ch. 70, Par 405/22.02a).

Dwayne Konicek
SWCD Board Representative

08/08/2022
Date

Kendall County Soil & Water Conservation District

7775A Route 47, Yorkville, Illinois 60560 ● (630)553-5821 extension 3

www.kendallswcd.org

August 9, 2022

TPE IL KE106, LLC
3720 S. Dahlia St.
Denver, CO 80237

Dear Petitioner,

The Kendall County Soil & Water Conservation District (SWCD) completed a Natural Resource Information (NRI) Executive Summary Report #2212 for a Special Use Permit request with the City of Yorkville, IL to construct a freestanding solar energy system. The proposed solar facility is located on one parcel (Parcel Index Number 02-10-300-017) in the SE and SW ¼ of Section 10, Township 37N, and Range 7E of Bristol Township in Kendall County, IL.

This project (TPE IL KE106) was submitted for review in conjunction with solar project TPE IL KE105, which is located on a nearby parcel to the south (Parcel Index Number 02-15-126-004). Both projects were reviewed by Kendall County SWCD. A full NRI report was prepared for project TPE IL KE105 (NRI Report #2211). Since much of the soils and natural resources information for this project were similar to project TPE IL KE105, it was determined that an Executive Summary Report was appropriate. Please reference NRI Report #2211 for additional natural resources information.

Copies of NRI Executive Summary Report #2212 have been provided to the City of Yorkville's Zoning Department and Bristol Township.

Attached please find a copy of the NRI Executive Summary Report and payment receipt for $1,041.00. We received your payment by mail. The fee for an Executive Summary Report is $300.00. As a result, a refund payment of $741.00 has been mailed to you at the address provided.

If you have any questions, please contact our office at (630) 553-5821 extension 3 or email Alyse.Olson@il.nacdnet.net.

Sincerely,

Alyse Olson

Alyse Olson
Resource Conservationist

Enclosures

Kendall County Soil & Water Conservation District

7775A Route 47
Yorkville, IL 60560
Phone: 630.553.5821 ext.3
Fax: 630.553.7442
alyse.olson@il.nacdnet.net

NRI Receipt

Date	NRI No.
8/8/2022	2212

Applicant
TPE IL KE106, LLC 3720 S. Dahlia Street Denver, CO 80237

Contact
TPE IL KE106, LLC Attn: Scott Osborn 3720 S. Dahlia Street Denver, CO 80237

Check No.	Payment Method
487	Check

Item	Project Name	Acres	Additional Acres	Rate	Amount
NRI Executive Summary	NRI Executive Summary Fee TPE IL KE106, LLC (Executive Summary Report Only; Full Fee Paid, Refund Due $741)			300.00	300.00

Total $300.00

APPENDIX I – MANUFACTURER'S SPECIFICATIONS

Hi-MO 5

LR5-72HBD

525~545M

- Based on M10-182mm wafer, best choice for ultra-large power plants
- Advanced module technology delivers superior module efficiency
  - M10 Gallium-doped Wafer
  - Smart Soldering
  - 9-busbar Half-cut Cell
- Globally validated bifacial energy yield
- High module quality ensures long-term reliability



12 12-year Warranty for Materials and Processing

30 30-year Warranty for Extra Linear Power Output

Complete System and Product Certifications

IEC 61215, IEC 61730, UL 61730

ISO 9001:2015: ISO Quality Management System

ISO 14001: 2015: ISO Environment Management System

TS62941: Guideline for module design qualification and type approval

ISO 45001: 2018: Occupational Health and Safety

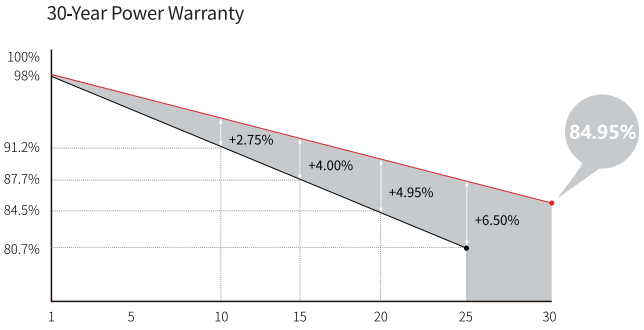
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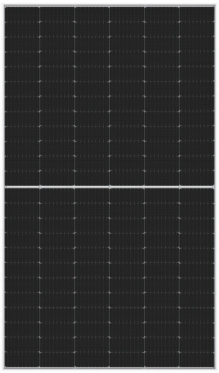
Hi-MO 5

LR5-72HBD 525~545M

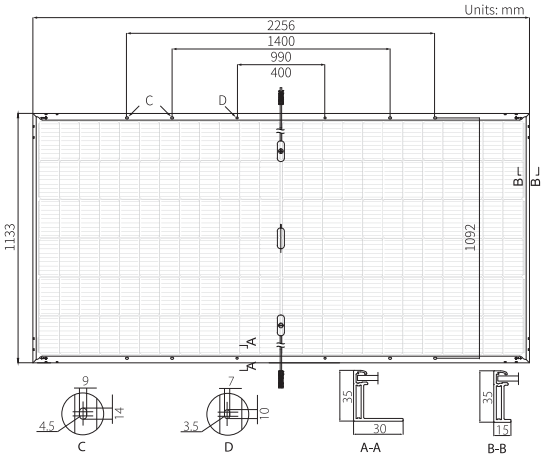
21.3%	0~+5W	<2%	0.45%	HALF-CELL
MAX MODULE EFFICIENCY	POWER TOLERANCE	FIRST YEAR POWER DEGRADATION	YEAR 2-30 POWER DEGRADATION	Lower operating temperature

Additional Value









Mechanical Parameters

Cell Orientation	144 (6×24)
Junction Box	IP68, three diodes
Output Cable	4mm², +400, -200mm/±1400mm length can be customized
Glass	Dual glass, 2.0mm coated tempered glass
Frame	Anodized aluminum alloy frame
Weight	32.3kg
Dimension	2256×1133×35mm
Packaging	31pcs per pallet / 155pcs per 20' GP / 620pcs per 40' HC

Electrical Characteristics

STC : AM1.5 1000W/m² 25°C NOCT : AM1.5 800W/m² 20°C 1m/s

Test uncertainty for Pmax: ±3%

Module Type	LR5-72HBD-525M		LR5-72HBD-530M		LR5-72HBD-535M		LR5-72HBD-540M		LR5-72HBD-545M	
Testing Condition	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT
Maximum Power (Pmax/W)	525	392.1	530	395.8	535	399.5	540	403.3	545	407.0
Open Circuit Voltage (Voc/V)	49.05	45.89	49.20	46.03	49.35	46.17	49.50	46.31	49.65	46.46
Short Circuit Current (Isc/A)	13.65	11.03	13.71	11.08	13.78	11.14	13.85	11.19	13.92	11.24
Voltage at Maximum Power (Vmp/V)	41.20	38.41	41.35	38.55	41.50	38.69	41.65	38.83	41.80	38.97
Current at Maximum Power (Imp/A)	12.75	10.21	12.82	10.27	12.90	10.33	12.97	10.39	13.04	10.44
Module Efficiency(%)	20.5		20.7		20.9		21.1		21.3	

Operating Parameters

Operational Temperature	-40°C ~ +85°C
Power Output Tolerance	0 ~ +5 W
Voc and Isc Tolerance	±3%
Maximum System Voltage	DC1500V (IEC/UL)
Maximum Series Fuse Rating	30A
Nominal Operating Cell Temperature	45±2°C
Protection Class	Class II
Fire Rating	UL type 29
Bifaciality	70±5%

Mechanical Loading

Front Side Maximum Static Loading	5400Pa
Rear Side Maximum Static Loading	2400Pa
Hailstone Test	25mm Hailstone at the speed of 23m/s

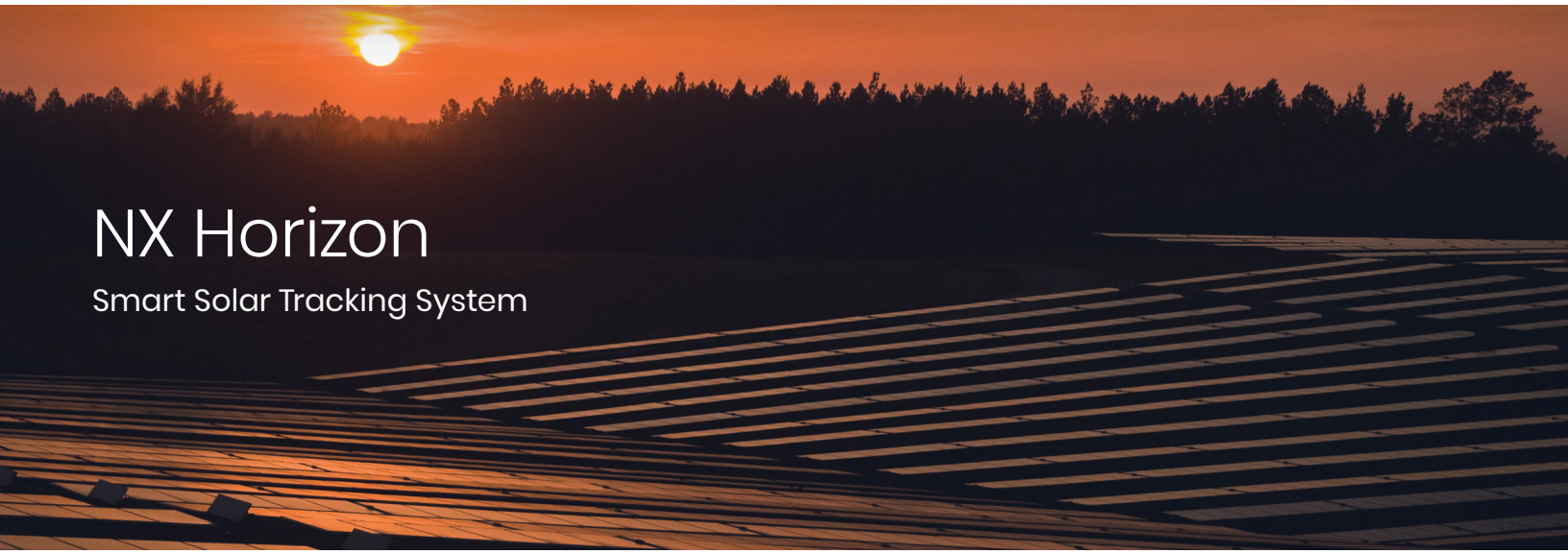
Temperature Ratings (STC)

Temperature Coefficient of Isc	+0.050%/°C
Temperature Coefficient of Voc	-0.284%/°C
Temperature Coefficient of Pmax	-0.350%/°C

LONGi

No.8369 Shangyuan Road, Xi'an Economic And Technological Development Zone, Xi'an, Shaanxi, China.
Web: en.longi-solar.com

Specifications included in this datasheet are subject to change without notice. LONGi reserves the right of final interpretation. (20210508V13)



NX Horizon

Smart Solar Tracking System

Serving as the backbone on over 35 gigawatts of solar power plants around the world, the NX Horizon™ smart solar tracker system combines best-in-class hardware and software to help EPCs and asset owners maximize performance and minimize operational costs.

Flexible and Resilient by Design

With its self-aligning module rails and vibration-proof fasteners, NX Horizon can be easily and rapidly installed. The self-powered, decentralized architecture allows each row to be commissioned in advance of site power, and is designed to withstand high winds and other adverse weather conditions. On a recent 838 megawatt project in Villanueva, Mexico, these design features allowed for the project to go online nine months ahead of schedule.

TrueCapture and Bifacial Enabled

Incorporating the most promising innovations in utility scale solar, NX Horizon with TrueCapture™ smart control system can add additional energy production by up to six percent. Further unlocking the advantages of independent-row architecture and the data collected from thousands of sensors across its built-in wireless network, the software continuously optimizes the tracking algorithm of each row in response to site terrain and changing weather conditions. NX Horizon can also be paired with bifacial PV module technology, which can provide even more energy harvest and performance. With bifacial technology, NX Horizon outperforms conventional tracking systems with over 1% more annual energy.

Quality and Reliability from Day One

Quality and reliability are designed and tested into every NX Horizon component and system across our supply chain and manufacturing operations. Nextracker is the leader in dynamic wind analysis and safety stowing, delivering major benefits in uptime and long-term durability NX Horizon is certified to UL 2703 and UL 3703 standards, underscoring Nextracker's commitment to safety, reliability and quality.

Features and Benefits

5 years in a row

Global Market Share Leader (2015-18)

35 GW

Delivered on 5 Continents

Best-in Class

Software Ecosystem and Global Services

Up to 6%

Using TrueCapture Smart Control System



GENERAL AND MECHANICAL

Tracking type	Horizontal single-axis, independent row.
String voltage	1,500 V_{DC} or 1,000 V_{DC}
Typical row size	78-90 modules, depending on module string length.
Drive type	Non-backdriving, high accuracy slew gear.
Motor type	24 V brushless DC motor
Array height	Rotation axis elevation 1.3 to 1.8 m / 4'3" to 5'10"
Ground coverage ratio (GCR)	Configurable. Typical range 28-50%.
Modules supported	Mounting options available for virtually all utility-scale crystalline modules, First Solar Series 6 and First Solar Series 4.
Bifacial features	High-rise mounting rails, bearing + driveline gaps and round torque tube.
Tracking range of motion	Options for ±60° or ±50°
Operating temperature range	SELF POWERED: -30°C to 55°C (-22°F to 131°F) AC POWERED: -40°C to 55°C (-40°F to 131°F)
Module configuration	1 in portrait. 3 x 1,500 V or 4 x 1,000 V strings per standard tracker. Partial length trackers available.
Module attachment	Self-grounding, electric tool-actuated fasteners.
Materials	Galvanized steel
Allowable wind speed	Configurable up to 225 kph (140 mph) 3-second gust
Wind protection	Intelligent wind stowing with symmetric dampers for maximum array stability in all wind conditions
Foundations	Standard W6 section foundation posts

ELECTRONICS AND CONTROLS

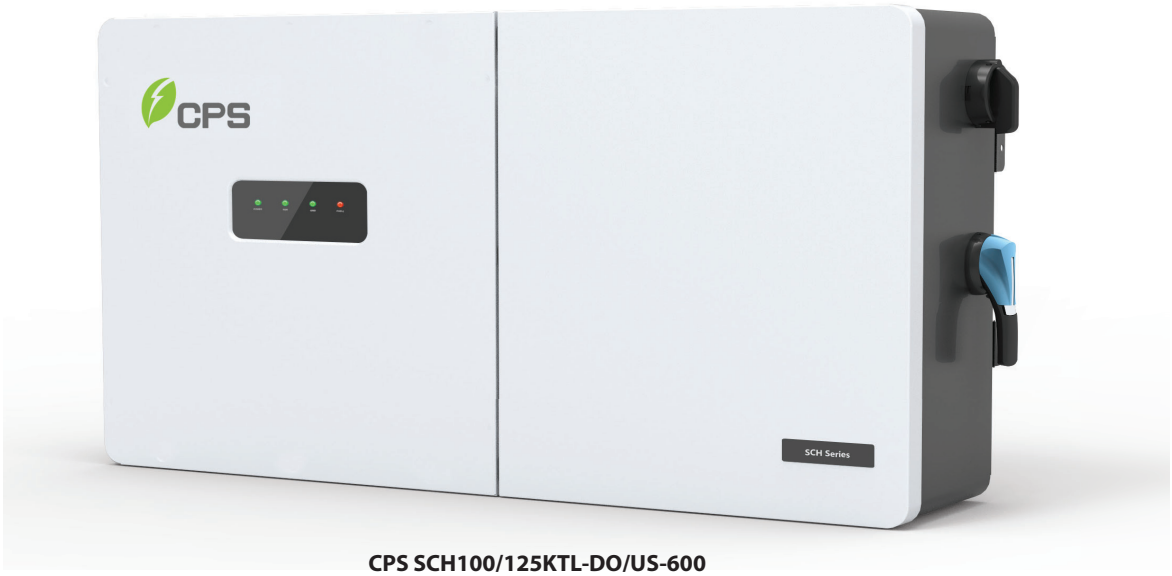
Solar tracking method	Astronomical algorithm with backtracking. TrueCapture™ upgrades available for terrain adaptive backtracking and diffuse tracking mode
Control electronics	NX tracker controller with inbuilt inclinometer and backup battery
Communications	Zigbee wireless communications to all tracker rows and weather stations via network control units (NCUs)
Nighttime stow	Yes
Power supply	SELF POWERED: NX provided 30 or 60W Smart Panel AC POWERED: Customer-provided 120-240 V_{AC} circut

INSTALLATION, OPERATIONS AND SERVICE

PE stamped structural calculations and drawings	Included
Onsite training and system commissioning	Included
Installation requirements	Simple assembly using swaged fasteners and bolted connections. No field cutting, drilling or welding.
Monitoring	NX Data Hub™ centralized data aggregation and monitoring
Module cleaning compatibility	Compatible with NX qualified cleaning systems
Warranty	10-year structural, 5-year drive and control components.
Codes and standards	UL 3703 / UL 2703 / IEC 62817

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6200 Paseo Padre Parkway | Fremont, CA 94555 | USA | +1 510 270 2500 | nextracker.com

100/125kW, 1500Vdc String Inverters for North America



CPS SCH100/125KTL-DO/US-600

The 100 & 125kW high power CPS three phase string inverters are designed for ground mount applications. The units are high performance, advanced and reliable inverters designed specifically for the North American environment and grid. High efficiency at 99.1% peak and 98.5% CEC, wide operating voltages, broad temperature ranges and a NEMA Type 4X enclosure enable this inverter platform to operate at high performance across many applications. The CPS 100/125kW products ship with the Standard or Centralized Wire-box, each fully integrated and separable with AC and DC disconnect switches. The Standard Wire-box includes touch safe fusing for up to 20 strings. The CPS FlexOM Gateway enables communication, controls and remote product upgrades.

Key Features

- NFPA 70, NEC 2014 and 2017 compliant
- Touch safe DC Fuse holders adds convenience and safety
- CPS FlexOM Gateway enables remote FW upgrades
- Integrated AC & DC disconnect switches
- 1 MPPT with 20 fused inputs for maximum flexibility
- Copper and Aluminum compatible AC connections
- NEMA Type 4X outdoor rated, tough tested enclosure
- Advanced Smart-Grid features (CA Rule 21 certified)
- kVA Headroom yields 100kW @ 0.9PF and 125kW @ 0.95PF
- Generous 1.87 and 1.5 DC/AC Inverter Load Ratios
- Separable wire-box design for fast service
- Standard 5 year warranty with extensions to 20 years



100/125KTL Standard Wire-box



100/125KTL Centralized Wire-box

C SA US

This device complies with part 15 of the FCC Rules

© CHINT POWER SYSTEMS AMERICA 2021/10-MKT NA

Chint Power Systems America
6800 Koll Center Parkway, Suite 235 Pleasanton, CA 94566
Tel: 855-584-7168 Mail: AmericaSales@chintpower.com Web: www.chintpowersystems.com

Model Name	CPS SCH100KTL-DO/US-600	CPS SCH125KTL-DO/US-600
DC Input		
Max. PV Power	187.5kW	
Max. DC Input Voltage	1500V	
Operating DC Input Voltage Range	860-1450Vdc	
Start-up DC Input Voltage / Power	900V / 250W	
Number of MPP Trackers	1	
MPPT Voltage Range[1]	870-1300Vdc	
Max. PV Input Current (Isc x1.25)	275A	
Number of DC Inputs	20 PV source circuits, pos. & neg. fused (Standard Wire-box) 1 PV output circuit, 1-2 terminations per pole, non-fused (Centralized Wire-box)	
DC Disconnection Type	Load-rated DC switch	
DC Surge Protection	Type II MOV (with indicator/remote signaling), Up=2.5kV, In=20kA (8/20uS)	
AC Output		
Rated AC Output Power	100kW	125kW
Max. AC Output Power[2]	100kVA (111KVA @ PF>0.9)	125kVA (132KVA @ PF>0.95)
Rated Output Voltage	600Vac	
Output Voltage Range[3]	528-660Vac	
Grid Connection Type[4]	3Φ / PE / N (Neutral optional)	
Max. AC Output Current @600Vac	96.2/106.8A	120.3/127.0A
Rated Output Frequency	60Hz	
Output Frequency Range[3]	57-63Hz	
Power Factor	>0.99 (±0.8 adjustable)	>0.99 (±0.8 adjustable)
Current THD	<3%	
Max. Fault Current Contribution (1-cycle RMS)	41.47A	
Max. OCPD Rating	200A	
AC Disconnection Type	Load-rated AC switch	
AC Surge Protection	Type II MOV (with indicator/remote signaling), Up=2.5kV, In=20kA (8/20uS)	
System		
Topology	Transformerless	
Max. Efficiency	99.1%	
CEC Efficiency	98.5%	
Stand-by / Night Consumption	<4W	
Environment		
Enclosure Protection Degree	NEMA Type 4X	
Cooling Method	Variable speed cooling fans	
Operating Temperature Range	-22°F to +140°F / -30°C to +60°C (derating from +108°F / +42°C)	
Non-Operating Temperature Range[5]	-40°F to +158°F / -40°C to +70°C maximum	
Operating Humidity	0-100%	
Operating Altitude	8202ft / 2500m (no derating)	
Audible Noise	<65dBA@1m and 25°C	
Display and Communication		
User Interface and Display	LED Indicators, WiFi + APP	
Inverter Monitoring	Modbus RS485	
Site Level Monitoring	CPS FlexOM Gateway (1 per 32 inverters)	
Modbus Data Mapping	SunSpec/CPS	
Remote Diagnostics / FW Upgrade Functions	Standard / (with FlexOM Gateway)	
Mechanical		
Dimensions (WxHxD)	45.28x24.25x9.84in (1150x616x250mm) with Standard Wire-box 39.37x24.25x9.84in (1000x616x250mm) with Centralized Wire-box	
Weight	Inverter: 121lbs / 55kg; Wire-box: 55lbs / 25kg (Standard Wire-box); 33lbs / 15kg (Centralized Wire-box)	
Mounting / Installation Angle	15 - 90 degrees from horizontal (vertical or angled)	
AC Termination	M10 Stud Type Terminal [3Φ] (Wire range:1/0AWG - 500kcmil CU/AL, Lugs not supplied) Screw Clamp Terminal Block [N] (#12 - 1/0AWG CU/AL)	
DC Termination	Screw Clamp Fuse Holder (Wire range: #12 - #6AWG CU) - Standard Wire-box Busbar, M10 Bolts (Wire range: #1AWG - 500kcmil CU/AL [1 termination per pole], #1AWG - 300kcmil CU/AL [2 terminations per pole], Lugs not supplied) - Centralized Wire-box	
Fused String Inputs	20A fuses provided (Fuse values up to 30A acceptable)	
Safety		
Safety and EMC Standard	UL1741-SA-2016, CSA-C22.2 NO.107.1-01, IEEE1547a-2014; FCC PART15	
Selectable Grid Standard	IEEE 1547a-2014, CA Rule 21, ISO-NE	
Smart-Grid Features	Volt-RideThru, Freq-RideThru, Ramp-Rate, Specified-PF, Volt-VAr, Freq-Watt, Volt-Watt	
Warranty		
Standard[6]	5 years	
Extended Terms	10, 15 and 20 years	

1) See user manual for further information regarding MPPT Voltage Range when operating at non-unity PF
2) "Max. AC Apparent Power" rating valid within MPPT voltage range and temperature range of -30°C to +40°C (-22°F to +104°F) for 100KW PF ≥0.9 and 125KW PF ≥0.95
3) The "Output Voltage Range" and "Output Frequency Range" may differ according to the specific grid standard.
4) Wye neutral-grounded, Delta may not be corner-grounded.
5) See user manual for further requirements regarding non-operating conditions.
6) 5 year warranty effective for units purchased after October 1st, 2019.

APPENDIX J – OPERATIONS AND MAINTENANCE PLAN

Operations & Maintenance ("O&M") Plan [TPE IL KE106 LLC]

O&M Plan / O&M Practices and Services

The O&M plan is structured to both maximize system performance and meet all permitting requirements. Regional O&M staff and seasonal staff will be assigned to perform: 1. Preventative maintenance, 2. Corrective maintenance, and 3. Support of monitoring and asset management services. A summary scope of work for each is as follows:

Preventative Maintenance

- Industry standard of care to ensure and maintain solar production levels
- Regular maintenance on project components per manufacturer recommendations and industry best practices and standards of care
- Module cleanings are not expected given the average monthly rainfall in the area. If cleaning is required, modules will be cleaned to ensure project performance.
- Vegetation abatement as required to ensure project performance
- Primary component inspection on an annual basis (panels, inverter, high voltage equipment)
    - Array & balance of system inspection
    - Module visual inspection
    - Data Acquisition System (DAS) & Meteorological (MET) station inspection
    - Inverter full inspection
    - High voltage equipment inspections
- Mechanical & electrical maintenance on an annual basis including inverter maintenance per manufacturer warranty requirements and standards of care
- Yearly inspection and maintenance as needed for roads, storm water, and other site civil features

Corrective Maintenance

- Remote problem diagnosis & qualification via the project SCADA system
- On-site technician dispatch: Trained, qualified and insured service techs utilized for rapid response
- Warranty submittal/claims notification, tracking of replacement parts' arrival/storage/ installation, etc.
- Maintenance ticket updates and closure identifying root cause/problem resolution reporting to owner

Monitoring

- Remote equipment monitoring (24x7x365) via SCADA system
- Remote dispatch per customer/owner requirements
- Ticketing: Create and dispatch automated ticketing with issue resolution notifications and root cause reporting
- Problem tracking and ensured resolution reporting included within monthly report

- Identify potential and actual underperformance issues; recommend remedies
- Customized data analysis and alerts for customer:
    - Collection and hosting of system monitoring data
    - Owner access to online portal monitoring and production with weather data
    - Operator to host site communication and fees for monitoring

Monitoring and asset management services are provided by the late-stage development company's remote operation center and central services staff.

Plan and Timeline for Responding to Loss of Major Plant Components

O&M personnel will be notified of any loss of major plant component or related failures by the 7x24 remote operations center. This center will dispatch onsite technicians for system critical failures (inverter, transformer, or tracker motor failure). The plan for such losses is to:

- Remove and replace the failed equipment with spare parts, nearby parts in inventory or emergency delivery of parts from manufacturer as rapidly as possible.
- Diagnose reason for failure.
- Work with general contractor and/or manufacturers for any warranty or related claims.

Compliance with Prudent Utility Practices

All O&M practices follow Prudent Utility Practices with the utmost focus on safety. As a part of all O&M contracts with vendors, contractors, and sub-contractors, our team will ensure that these companies are responsible for the safe performance of work and for the safety of its, and its subcontractors', employees, representatives, agents and invitees of contractor or its subcontractors at and around the project site, or any other person who enters the project site for any purpose. To facilitate this, all contractors must provide a safety plan whereby contractor maintains responsibility for maintaining all safety precautions and measures for areas on and around the project site. As part of this safety plan, contractor must provide a safe working environment at the project site during the performance of the work, and shall, among other requirements, seek to minimize the number of safety-related incidents during the performance of the work (with both TPE's and contractor's mutual objective of zero lost time accidents). Such safety plan shall include requirements for the safety prequalification of each subcontractor and a drug and alcohol program (which shall include a drug testing policy). Furthermore, the safety plan shall meet the requirements of applicable laws and applicable standards.

After the commencement of work, TPE and contractor shall periodically review safety compliance, particularly in light of any injuries or near-miss incidents that may arise through the performance of the work and cooperate jointly to develop necessary changes to the safety plan in light of such circumstances, if any.

The safety plan shall apply to all individuals accessing the project site and performing work on the project. As part of the safety plan, a safety representative will be identified with the necessary qualifications and experience to supervise the implementation of, and monitoring of compliance with, the safety plan. The safety representative shall make routine inspections of the project site and shall hold regular safety meetings with contractor's personnel, subcontractors and others.

Each staff member undergoes personal background checks, qualifies as possessing safety and related solar skills training required, or shall gain this training from an approved O&M training program prior to starting work on the job site.

The contractor shall make the site safety plan available to local authorities having jurisdiction/permitting authorities (AHJs) during the construction process, upon request. The safety plan should include provisions for the management of site access, traffic management, road maintenance, and site security.

Emergency Response

The site owner shall provide an emergency response plan to the AHJs prior to commercial operation of the facility, if required by the local AHJs. The site owner shall provide an education training session to county representatives and first responders prior to commercial operation of the facility, if required by the local AHJs. The site owner shall provide a means and procedure for site access in coordination with the local AHJs.

Equipment Manufacturer Recommendations

The O&M plan referenced above complies with or exceeds all standard utility-scale PV equipment manufacturer recommendations. We can provide copies of all major equipment O&M recommendations prior to formal procurement as needed.

Mowing and Weed Management

A comprehensive vegetation management plan shall be implemented and followed for the duration of the project life. A mowing schedule shall be established based on the plant species in the seed mix that is properly timed to balance avoiding the disturbance of wildlife and native vegetation with the need to avoid the establishment of weeds. Vegetation underneath and between the solar panels should be well maintained in the defined lease area to keep vegetation below the low edge of the solar panels at maximum tilt angle. Management should comply with any local ordinances or conditions of approval. Mowing and weed whacking schedules will be adjusted from time to time to allow for flexibility based on rainfall and vegetation growth. Chemical control shall be used in accordance with the Illinois noxious weed regulations.

Buffer Management

Vegetative Buffers should be inspected during maintenance visits to ensure compliance with local ordinances or conditions of approval. Tree health and growth should be assessed and promoted to ensure compliance with local ordinances.

Warranties

All warranties are managed and handled at the project company level and are the responsibility of the late-stage development company that will operate and own the project over its useful life. Manufacturers of major equipment including modules, inverters, racking and transformers provide equipment warranties for the life of their products.

Outage Schedules

All planned shutdown of equipment for routine maintenance will be planned and coordinated with the local utility. When possible, these outages will occur in non-solar producing hours (nighttime). As such, no planned outages are scheduled.

Spare Parts

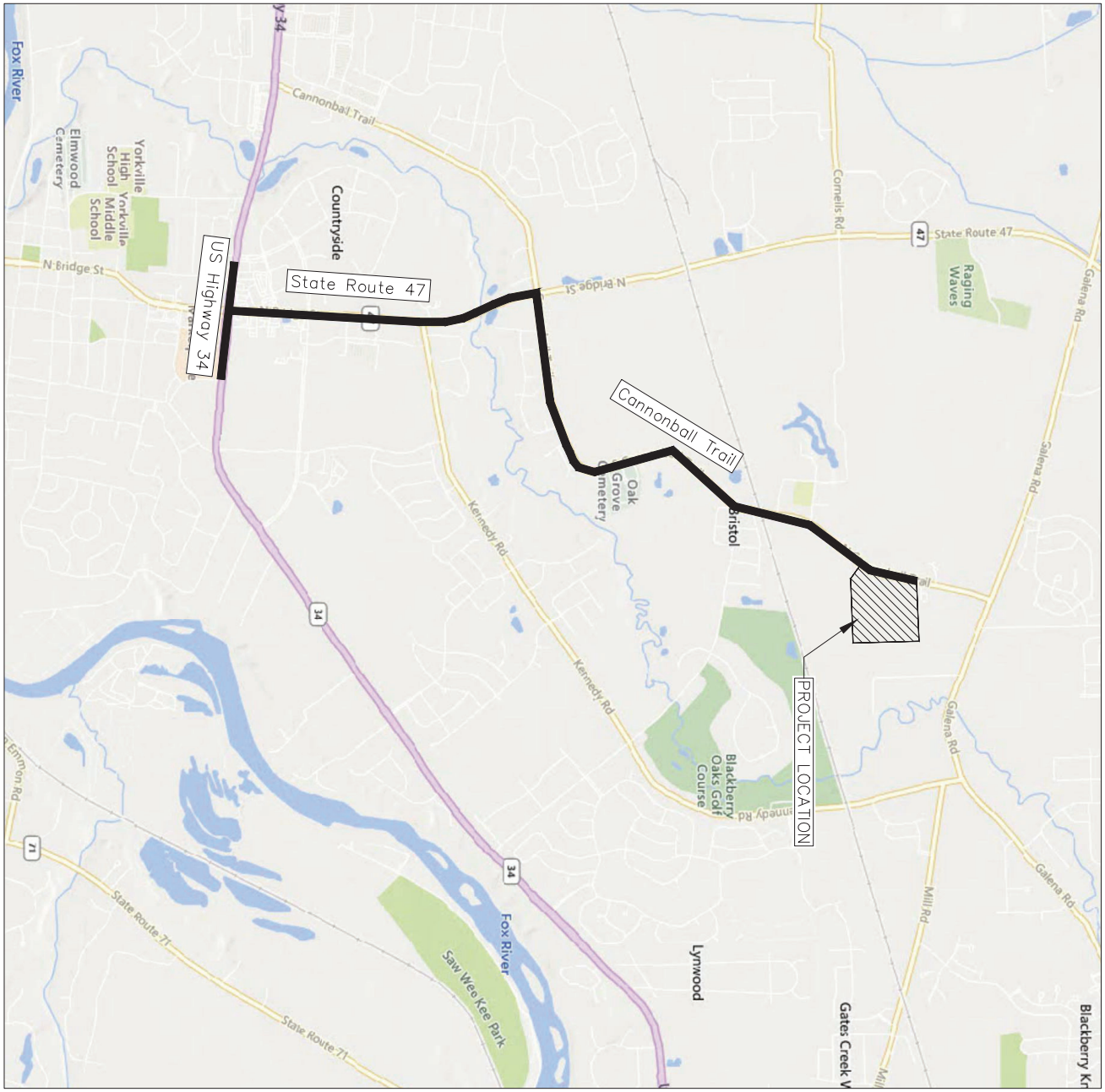
As part of the installation of the project, spare parts may be procured and stored with the O&M service provider for faster access to parts when necessary. This may include spare modules, inverters, parts, tracker components, fuses, wire and related inventory. Additionally, along with the warranty of the equipment, we expect to gain committed response intervals from manufacturers to address equipment replacement requirements. Spare parts will not be stored on site, rather, they will be stored off site in the O&M provider's facilities.

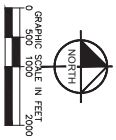
Start-up / Ramp-up Requirements / Times

The PV solar plant starts up as the sun rises in the morning and ramps down as the sun sets in the evening. We can provide specific historical times for the location of our solar array as a means of working to optimize this generation asset.

APPENDIX K – TRANSPORTATION AND ACCESS PLAN

Drawing name: K:\CHS_LDEV\268173009_Turning Point Energy_KE106\2 Design\CAD\Exhibits\KE106_Transportation and Access Plan.dwg Layout1 Aug 18, 2022 3:36pm by: Savannah.White
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SHEET NUMBER EX-1

TPE IL KE106, LLC

KENDALL COUNTY, IL

TRANSPORTATION AND ACCESS PLAN

KHA PROJECT	268173009
DATE	08/18/2021
SCALE	AS SHOWN
DESIGNED BY	SAF
DRAWN BY	SAF
CHECKED BY	APK

Kimley»Horn

© 2022 KIMLEY-HORN AND ASSOCIATES, INC.

570 LAKE COOK RD SUITE 200
DEERFIELD, IL 60015
WWW.KIMLEY-HORN.COM

TurningPoint Energy

No.	REVISIONS	DATE

APPENDIX L – INTERCONNECTION AGREEMENT

Project Number: [redacted] [redacted]

STANDARD AGREEMENT FOR INTERCONNECTION OF DISTRIBUTED GENERATION FACILITIES WITH A CAPACITY LESS THAN OR EQUAL TO 10 MVA

This agreement (together with all attachments, the "Agreement") is made and entered into this

7th day of October, 2022, by and between TPE IL KE106, LLC ("interconnection customer"), as a Limited Liability Company organized and existing under the laws of the State of Delaware and Commonwealth Edison Company, ("Electric Distribution Company" or "EDC"), a corporation existing under the laws of the State of Illinois. Interconnection customer and EDC each may be referred to as a "Party", or collectively as the "Parties".

Recitals:

Whereas, interconnection customer is proposing to install or direct the installation of a distributed generation facility or is proposing a generating capacity addition to an existing distributed generation facility, consistent with the interconnection request application form completed by interconnection customer on 6/24/2022; and

Whereas, the interconnection customer will operate and maintain, or cause the operation and maintenance of, the distributed generation facility; and

Whereas, interconnection customer desires to interconnect the distributed generation facility with EDC's electric distribution system.

Now, therefore, in consideration of the premises and mutual covenants set forth in this Agreement, and other good and valuable consideration, the receipt, sufficiency and adequacy of which are hereby acknowledged, the Parties covenant and agree as follows:

Article 1. Scope and Limitations of Agreement

1.1 This Agreement shall be used for all approved interconnection requests for distributed generation facilities that fall under Levels 2, 3 and 4 according to the procedures set forth in Part 466 of the Commission's rules (83 Ill. Adm. Code 466) (referred to as the Illinois Distributed Generation Interconnection Standard).

1.2 This Agreement governs the terms and conditions under which the distributed generation facility will interconnect to, and operate in parallel with, the EDC's electric distribution system.

1.3 This Agreement does not constitute an agreement to purchase or deliver the interconnection customer's power.

1.4 Nothing in this Agreement is intended to affect any other agreement between the EDC and the interconnection customer.

1.5 Terms used in this agreement are defined as in Section 466.30 of the Illinois Distributed Generation Interconnection Standard unless otherwise noted.

1.6 Responsibilities of the Parties

1.6.1 The Parties shall perform all obligations of this Agreement in accordance with all applicable laws and regulations.

1.6.2 The EDC shall construct, own, operate, and maintain its interconnection facilities in accordance with this Agreement.

1.6.3 The interconnection customer shall construct, own, operate, and maintain its distributed generation facility and interconnection facilities in accordance with this Agreement.

1.6.4 Each Party shall operate, maintain, repair, and inspect, and shall be fully responsible for, the facilities that it now or subsequently may own unless otherwise specified in the attachments to this Agreement. Each Party shall be responsible for the safe installation, maintenance, repair and condition of its respective lines and appurtenances on its respective sides of the point of interconnection.

1.6.5 The interconnection customer agrees to design, install, maintain and operate its distributed generation facility so as to minimize the likelihood of causing an adverse system impact on the electric distribution system or any other electric system that is not owned or operated by the EDC.

1.7 Parallel Operation Obligations
Once the distributed generation facility has been authorized to commence parallel operation, the interconnection customer shall abide by all operating procedures established in IEEE Standard 1547 and any other applicable laws, statutes or guidelines, including those specified in Attachment 4 of this Agreement.

1.8 Metering
The interconnection customer shall be responsible for the cost to purchase, install, operate, maintain, test, repair, and replace metering and data acquisition equipment specified in Attachments 5 and 6 of this Agreement.

1.9 Reactive Power

1.9.1 Interconnection customers with a distributed generation facility larger than or equal to 1 MVA shall design their distributed generation facilities to maintain a power factor at the point of interconnection between .95 lagging and .95 leading

at all times. Interconnection customers with a distributed generation facility smaller than 1 MVA shall design their distributed generation facility to maintain a power factor at the point of interconnection between .90 lagging and .90 leading at all times.

1.9.2 Any EDC requirements for meeting a specific voltage or specific reactive power schedule as a condition for interconnection shall be clearly specified in Attachment 4. Under no circumstance shall the EDC's additional requirements for voltage or reactive power schedules exceed the normal operating capabilities of the distributed generation facility.

1.9.3 If the interconnection customer does not operate the distributed generation facility within the power factor range specified in Attachment 4, or does not operate the distribute generation facility in accordance with a voltage or reactive power schedule specified in Attachment 4, the interconnection customer is in default, and the terms of Article 6.5 apply.

1.10 Standards of Operations

The interconnection customer must obtain all certifications, permits, licenses and approvals necessary to construct, operate and maintain the facility and to perform its obligations under this Agreement. The interconnection customer is responsible for coordinating and synchronizing the distributed generation facility with the EDC's system. The interconnection customer is responsible for any damage that is caused by the interconnection customer's failure to coordinate or synchronize the distributed generation facility with the electric distribution system. The interconnection customer agrees to be primarily liable for any damages resulting from the continued operation of the distributed generation facility after the EDC ceases to energize the line section to which the distributed generation facility is connected. In Attachment 4, the EDC shall specify the shortest reclose time setting for its protection equipment that could affect the distributed generation facility. The EDC shall notify the interconnection customer at least 10 business days prior to adopting a faster reclose time on any automatic protective equipment, such as a circuit breaker or line recloser, that might affect the distributed generation facility.

Article 2. Inspection, Testing, Authorization, and Right of Access

2.1 Equipment Testing and Inspection

The interconnection customer shall test and inspect its distributed generation facility including the interconnection equipment prior to interconnection in accordance with IEEE Standard 1547 (2003) and IEEE Standard 1547.1 (2005). The interconnection customer shall not operate its distributed generation facility in parallel with the EDC's electric distribution system without prior written authorization by the EDC as provided for in Articles 2.1.1-2.1.3.

2.1.1 The EDC shall perform a witness test after construction of the distributed generation facility is completed, but before parallel operation, unless the EDC

specifically waives the witness test. The interconnection customer shall provide the EDC at least 15 business days notice of the planned commissioning test for the distributed generation facility. If the EDC performs a witness test at a time that is not concurrent with the commissioning test, it shall contact the interconnection customer to schedule the witness test at a mutually agreeable time within 10 business days after the scheduled commissioning test designated on the application. If the EDC does not perform the witness test within 10 business days after the commissioning test, the witness test is deemed waived unless the Parties mutually agree to extend the date for scheduling the witness test, or unless the EDC cannot do so for good cause, in which case, the Parties shall agree to another date for scheduling the test within 10 business days after the original scheduled date. If the witness test is not acceptable to the EDC, the interconnection customer has 30 business days to address and resolve any deficiencies. This time period may be extended upon agreement between the EDC and the interconnection customer. If the interconnection customer fails to address and resolve the deficiencies to the satisfaction of the EDC, the applicable cure provisions of Article 6.5 shall apply. The interconnection customer shall, if requested by the EDC, provide a copy of all documentation in its possession regarding testing conducted pursuant to IEEE Standard 1547.1.

2.1.2 If the interconnection customer conducts interim testing of the distributed generation facility prior to the witness test, the interconnection customer shall obtain permission from the EDC before each occurrence of operating the distributed generation facility in parallel with the electric distribution system. The EDC may, at its own expense, send qualified personnel to the distributed generation facility to observe such interim testing, but it cannot mandate that these tests be considered in the final witness test. The EDC is not required to observe the interim testing or precluded from requiring the tests be repeated at the final witness test.

2.1.3 After the distributed generation facility passes the witness test, the EDC shall affix an authorized signature to the certificate of completion and return it to the interconnection customer approving the interconnection and authorizing parallel operation. The authorization shall not be conditioned or delayed.

2.2 Commercial Operation

The interconnection customer shall not operate the distributed generation facility, except for interim testing as provided in Article 2.1, until such time as the certificate of completion is signed by all Parties.

2.3 Right of Access

The EDC must have access to the disconnect switch and metering equipment of the distributed generation facility at all times. When practical, the EDC shall provide notice to the interconnection customer prior to using its right of access.

Article 3. Effective Date, Term, Termination, and Disconnection

3.1 Effective Date
This Agreement shall become effective upon execution by all Parties.

3.2 Term of Agreement
This Agreement shall become effective on the effective date and shall remain in effect unless terminated in accordance with Article 3.3 of this Agreement.

3.3 Termination

3.3.1 The interconnection customer may terminate this Agreement at any time by giving the EDC 30 calendar days prior written notice.

3.3.2 Either Party may terminate this Agreement after default pursuant to Article 6.5.

3.3.3 The EDC may terminate, upon 60 calendar days' prior written notice, for failure of the interconnection customer to complete construction of the distributed generation facility within 12 months after the in-service date as specified by the Parties in Attachment 2, which may be extended by agreement between the Parties.

3.3.4 The EDC may terminate this Agreement, upon 60 calendar days' prior written notice, if the interconnection customer has abandoned, cancelled, permanently disconnected or stopped development, construction, or operation of the distributed generation facility, or if the interconnection customer fails to operate the distributed generation facility in parallel with the EDC's electric system for three consecutive years.

3.3.5 Upon termination of this Agreement, the distributed generation facility will be disconnected from the EDC's electric distribution system. Terminating this Agreement does not relieve either Party of its liabilities and obligations that are owed or continuing when the Agreement is terminated.

3.3.6 If the Agreement is terminated, the interconnection customer loses its position in the interconnection queue.

3.4 Temporary Disconnection
A Party may temporarily disconnect the distributed generation facility from the electric distribution system in the event one or more of the following conditions or events occurs:

3.4.1 Emergency conditions – shall mean any condition or situation: (1) that in the judgment of the Party making the claim is likely to endanger life or property; or (2) that the EDC determines is likely to cause an adverse system impact, or is likely to have a material adverse effect on the EDC's electric distribution system, interconnection facilities or other facilities, or is likely to interrupt or materially

interfere with the provision of electric utility service to other customers; or (3) that is likely to cause a material adverse effect on the distributed generation facility or the interconnection equipment. Under emergency conditions, the EDC or the interconnection customer may suspend interconnection service and temporarily disconnect the distributed generation facility from the electric distribution system. The EDC must notify the interconnection customer when it becomes aware of any conditions that might affect the interconnection customer's operation of the distributed generation facility. The interconnection customer shall notify the EDC when it becomes aware of any condition that might affect the EDC's electric distribution system. To the extent information is known, the notification shall describe the condition, the extent of the damage or deficiency, the expected effect on the operation of both Parties' facilities and operations, its anticipated duration, and the necessary corrective action.

3.4.2 Scheduled maintenance, construction, or repair – the EDC may interrupt interconnection service or curtail the output of the distributed generation facility and temporarily disconnect the distributed generation facility from the EDC's electric distribution system when necessary for scheduled maintenance, construction, or repairs on EDC's electric distribution system. To the extent possible, the EDC shall provide the interconnection customer with notice five business days before an interruption. The EDC shall coordinate the reduction or temporary disconnection with the interconnection customer; however, the interconnection customer is responsible for out-of-pocket costs incurred by the EDC for deferring or rescheduling maintenance, construction or repair at the interconnection customer's request.

3.4.3 Forced outages – The EDC may suspend interconnection service to repair the EDC's electric distribution system. The EDC shall provide the interconnection customer with prior notice, if possible. If prior notice is not possible, the EDC shall, upon written request, provide the interconnection customer with written documentation, after the fact, explaining the circumstances of the disconnection.

3.4.4 Adverse system impact – the EDC must provide the interconnection customer with written notice of its intention to disconnect the distributed generation facility, if the EDC determines that operation of the distributed generation facility creates an adverse system impact. The documentation that supports the EDC's decision to disconnect must be provided to the interconnection customer. The EDC may disconnect the distributed generation facility if, after receipt of the notice, the interconnection customer fails to remedy the adverse system impact, unless emergency conditions exist, in which case, the provisions of Article 3.4.1 apply. The EDC may continue to leave the generating facility disconnected until the adverse system impact is corrected.

3.4.5 Modification of the distributed generation facility – The interconnection customer must receive written authorization from the EDC prior to making any change to

the distributed generation facility, other than a minor equipment modification. If the interconnection customer modifies its facility without the EDC's prior written authorization, the EDC has the right to disconnect the distributed generation facility until such time as the EDC concludes the modification poses no threat to the safety or reliability of its electric distribution system.

3.4.6 The EDC is not responsible for any lost opportunity or other costs incurred by the interconnection customer as a result of an interruption of service under Article 3.

Article 4. Cost Responsibility for Interconnection Facilities and Distribution Upgrades

4.1 Interconnection Facilities

4.1.1 The interconnection customer shall pay for the cost of the interconnection facilities itemized in Attachment 3. The EDC shall identify the additional interconnection facilities necessary to interconnect the distributed generation facility with the EDC's electric distribution system, the cost of those facilities, and the time required to build and install those facilities, as well as an estimated date of completion of the building or installation of those facilities.

4.1.2 The interconnection customer is responsible for its expenses, including overheads, associated with owning, operating, maintaining, repairing, and replacing its interconnection equipment.

4.2 Distribution Upgrades

The EDC shall design, procure, construct, install, and own any distribution upgrades. The actual cost of the distribution upgrades, including overheads, shall be directly assigned to the interconnection customer whose distributed generation facility caused the need for the distribution upgrades.

Article 5. Billing, Payment, Milestones, and Financial Security

5.1 Billing and Payment Procedures and Final Accounting (Applies to additional reviews conducted under a Level 2 review and Level 4 reviews)

5.1.1 The EDC shall bill the interconnection customer for the design, engineering, construction, and procurement costs of EDC-provided interconnection facilities and distribution upgrades contemplated by this Agreement as set forth in Attachment 3. The billing shall occur on a monthly basis, or as otherwise agreed to between the Parties. The interconnection customer shall pay each bill within 30 calendar days after receipt, or as otherwise agreed to between the Parties.

5.1.2 Within 90 calendar days after completing the construction and installation of the EDC's interconnection facilities and distribution upgrades described in Attachments 2 and 3 to this Agreement, the EDC shall provide the interconnection customer with a final accounting report of any difference between

(1) the actual cost incurred to complete the construction and installation of the EDC's interconnection facilities and distribution upgrades; and (2) the interconnection customer's previous deposit and aggregate payments to the EDC for the interconnection facilities and distribution upgrades. If the interconnection customer's cost responsibility exceeds its previous deposit and aggregate payments, the EDC shall invoice the interconnection customer for the amount due and the interconnection customer shall make payment to the EDC within 30 calendar days. If the interconnection customer's previous deposit and aggregate payments exceed its cost responsibility under this Agreement, the EDC shall refund to the interconnection customer an amount equal to the difference within 30 calendar days after the final accounting report. Upon request from the interconnection customer, if the difference between the budget estimate and the actual cost exceeds 20%, the EDC will provide a written explanation for the difference.

5.1.3 If a Party disputes any portion of its payment obligation pursuant to this Article 5, the Party shall pay in a timely manner all non-disputed portions of its invoice, and the disputed amount shall be resolved pursuant to the dispute resolution provisions contained in Article 8. A Party disputing a portion of an Article 5 payment shall not be considered to be in default of its obligations under this Article.

5.2 Interconnection Customer Deposit

At least 20 business days prior to the commencement of the design, procurement, installation, or construction of the EDC's interconnection facilities and distribution upgrades, the interconnection customer shall provide the EDC with a deposit equal to 100% of the estimated, non-binding cost to procure, install, or construct any such facilities (the "Security Deposit"). However, when the estimated date of completion of the building or installation of facilities exceeds three months from the date of notification, pursuant to Article 4.1.1 of this Agreement, this deposit may be held in escrow by a mutually agreed-upon third-party, with any interest to inure to the benefit of the interconnection customer.

Article 6. Assignment, Limitation on Damages, Indemnity, Force Majeure, and Default

6.1 Assignment

This Agreement may be assigned by either Party. If the interconnection customer attempts to assign this Agreement, the assignee must agree to the terms of this Agreement in writing and such writing must be provided to the EDC. Any attempted assignment that violates this Article is void and ineffective. Assignment shall not relieve a Party of its obligations, nor shall a Party's obligations be enlarged, in whole or in part, by reason of the assignment. An assignee is responsible for meeting the same obligations as the assignor.

6.1.1 Either Party may assign this Agreement without the consent of the other Party to any affiliate (including mergers, consolidations, or transfers, or a sale of a

substantial portion of the Party's assets, between the Party and another entity), of the assigning Party that has an equal or greater credit rating and the legal authority and operational ability to satisfy the obligations of the assigning Party under this Agreement.

6.1.2 The interconnection customer can assign this Agreement, without the consent of the EDC, for collateral security purposes to aid in providing financing for the distributed generation facility.

6.2 Limitation on Damages

Except for cases of gross negligence or willful misconduct, the liability of any Party to this Agreement shall be limited to direct actual damages and reasonable attorney's fees, and all other damages at law are waived. Under no circumstances, except for cases of gross negligence or willful misconduct, shall any Party or its directors, officers, employees and agents, or any of them, be liable to another Party, whether in tort, contract or other basis in law or equity for any special, indirect, punitive, exemplary or consequential damages, including lost profits, lost revenues, replacement power, cost of capital or replacement equipment. This limitation on damages shall not affect any Party's rights to obtain equitable relief, including specific performance, as otherwise provided in this Agreement. The provisions of this Article 6.2 shall survive the termination or expiration of the Agreement.

6.3 Indemnity

6.3.1 This provision protects each Party from liability incurred to third parties as a result of carrying out the provisions of this Agreement. Liability under this provision is exempt from the general limitations on liability found in Article 6.2.

6.3.2 The interconnection customer shall indemnify and defend the EDC and the EDC's directors, officers, employees, and agents, from all damages and expenses resulting from a third party claim arising out of or based upon the interconnection customer's (a) negligence or willful misconduct or (b) breach of this Agreement.

6.3.3 The EDC shall indemnify and defend the interconnection customer and the interconnection customer's directors, officers, employees, and agents from all damages and expenses resulting from a third party claim arising out of or based upon the EDC's (a) negligence or willful misconduct or (b) breach of this Agreement.

6.3.4 Within 5 business days after receipt by an indemnified Party of any claim or notice that an action or administrative or legal proceeding or investigation as to which the indemnity provided for in this Article may apply has commenced, the indemnified Party shall notify the indemnifying Party of such fact. The failure to notify, or a delay in notification, shall not affect a Party's indemnification obligation unless that failure or delay is materially prejudicial to the indemnifying Party.

6.3.5 If an indemnified Party is entitled to indemnification under this Article as a result of a claim by a third party, and the indemnifying Party fails, after notice and reasonable opportunity to proceed under this Article, to assume the defense of such claim, that indemnified Party may, at the expense of the indemnifying Party, contest, settle or consent to the entry of any judgment with respect to, or pay in full, the claim.

6.3.6 If an indemnifying Party is obligated to indemnify and hold any indemnified Party harmless under this Article, the amount owing to the indemnified person shall be the amount of the indemnified Party's actual loss, net of any insurance or other recovery.

6.4 Force Majeure

6.4.1 As used in this Article, a force majeure event shall mean any act of God, labor disturbance, act of the public enemy, war, acts of terrorism, insurrection, riot, fire, storm or flood, explosion, breakage or accident to machinery or equipment through no direct, indirect, or contributory act of a Party, any order, regulation or restriction imposed by governmental, military or lawfully established civilian authorities, or any other cause beyond a Party's control. A force majeure event does not include an act of gross negligence or intentional wrongdoing by the Party claiming force majeure.

6.4.2 If a force majeure event prevents a Party from fulfilling any obligations under this Agreement, the Party affected by the force majeure event ("Affected Party") shall notify the other Party of the existence of the force majeure event within one business day. The notification must specify the circumstances of the force majeure event, its expected duration, and the steps that the Affected Party is taking and will take to mitigate the effects of the event on its performance. If the initial notification is verbal, it must be followed up with a written notification within one business day. The Affected Party shall keep the other Party informed on a continuing basis of developments relating to the force majeure event until the event ends. The Affected Party may suspend or modify its obligations under this Agreement (other than the obligation to make payments) only to the extent that the effect of the force majeure event cannot be otherwise mitigated.

6.5 Default

6.5.1 No default shall exist when the failure to discharge an obligation (other than the payment of money) results from a force majeure event as defined in this Agreement, or the result of an act or omission of the other Party.

6.5.2 A Party shall be in default ("Default") of this Agreement if it fails in any material respect to comply with, observe or perform, or defaults in the performance of, any covenant or obligation under this Agreement and fails to cure the failure within 60

calendar days after receiving written notice from the other Party. Upon a default of this Agreement, the non-defaulting Party shall give written notice of the default to the defaulting Party. Except as provided in Article 6.5.3, the defaulting Party has 60 calendar days after receipt of the default notice to cure the default; provided, however, if the default cannot be cured within 60 calendar days, the defaulting Party shall commence the cure within 20 calendar days after original notice and complete the cure within six months from receipt of the default notice; and, if cured within that time, the default specified in the notice shall cease to exist.

6.5.3 If a Party has assigned this Agreement in a manner that is not specifically authorized by Article 6.1, fails to provide reasonable access pursuant to Article 2.3, and is in default of its obligations pursuant to Article 7, or if a Party is in default of its payment obligations pursuant to Article 5 of this Agreement, the defaulting Party has 30 days from receipt of the default notice to cure the default.

6.5.4 If a default is not cured as provided for in this Article, or if a default is not capable of being cured within the period provided for in this Article, the non-defaulting Party shall have the right to terminate this Agreement by written notice, and be relieved of any further obligation under this Agreement and, whether or not that Party terminates this Agreement, to recover from the defaulting Party all amounts due under this Agreement, plus all other damages and remedies to which it is entitled at law or in equity. The provisions of this Article shall survive termination of this Agreement.

Article 7. Insurance

For distributed generation facilities with a nameplate capacity of 1 MVA or above, the interconnection customer shall carry sufficient insurance coverage so that the maximum comprehensive/general liability coverage that is continuously maintained by the interconnection customer during the term shall be not less than $2,000,000 for each occurrence, and an aggregate, if any, of at least $4,000,000. The EDC, its officers, employees and agents shall be added as an additional insured on this policy. The interconnection customer agrees to provide the EDC with at least 30 calendar days advance written notice of cancellation, reduction in limits, or non-renewal of any insurance policy required by this Article.

Article 8. Dispute Resolution

8.1 Parties shall attempt to resolve all disputes regarding interconnection as provided in this Article in a good faith manner.

8.2 If there is a dispute between the Parties about an interpretation of the Agreement, the aggrieved Party shall issue a written notice to the other Party to the agreement that specifies the dispute and the Agreement articles that are disputed.

8.3 A meeting between the Parties shall be held within ten days after receipt of the written notice. Persons with decision-making authority from each Party shall attend the meeting. If the dispute involves technical issues, persons with sufficient technical expertise and familiarity with the issue in dispute from each Party shall also attend the meeting. The meeting may be conducted by teleconference.

8.4 After the first meeting, each Party may seek resolution through complaint or mediation procedures available at the Commission. The Commission may designate an engineer from the Commission's Energy Division to assist in resolving the dispute. Dispute resolution shall be conducted in a manner designed to minimize costs and delay. Dispute resolution may be conducted by phone.

8.5 Pursuit of dispute resolution may not affect an interconnection request or an interconnection applicant's position in the EDC's interconnection queue.

8.6 If the Parties fail to resolve their dispute under the dispute resolution provisions of this Article, nothing in this Article shall affect any Party's rights to obtain equitable relief, including specific performance, as otherwise provided in this Agreement.

Article 9. Miscellaneous

9.1 Governing Law, Regulatory Authority, and Rules
The validity, interpretation and enforcement of this Agreement and each of its provisions shall be governed by the laws of the State of Illinois, without regard to its conflicts of law principles. This Agreement is subject to all applicable laws and regulations. Each Party expressly reserves the right to seek change in, appeal, or otherwise contest any laws, orders or regulations of a governmental authority. The language in all parts of this Agreement shall in all cases be construed as a whole, according to its fair meaning, and not strictly for or against the EDC or interconnection customer, regardless of the involvement of either Party in drafting this Agreement.

9.2 Amendment
Modification of this Agreement shall be only by a written instrument duly executed by both Parties.

9.3 No Third-Party Beneficiaries
This Agreement is not intended to and does not create rights, remedies, or benefits of any character whatsoever in favor of any persons, corporations, associations, or entities other than the Parties, and the obligations in this Agreement assumed are solely for the use and benefit of the Parties, their successors in interest and, where permitted, their assigns.

9.4 Waiver

9.4.1 Except as otherwise provided in this Agreement, a Party's compliance with any obligation, covenant, agreement, or condition in this Agreement may be waived by the Party entitled to the benefits thereof only by a written instrument signed by

the Party granting the waiver, but the waiver or failure to insist upon strict compliance with the obligation, covenant, agreement, or condition shall not operate as a waiver of, or estoppel with respect to, any subsequent or other failure.

9.4.2. Failure of any Party to enforce or insist upon compliance with any of the terms or conditions of this Agreement, or to give notice or declare this Agreement or the rights under this Agreement terminated, shall not constitute a waiver or relinquishment of any rights set out in this Agreement, but the same shall be and remain at all times in full force and effect, unless and only to the extent expressly set forth in a written document signed by that Party granting the waiver or relinquishing any such rights. Any waiver granted, or relinquishment of any right, by a Party shall not operate as a relinquishment of any other rights or a waiver of any other failure of the Party granted the waiver to comply with any obligation, covenant, agreement, or condition of this Agreement.

9.5 Entire Agreement

Except as provided in Article 9.1, this Agreement, including all attachments, constitutes the entire Agreement between the Parties with reference to the subject matter of this Agreement, and supersedes all prior and contemporaneous understandings or agreements, oral or written, between the Parties with respect to the subject matter of this Agreement. There are no other agreements, representations, warranties, or covenants that constitute any part of the consideration for, or any condition to, either Party's compliance with its obligations under this Agreement.

9.6 Multiple Counterparts

This Agreement may be executed in two or more counterparts, each of which is deemed an original, but all constitute one and the same instrument.

9.7 No Partnership

This Agreement shall not be interpreted or construed to create an association, joint venture, agency relationship, or partnership between the Parties, or to impose any partnership obligation or partnership liability upon either Party. Neither Party shall have any right, power or authority to enter into any agreement or undertaking for, or act on behalf of, or to act as or be an agent or representative of, or to otherwise bind, the other Party.

9.8 Severability

If any provision or portion of this Agreement shall for any reason be held or adjudged to be invalid or illegal or unenforceable by any court of competent jurisdiction or other governmental authority, (1) that portion or provision shall be deemed separate and independent, (2) the Parties shall negotiate in good faith to restore insofar as practicable the benefits to each Party that were affected by the ruling, and (3) the remainder of this Agreement shall remain in full force and effect.

9.9

Environmental Releases

Each Party shall notify the other Party of the release of any hazardous substances, any asbestos or lead abatement activities, or any type of remediation activities related to the distributed generation facility or the interconnection facilities, each of which may reasonably be expected to affect the other Party. The notifying Party shall (1) provide the notice as soon as practicable, provided that Party makes a good faith effort to provide the notice no later than 24 hours after that Party becomes aware of the occurrence, and (2) promptly furnish to the other Party copies of any publicly available reports filed with any governmental authorities addressing such events.

9.10 Subcontractors

Nothing in this Agreement shall prevent a Party from using the services of any subcontractor it deems appropriate to perform its obligations under this Agreement; provided, however, that each Party shall require its subcontractors to comply with all applicable terms and conditions of this Agreement in providing services and each Party shall remain primarily liable to the other Party for the performance of the subcontractor.

9.10.1 A subcontract relationship does not relieve any Party of any of its obligations under this Agreement. The hiring Party remains responsible to the other Party for the acts or omissions of its subcontractor. Any applicable obligation imposed by this Agreement upon the hiring Party shall be equally binding upon, and shall be construed as having application to, any subcontractor of the hiring Party.

9.10.2 The obligations under this Article cannot be limited in any way by any limitation of subcontractor's insurance.

Article 10. Notices

10.1 General
Unless otherwise provided in this Agreement, any written notice, demand, or request required or authorized in connection with this Agreement ("Notice") shall be deemed properly given if delivered in person, delivered by recognized national courier service, or sent by first class mail, postage prepaid, to the person specified below:

If to Interconnection Customer:

Interconnection Customer: TPE IL KE106, LLC
Attention: James Marshall
Address: 3720 S. Dahlia St
City: Denver State: Colorado Zip: 80237
Phone: [redacted] Fax: _____ E-Mail: [redacted]

If to EDC:

EDC: Commonwealth Edison Company
Attention: DER Interconnection
Address: 2 Lincoln Center
City: Oakbrook Terrace State: IL Zip: 60181
Phone: [redacted] E-Mail: [redacted]

Alternative Forms of Notice
Any notice or request required or permitted to be given by either Party to the other Party and not required by this Agreement to be in writing may be given by telephone, facsimile or e-mail to the telephone numbers and e-mail addresses set out above.

10.2 Billing and Payment
Billings and payments shall be sent to the addresses set out below:

If to Interconnection Customer
Interconnection Customer: TPE IL KE106, LLC
Attention: James Marshall
Address: 3720 S. Dahlia St
City: Denver State: Colorado Zip: 80237
Phone [redacted] Fax _____ Email [redacted]

If to EDC:

EDC: Commonwealth Edison

Attention: DER Interconnection

Address: 2 Lincoln Center

City: Oakbrook Terrace State: IL Zip: 60181

10.3 Designated Operating Representative
The Parties may also designate operating representatives to conduct the communications that may be necessary or convenient for the administration of this Agreement. This person will also serve as the point of contact with respect to operations and maintenance of the Party's facilities.

Interconnection Customer's Operating Representative:

Attention: James Marshall

Address: 3720 S. Dahlia St

City: Denver State: CO 80237

Phone: [redacted] Fax: Email: [redacted]

EDC's Operating Representative: Commonwealth Edison Company

Attention: Customer Operations

Address: ComEd - 2 Lincoln Center – Call Center

City: Oakbrook State: IL Zip: 60181

Phone: [redacted]

10.4 Changes to the Notice Information
Either Party may change this notice information by giving five business days written notice before the effective date of the change.

Article 11. Signatures

IN WITNESS WHEREOF, the Parties have caused this Agreement to be executed by their respective duly authorized representatives.

Project Name: CEF-IL KE106

For the Interconnection Customer:

Name: James Marshall

Title: Executive Vice President

Date: 10/7/2022

For EDC:

Name: Kelli Freiberg

Title: Principal Contract Specialist

Date:

Attachment 1

Definitions

Adverse system impact – A negative effect that compromises the safety or reliability of the electric distribution system or materially affects the quality of electric service provided by the electric distribution company (EDC) to other customers.

Applicable laws and regulations – All duly promulgated applicable federal, State and local laws, regulations, rules, ordinances, codes, decrees, judgments, directives, or judicial or administrative orders, permits and other duly authorized actions of any governmental authority, having jurisdiction over the Parties.

Commissioning test – Tests applied to a distributed generation facility by the applicant after construction is completed to verify that the facility does not create adverse system impacts. At a minimum, the scope of the commissioning tests performed shall include the commissioning test specified IEEE Standard 1547 Section 5.4 "Commissioning tests."

Distributed generation facility – The equipment used by an interconnection customer to generate or store electricity that operates in parallel with the electric distribution system. A distributed generation facility typically includes an electric generator, prime mover, and the interconnection equipment required to safely interconnect with the electric distribution system or a local electric power system.

Distribution upgrades – A required addition or modification to the EDC's electric distribution system at or beyond the point of interconnection to accommodate the interconnection of a distributed generation facility. Distribution upgrades do not include interconnection facilities.

Electric distribution company or EDC – Any electric utility entity subject to the jurisdiction of the Illinois Commerce Commission.

Electric distribution system – The facilities and equipment used to transmit electricity to ultimate usage points such as homes and industries from interchanges with higher voltage transmission networks that transport bulk power over longer distances. The voltage levels at which electric distribution systems operate differ among areas but generally carry less than 100 kilovolts of electricity. Electric distribution system has the same meaning as the term Area EPS, as defined in 3.1.6.1 of IEEE Standard 1547.

Facilities study – An engineering study conducted by the EDC to determine the required modifications to the EDC's electric distribution system, including the cost and the time required to build and install the modifications, as necessary to accommodate an interconnection request.

Force majeure event – Any act of God, labor disturbance, act of the public enemy, war, acts of terrorism, insurrection, riot, fire, storm or flood, explosion, breakage or accident to machinery or equipment through no direct, indirect, or contributory act of a Party, any order, regulation or restriction imposed by governmental, military or lawfully established civilian authorities, or any

other cause beyond a Party's control. A force majeure event does not include an act of gross negligence or intentional wrongdoing.

Governmental authority – Any federal, State, local or other governmental regulatory or administrative agency, court, commission, department, board, other governmental subdivision, legislature, rulemaking board, tribunal, or other governmental authority having jurisdiction over the Parties, their respective facilities, or the respective services they provide, and exercising or entitled to exercise any administrative, executive, police, or taxing authority or power; provided, however, that this term does not include the interconnection customer, EDC or any affiliate of either.

IEEE Standard 1547 – The Institute of Electrical and Electronics Engineers, Inc. (IEEE), 3 Park Avenue, New York NY 10016-5997, Standard 1547 (2003), "Standard for Interconnecting Distributed Resources with Electric Power Systems."

IEEE Standard 1547.1 – The IEEE Standard 1547.1 (2005), "Conformance Test Procedures for Equipment Interconnecting Distributed Resources with Electric Power Systems."

Interconnection agreement or Agreement – The agreement between the interconnection customer and the EDC. The interconnection agreement governs the connection of the distributed generation facility to the EDC's electric distribution system and the ongoing operation of the distributed generation facility after it is connected to the EDC's electric distribution system.

Interconnection customer – The entity entering into this Agreement for the purpose of interconnecting a distributed generation facility to the EDC's electric distribution system.

Interconnection equipment – A group of components or an integrated system connecting an electric generator with a local electric power system or an electric distribution system that includes all interface equipment, including switchgear, protective devices, inverters or other interface devices. Interconnection equipment may be installed as part of an integrated equipment package that includes a generator or other electric source.

Interconnection facilities – Facilities and equipment required by the EDC to accommodate the interconnection of a distributed generation facility. Collectively, interconnection facilities include all facilities, and equipment between the distributed generation facility and the point of interconnection, including modification, additions, or upgrades that are necessary to physically and electrically interconnect the distributed generation facility to the electric distribution system. Interconnection facilities are sole use facilities and do not include distribution upgrades.

Interconnection request – An interconnection customer's request, on the required form, for the interconnection of a new distributed generation facility, or to increase the capacity or change the operating characteristics of an existing distributed generation facility that is interconnected with the EDC's electric distribution system.

Interconnection study – Any of the following studies, as determined to be appropriate by the EDC: the interconnection feasibility study, the interconnection system impact study, and the interconnection facilities study.

Illinois standard distributed generation interconnection rules – The most current version of the procedures for interconnecting distributed generation facilities adopted by the Illinois Commerce Commission. See 83 Ill. Adm. Code 466.

Parallel operation or Parallel – The state of operation that occurs when a distributed generation facility is connected electrically to the electric distribution system.

Point of interconnection – The point where the distributed generation facility is electrically connected to the electric distribution system. Point of interconnection has the same meaning as the term "point of common coupling" defined in 3.1.13 of IEEE Standard 1547.

Witness test – For lab-certified equipment, verification (either by an on-site observation or review of documents) by the EDC that the interconnection installation evaluation required by IEEE Standard 1547 Section 5.3 and the commissioning test required by IEEE Standard 1547 Section 5.4 have been adequately performed. For interconnection equipment that has not been lab-certified, the witness test shall also include verification by the EDC of the on-site design tests required by IEEE Standard 1547 Section 5.1 and verification by the EDC of production tests required by IEEE Standard 1547 Section 5.2. All tests verified by the EDC are to be performed in accordance with the test procedures specified by IEEE Standard 1547.1.

Attachment 2

Construction Schedule, Proposed Equipment & Settings

This attachment is to be completed by the interconnection customer and shall include the following:

1. The construction schedule for the distributed generation facility.

   The proposed construction schedule for the distributed generation facility is identified in Attachment 3, Schedule for Customer Work.

2. A one-line diagram indicating the distributed generation facility, interconnection equipment, interconnection facilities, metering equipment, and distribution upgrades.

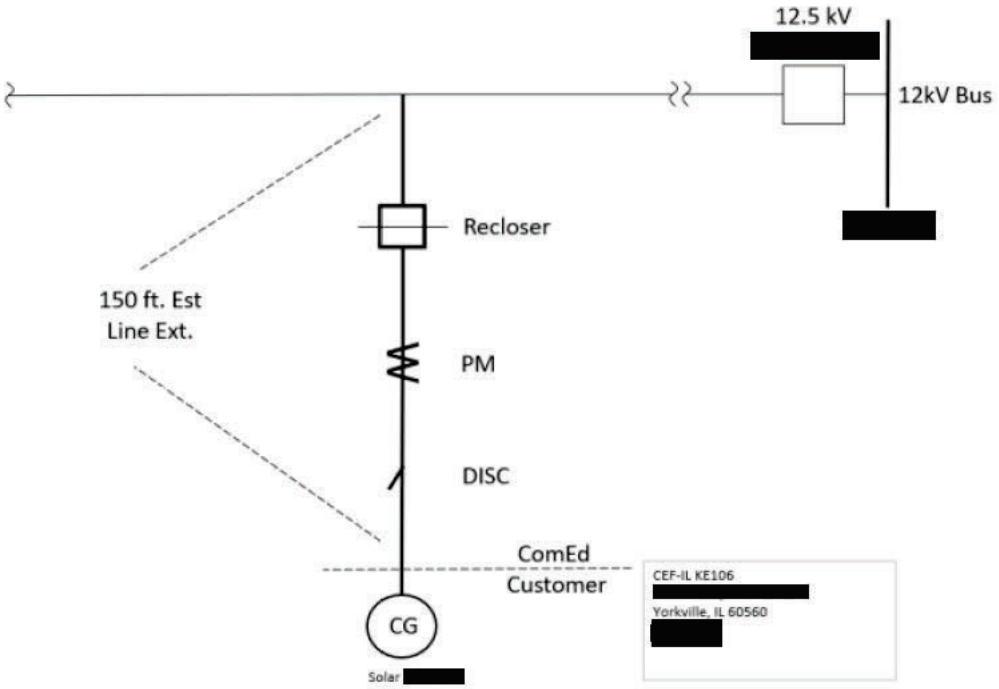
3. Component specifications for equipment identified in the one-line diagram.

4. Component settings.

5. Proposed sequence of operations.

6. A three line diagram showing current potential circuits for protective relays.

7. Relay tripping and control schematic diagram.



Attachment 3

Description, Costs and Time Required to Build and Install the EDC's Interconnection Facilities

This attachment is to be completed by the EDC and shall include the following:

1. Facilities Address/ Location: Cannonball Trail, Yorkville, Illinois 60560

2. Capacity: [redacted] kW

3. Required interconnection facilities, including any required metering*.

1) Install approx. 150 feet of 3-phase 12kV overhead line
2) Install one normally closed 12KV recloser at the POI
3) Install one normally closed 12kV disconnect
4) Install primary metering equipment
5) Install line side voltage sensors at station (see relay notes)

4. An estimate of itemized costs charged by the EDC for interconnection, including overheads, is provided below*.

Cost Summary	
Directs	[redacted]
Indirects	[redacted]
AIA	[redacted]
Tax Gross Up	[redacted]
Estimated Grand Total*	[redacted]

**The scope of work and cost provided are intended to be an initial estimate based on information provided by the interconnection customer about its distributed generation system, and ComEd's engineering and design standards. The scope of work may be revised as location-specific conditions are identified during detailed design.*

5. An estimate for the time required to build and install the EDC's interconnection facilities based on results from prior studies and an estimate of the date upon which the facilities will be completed.

Schedule for EDC Work:

Project Authorization:	**Day 1 – The latter of execution of this agreement and receipt by the EDC of the security deposit set forth in Attachment 3.**
Project Design	**Day 20-254**
Material Procurement:	**Day 196-318**
Construction – Feeder Tie-In:	**Day 319-333**
Constructions – Substations Modifications:	**Day 334-341**
Acceptance Testing:	**Day 342-344**

**Schedule reflects calendar days*

Schedule for Customer Work per Attachment 2, Step 1:

Schedule for Customer Work		
Milestone	Description	Schedule (on/before)
2.1	Submittal of remainder of 100% deposit date	10/6/2023
2.2	Begin construction date	5/9/2024
2.3	Generator step-up transformers receive back feed power date	9/2/2024
2.4	Generating Test Date	9/19/2024
2.5	Desired In-Service Date	10/6/2024

6. Contingency Projects – Any contingencies noted: N/A
Other projects in the interconnection queue, upon which the scope, costs and schedule in Attachment 3 are contingent. This project may be required to include additional scope and costs to complete the EDC's interconnection facilities if a contingency project(s) withdraws from the interconnection queue.

Attachment 4

Operating Requirements for Distributed Generation Facilities Operating in Parallel

The EDC shall list specific operating practices that apply to this distributed generation interconnection and the conditions under which each listed specific operating practice applies.

See Articles 1,7 Parallel Operation Obligations 1.9, Reactive Power, 1.10, Standards of Operation and as identified in the prior studies.

Any additional operational practices listed below:

1) Customer Transformer(s) Connection(s) at PCC (12kV) – ComEd requires a Delta H.S. transformer winding for all customer connected transformers.

2) Customer Photovoltaic System Inverter Modules – Transient Overvoltage (TOV) Limits: Customer inverters shall not by their design or application while interconnected to the ComEd system cause transient overvoltages (TOV) which exceed ComEd 12kV line or equipment ratings during fault or switching operations. If the customer inverters cause objectionable overvoltages which exceed the ratings of the ComEd lines and equipment, then ComEd may require that the customer at their expense mitigate these issues to a level below the equipment design ratings.

3) Customer Equipment Short-Circuit Ratings - Customer equipment shall be rated for ultimate fault current levels: Ultimate 3 Phase - 6,700 Amps and Ultimate 1 Phase - 6,700 Amps.

4) Interconnections ≤ 2.0MW using lab certified UL 1741 Inverters do not require any additional relay protection

5) All transformers require a high side protective operating device to operate under fault conditions.

6) ComEd Testing Group resources will be required to verify settings for required system protection prior to customer equipment being placed into service.

7) This photovoltaic installation shall only operate when it is connected to 12kV feeder [redacted], and when feeder [redacted] is fed from its normal breaker at [redacted].

8) Customer will be responsible to complete all subgrade and civil work on their property, if required for the interconnection facilities.

9) Customer will be responsible to purchase real estate or obtain the necessary right-of - way/ easements, to install the interconnection facilities.

Attachment 5

Monitoring and Control Requirements

This attachment is to be completed by the EDC and shall include the following:

1. The EDC's monitoring and control requirements must be specified, along with a reference to the EDC's written requirements documents from which these requirements are derived.

2. An internet link to the requirements documents.

https://www.comed.com/MyAccount/MyService/Pages/DistributionLess10k.aspx

http://standards.ieee.org

Attachment 6

Metering Requirements

This attachment is to be completed by the EDC and shall include the following:

1. The metering requirements for the distributed generation facility.

   The specific metering requirements and equipment will be specified as part of the Detailed Engineering.

2. Identification of the appropriate tariffs that establish these requirements.

3. An internet link to these tariffs.

https://www.comed.com/MyAccount/MyService/Pages/DistributionLess10k.aspx

https://www.comed.com/MyAccount/MyBillUsage/Pages/CurrentRatesTariffs.aspx

Attachment 7

As Built Documents

This attachment is to be completed by the interconnection customer and shall include the following:

When it returns the certificate of completion to the EDC, the interconnection customer shall provide the EDC with documents detailing the as-built status of the following:

1. A one-line diagram indicating the distributed generation facility, interconnection equipment, interconnection facilities, and metering equipment.

2. Component specifications for equipment identified in the one-line diagram.

3. Component settings.

4. Proposed sequence of operations.

5. A three-line diagram showing current potential circuits for protective relays.

6. Relay tripping and control schematic diagram.

Attachment 8
Other Provisions

The Parties agree to the following terms and conditions in connection with the distributed generation facility.

1.1 Nothing in this Agreement shall constitute an express or implied representation or warranty on the part of EDC with respect to the current or future availability of transmission service or create any obligation on the part of EDC to accept deliveries of energy unless the interconnection customer or a third party taking delivery of such energy has arranged for transmission service with PJM Interconnection LLC, or its successor in interest, the organization that operates the EDC's transmission system ("PJM") in accordance with the PJM tariff and applicable laws and regulations. EDC may charge for service over its electric distribution system to deliver energy or power from the distributed generation facility to or from the facilities controlled or operated by PJM that are used to provide transmission service pursuant to the PJM tariff.

1.2 This Agreement does not constitute an agreement to interconnect the interconnection customer to a PJM point of interconnection.

1.3 The interconnection customer shall not be allowed to construct any facilities or install any equipment which will be owned or operated by the EDC, without the prior written consent of the EDC, which consent may be conditioned on the Parties negotiating and agreeing upon provisions to govern such construction or installation.

1.4 Tax Status. Based on information provided by the interconnection customer, EDC will make the determination as to whether all costs and other amounts payable, and property to be transferred, by interconnection customer to EDC under this Agreement (collectively, the "Paid Amounts") satisfy the tax law provisions for non-taxable status, as referenced in this Section 1.4. For any amounts that EDC determines do not qualify for non-taxable status, the interconnection customer shall comply with this Section 1.4, including without limitation paying the applicable income tax gross-up as set forth herein.

1.4.1 Tax Status

A. To qualify for non-taxable treatment with respect to the Paid Amounts, the interconnection customer must meet all qualifications and requirements as set forth in the tax laws ("Non-Taxable Treatment"). The determination of whether the Paid Amounts qualify for Non-Taxable Treatment shall be made by EDC, based on the information furnished by interconnection customer to determine tax treatment under the relevant tax law provisions.

B. To the extent EDC reasonably determines that all or a portion of the Paid Amounts qualify for Non-Taxable Treatment, both Parties intend to treat such

amounts as non-taxable contributions from interconnection customer to EDC for federal and state income tax purposes. With respect to any such Paid Amounts, interconnection customer agrees to maintain Non-Taxable Treatment for such amounts, and interconnection customer shall remain subject to the terms of this Section 1.4, in any subsequent or interim agreement related to this Agreement. To the extent EDC determines that all or a portion of the Paid Amounts are taxable, interconnection customer agrees to pay the income tax gross-up amount referenced in this Section 1.4.

1.4.2 Tax Indemnity

For any amounts the Parties treat as non-taxable pursuant to Section 1.4.1, interconnection customer shall indemnify and hold harmless EDC for any costs or taxes, penalties, and interest that EDC incurs in the event that the IRS and/or a state taxing authority determines that the Paid Amounts are taxable income to EDC. In such an event, interconnection customer shall pay to EDC, on demand, the amount of any income taxes that the IRS or a state taxing authority assesses EDC in connection with the Paid Amounts, plus any applicable interest and/or penalties assessed EDC. In the event that EDC in its sole discretion chooses to contest such assessment and prevails in reducing or eliminating the tax, interest and/or penalties assessed against it, EDC shall refund to interconnection customer the excess of the amount paid to EDC pursuant to this Section 1.4 over the amount of the tax, interest and penalties for which EDC is finally determined to be liable. Interconnection customer's tax indemnification obligation under this section shall survive any termination of this Agreement or of any subsequent or interim agreement related to this Agreement.

1.4.3 Income Tax Gross-Up

A. In the event that interconnection customer does not establish to EDC's satisfaction within 15 days of the execution of this Agreement (the "Specified Date") that the Paid Amounts are or will be non-taxable, interconnection customer shall increase the amount of the Security Deposit to include any amounts described under this Section 1.4 regarding income tax gross-up.

B. The required increase in the Security Deposit shall equal the amount necessary to permit EDC to pay all applicable income taxes ("Current Taxes") on the amounts to be paid by interconnection customer under this Agreement after taking into account the present value of future tax deductions for depreciation that would be available as a result of the anticipated payments or property transfers (the "Present Value Depreciation Amount"), with respect to such amounts. For this purpose, Current Taxes shall be computed based on the composite federal and state income

tax rates applicable to EDC at the time the Security Deposit is increased, determined using the highest marginal rates in effect at that time (the "Current Tax Rate"), and (ii) the Present Value Depreciation Amount shall be computed by discounting EDC's anticipated tax depreciation deductions associated with such payments or property transfers by its current weighted average cost of capital. EDC may draw on the Security Deposit on a quarterly basis based on the Paid Amounts received by EDC.

C. Interconnection customer must provide the increase in the Security Deposit, in a form and with terms as acceptable to EDC, within 15 days of the Specified Date unless EDC notifies interconnection customer otherwise. The requirement for the increase in the Security Deposit under this Paragraph shall be treated as a milestone for purposes of Attachment 3 of this Agreement.

D. Each Party shall cooperate with the other to maintain the other Party's tax status. Nothing in this Agreement is intended to adversely affect any entity's tax exempt status with respect to the issuance of bonds including, but not limited to, local furnishing bonds.

E. In the event, and to the extent, (i) EDC subsequently determines that amounts for which interconnection customer has paid EDC are non-taxable, and (ii) EDC successfully obtains a refund of federal and/or state income tax originally paid with respect to such amounts, EDC shall timely return such amounts to the interconnection customer. For purposes hereof, EDC may make such a determination in light of subsequent IRS guidance, or other relevant authority. In the event of a successful refund claim by EDC, EDC shall return the remaining Security Deposit attributable to this Section 1.4, but no more than it obtains from the relevant taxing authority, less any reasonable fees incurred to secure such tax refund, to interconnection customer.

1.5 If any of EDC's facilities, in addition to those described in Section 2.3, are or will be located on interconnection customer's property, EDC shall have access to such facilities at all times and when practical, the EDC shall provide notice to the interconnection customer prior to using its right of access. Upon EDC's completion of final, detailed engineering, if EDC identifies any facilities which will be located on interconnection customer's property and requests written property rights in order to have such access, the interconnection customer shall provide such rights.

1.6 Interconnection customer shall also be responsible for paying in full to EDC all approved FERC and ICC rates and charges applicable to interconnection customer's connection to and usage of the electric distribution system, if any.

1.7 Interconnection customer shall not disclose any information labeled "CEII" or "Critical Energy Infrastructure Information" or other information labeled "Confidential" obtained pursuant to or in connection with this Agreement to any third party without the express written consent of the EDC, provided that interconnection customer may produce such information in response to a subpoena, discovery request or other compulsory process issued by a judicial body or governmental agency upon reasonable notice to the interconnection customer.

1.8 Each of the Parties shall provide the other party access to areas under its control as reasonably necessary to permit the other Party to perform its obligations under this Agreement, including operation and maintenance obligations. A Party that obtains such access shall comply with all safety rules applicable to the area to which access is obtained. Each Party agrees to inform the other Party's representatives of safety rules applicable to an area.

1.9 If project authorization has not been granted by the Interconnection Customer per Attachment 3, Description, Costs and Time Required to Build and Install the EDC's Interconnection Facilities within one (1) year after the execution of this agreement, this agreement will no longer be effective.

1.10 Article 5.1.2 of the Interconnection Agreement shall be modified as followed;

The parties agree Article 5 Section 1.2 is stricken in its entirety and replaced with, "Within 120 calendar days after completing the construction and installation of the EDC's interconnection facilities and distribution upgrades described in Attachments 2 and 3 to this Agreement, the EDC shall provide the interconnection customer with a final accounting report of any difference between (1) the actual cost incurred to complete the construction and installation of the EDC's interconnection facilities and distribution upgrades; and (2) the interconnection customer's previous deposit and aggregate payments to the EDC for the interconnection facilities and distribution upgrades. If the interconnection customer's cost responsibility exceeds its previous deposit and aggregate payments, the EDC shall invoice the interconnection customer for the amount due and the interconnection customer shall make payment to the EDC within 30 calendar days. If the interconnection customer's previous deposit and aggregate payments exceed its cost responsibility under this Agreement, the EDC shall refund to the interconnection customer an amount equal to the difference within 30 calendar days after the final accounting report. Upon request from the interconnection customer, if the difference between the budget estimate and the actual cost exceeds 25%, the EDC will provide a written explanation for the difference."

APPENDIX M – GLARE STUDY AND FAA NOTICE CRITERIA FILING

GLARE STUDY ANALYSIS

TPE IL KE106, LLC (SOLAR FARM)

1/31/2023

Introduction:

A glare study was performed by TPE Development, LLC ("TPE") using ForgeSolar software to assess the possible effects of reflectivity created by the proposed solar project located in Yorkville, near Bristol, Kendall County, IL (the "Project"). This report interprets and explains the inputs, assumptions and results of the study.

ForgeSolar software incorporates GlareGauge, the leading solar glare analysis tool which meets Federal Aviation Administration ("FAA") standards and is used globally for glare analysis. It is based on the Solar Glare Hazard Analysis Tool licensed from Sandia National Laboratories. The tool assesses the possible effects of reflectivity, both glint and glare, from a proposed solar photovoltaic installation. The tool can take topography into account; however, the tool is not able to take existing vegetation (trees, shrubs, etc) or structures (fences, buildings, etc) into account. If there is a tree line or fence obstructing visibility of the array, the tool may incorrectly report glare for which the user must adjust based on site specific vegetation or structures.

A model of the Project was input into the software along with a number of user defined observation points or paths ("Receptors"). The software calculates the sun's position relative to the Project for every minute of the year. Results are charted displaying annual glare duration and potential ocular impact type and duration for each Receptor.

Sun reflection is most noticeable when the sun is low on the horizon and sunlight reflects off the panels at a very low angle along the horizon where it can be seen by an observer standing next to the solar farm, driving along a road, or a neighboring dwelling. The assessment will capture all the possible reflection coming from the solar farm.

Reflectivity Summary:

The term 'reflectivity' is used in this report to refer to both reflection types (i.e. glint and glare). The definition of glint and glare can vary; however, the definitions used in this report is aligned with the FAA and are detailed below:

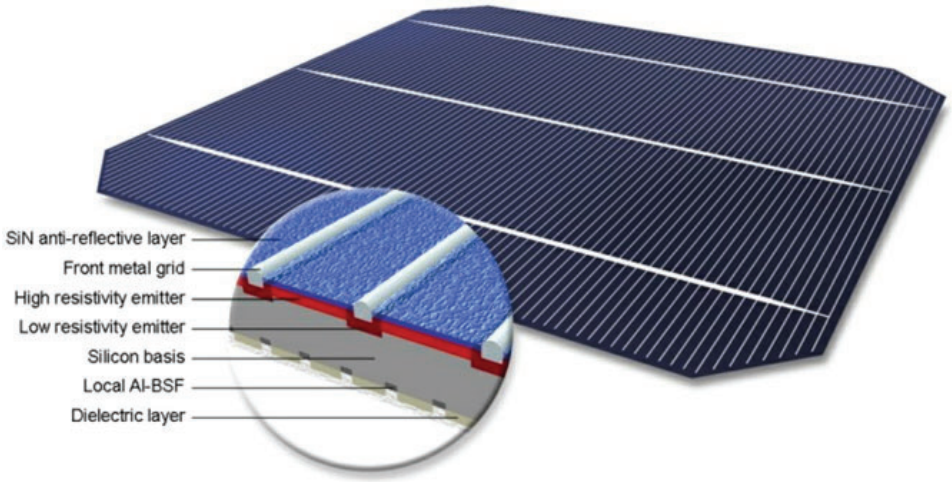
- Glint: A momentary flash of bright light typically received by moving receptors or from moving reflectors. Example: a momentary solar reflection from a moving car.
- Glare: A continuous source of bright light typically received by static Receptors or from large reflective surfaces. Glare is generally associated with stationary objects, which, due to the slow relative movement of the sun, reflect sunlight for a longer duration.

The primary difference between glint and glare is duration. The Forge Solar GlareGauge tool captures both types of reflection on the surrounding roads and dwellings.

To limit reflection and maximize conversion to electricity, solar PV panels are constructed of dark silicon wafers/cells with light-absorbing materials and the glass is covered with an anti-reflective

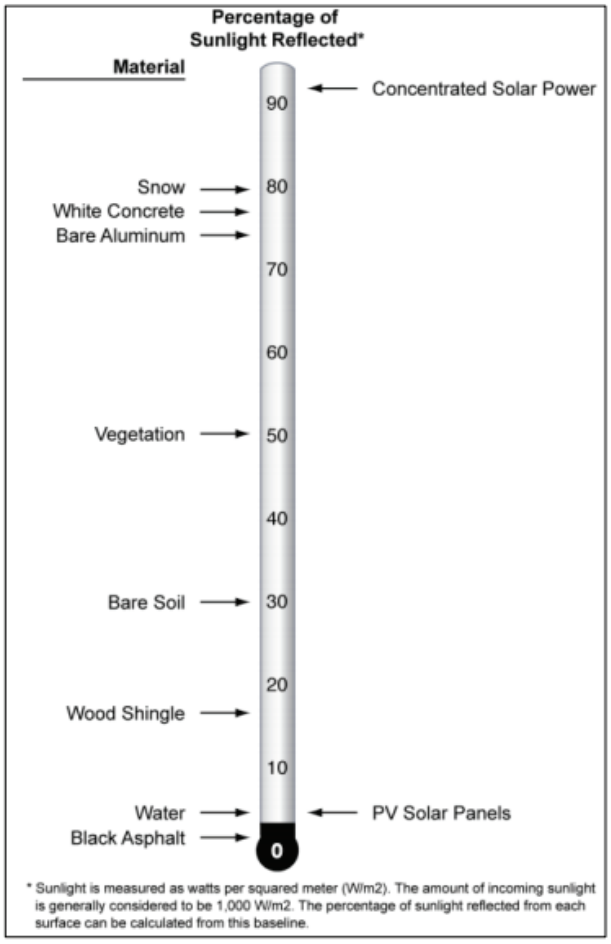
coating (ARC) as shown in Figure 1 below. These design features limit sunlight reflectance and maximize sunlight absorption.

Figure 1: Deconstructed Solar Panel



To calculate diffuse and specular reflectance of solar modules, TUV Rheinland (NRTL) performed a test using the ISO 9050 (External Light Reflectance) standards and the results are shown in Figure 2 below. The reflectivity of a typical mono-crystalline photovoltaic solar panel is approximately 5.7%, which is well below the other control samples included in the test.

Figure 2: Reflectivity of Solar Cells



ForgeSolar GlareGauge Analysis:

Inputs and Modeling Assumptions:

As input to the software, Route Receptors were created along roadways in vicinity of the site. Height was measured at 5' above ground to emulate passengers in cars. Further, Observation Receptors were modeled at specific dwellings located around the perimeter of the solar array. Heights were modeled at 5' above ground to emulate residents on the 1st floor of dwellings and evaluate the glare impact or at 15' above ground to emulate residents on any 2nd floor of dwellings.

The model assumes the sun is shining 100% of the time it is above the horizon (during laylight hours). That is, it does not account for cloudy or overcast conditions when the sun is not shining, therefore the results presented would be the maximum expected glint and glare during any single year.

Existing topography is taken into account in the simulation based on LIDAR ("Light Detection and Ranging") data. Existing and planned vegetation are not considered in the simulation. The model assumed zero vegetation that may screen the Project, so this must be considered when interpreting the study results. A direct line of sight between the Project and the designated Route Receptors and Observation Receptors is required to produce any discernible glint/glare, so if there is existing or proposed vegetation between the receptor and the project, any glint/glare would be eliminated.

Solar panels will be mounted on single axis trackers with a southern azimuth and the panels will track the sun to capture as much sunlight as possible. Therefore, glare is typically not experienced during normal operational hours since any reflection would be back toward the location of the sun. Potential glare is most noticeable when the sun is low on the horizon, early in the morning or late in the afternoon, when sunlight reflects off the panels in a horizontal position (stow mode) at the opposite low angle along the horizon to the east or the west. To reduce glare in the east and west directions during these low sun periods, a 5-degree tracker resting angle was implemented during these times which avoids the main source of glare for solar projects.

Results:

Based on the project-specific location, sun position throughout the year, and the above inputs and assumptions, some potential for glint or glare was identified in the analysis at the Route Receptors (located south and east of the solar farm) and at some of the neighboring Observation Receptors located near the solar farm. The model includes conservative assumptions and does not consider any existing and planned vegetation, buildings, or topographical features that may exist between the solar farm and the observation points and route receptors and that will further shield the view of the project from nearby properties and roadways.

As noted above, the ForgeSolar GlareGauge study results do not account for any existing vegetation, structures, or topography that may shield Observation points from glare. The mitigation plan is to, (1) assess the effectiveness of existing and planned vegetation, and (2) consider additional screening vegetation, and (3) program the array's tilt function such that glare-inducing reflective angles are avoided and their durations minimized. The planned vegetative screening is expected to resolve the identified glare occurrences.

If additional information is needed, contact Luis Sanchez, TPE Development, LLC at lsanchez@tpoint-e.com.

FORGESOLAR GLARE ANALYSIS

Project: **ILKE106**
Site configuration: **5DEG RESTING ANGLE 5FT OP**

Created 20 Jul, 2022
Updated 09 Dec, 2022
Time-step 1 minute
Timezone offset UTC-6
Site ID 72834.12819
Category 1 MW to 5 MW
DNI peaks at 1,000.0 W/m^2
Ocular transmission coefficient 0.5
Pupil diameter 0.002 m
Eye focal length 0.017 m
Sun subtended angle 9.3 mrad
Methodology V2



Summary of Results

Glare with potential for temporary after-image predicted

PV Array	Tilt	Orient	Annual Green Glare		Annual Yellow Glare		Energy
	°	°	min	hr	min	hr	kWh
PV array 1	SA tracking	SA tracking	5	0.1	2,447	40.8	20,870,000.0

Total annual glare received by each receptor; may include duplicate times of glare from multiple reflective surfaces.

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Route 1	0	0.0	12	0.2
Route 3	4	0.1	12	0.2
Route 4	0	0.0	726	12.1
OP 1	0	0.0	0	0.0
OP 2	0	0.0	45	0.8
OP 3	0	0.0	2	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	1,005	16.8
OP 6	0	0.0	9	0.1
OP 7	0	0.0	13	0.2
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	290	4.8
OP 12	0	0.0	8	0.1

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
OP 13	1	0.0	322	5.4
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
OP 20	0	0.0	0	0.0
OP 21	0	0.0	2	0.0
OP 22	0	0.0	1	0.0
OP 23	0	0.0	0	0.0
OP 24	0	0.0	0	0.0

Component Data

PV Arrays

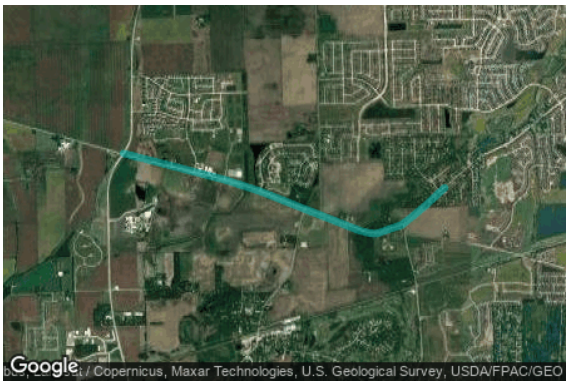
Name: PV array 1
Axis tracking: Single-axis rotation
Backtracking: Shade-slope
Tracking axis orientation: 180.0°
Max tracking angle: 60.0°
Resting angle: 0.0°
Ground Coverage Ratio: 0.32
Rated power: 7500.0 kW
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	41.695770	-88.422617	651.52	5.00	656.52
2	41.695786	-88.418454	650.35	5.00	655.35
3	41.692277	-88.418282	652.80	5.00	657.80
4	41.692037	-88.422510	651.71	5.00	656.71
5	41.692694	-88.423582	651.21	5.00	656.21
6	41.693655	-88.423003	651.64	5.00	656.64
7	41.694056	-88.422810	652.70	5.00	657.70

Route Receptors

Name: Route 1
Path type: Two-way
Observer view angle: 50.0°



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	41.705479	-88.446370	648.59	5.00	653.59
2	41.702787	-88.432552	656.03	5.00	661.03
3	41.701698	-88.428003	653.42	5.00	658.42
4	41.697597	-88.414098	648.55	5.00	653.55
5	41.697340	-88.412811	650.34	5.00	655.34
6	41.697276	-88.411781	650.63	5.00	655.63
7	41.698173	-88.408262	649.98	5.00	654.98
8	41.699135	-88.406631	651.10	5.00	656.10
9	41.700224	-88.404914	653.63	5.00	658.63
10	41.701954	-88.402425	654.89	5.00	659.89

Name: Route 3
Path type: Two-way
Observer view angle: 50.0°



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	41.698228	-88.408028	650.75	5.00	655.75
2	41.691829	-88.406147	654.40	5.00	659.40
3	41.684691	-88.405407	651.57	5.00	656.57

Name: Route 4
Path type: Two-way
Observer view angle: 50.0°



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	41.699726	-88.421491	654.79	5.00	659.79
2	41.697515	-88.422285	649.64	5.00	654.64
3	41.694295	-88.423165	653.41	5.00	658.41
4	41.693445	-88.423337	653.43	5.00	658.43
5	41.692708	-88.423916	651.65	5.00	656.65
6	41.690524	-88.426336	652.46	5.00	657.46
7	41.690091	-88.426830	651.60	5.00	656.60
8	41.689578	-88.427173	651.29	5.00	656.29
9	41.689154	-88.427377	651.21	5.00	656.21
10	41.686833	-88.427901	645.44	5.00	650.44
11	41.685672	-88.428073	641.45	5.00	646.45

Discrete Observation Point Receptors

Name	ID	Latitude (°)	Longitude (°)	Elevation (ft)	Height (ft)
OP 1	1	41.700932	-88.422182	657.54	5.00
OP 2	2	41.698812	-88.416327	655.69	5.00
OP 3	3	41.698632	-88.414943	651.78	5.00
OP 4	4	41.696138	-88.410528	649.33	5.00
OP 5	5	41.693097	-88.413342	651.67	5.00
OP 6	6	41.692597	-88.412597	648.92	5.00
OP 7	7	41.691270	-88.406592	649.49	5.00
OP 8	8	41.687777	-88.413809	646.95	5.00
OP 9	9	41.687521	-88.414061	647.82	5.00
OP 10	10	41.686972	-88.414684	647.48	5.00
OP 11	11	41.688301	-88.411563	649.67	5.00
OP 12	12	41.688186	-88.412033	649.15	5.00
OP 13	13	41.688413	-88.411102	649.87	5.00
OP 14	14	41.684823	-88.417582	648.05	5.00
OP 15	15	41.685304	-88.421173	641.73	5.00
OP 16	16	41.688254	-88.423818	645.41	5.00
OP 17	17	41.687777	-88.422986	648.41	5.00
OP 18	18	41.687762	-88.427398	648.13	5.00
OP 19	19	41.688136	-88.427299	650.38	5.00
OP 20	20	41.688336	-88.427280	650.50	5.00
OP 21	21	41.688497	-88.427251	650.93	5.00
OP 22	22	41.696180	-88.423846	653.29	5.00
OP 23	23	41.696036	-88.421094	651.27	5.00
OP 24	24	41.692207	-88.423862	654.74	0.00

Glare Analysis Results

Summary of Results

Glare with potential for temporary after-image predicted

PV Array	Tilt	Orient	Annual Green Glare		Annual Yellow Glare		Energy
	°	°	min	hr	min	hr	kWh
PV array 1	SA tracking	SA tracking	5	0.1	2,447	40.8	20,870,000.0

Total annual glare received by each receptor; may include duplicate times of glare from multiple reflective surfaces.

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Route 1	0	0.0	12	0.2
Route 3	4	0.1	12	0.2
Route 4	0	0.0	726	12.1
OP 1	0	0.0	0	0.0
OP 2	0	0.0	45	0.8
OP 3	0	0.0	2	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	1,005	16.8
OP 6	0	0.0	9	0.1
OP 7	0	0.0	13	0.2
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	290	4.8
OP 12	0	0.0	8	0.1
OP 13	1	0.0	322	5.4
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
OP 20	0	0.0	0	0.0
OP 21	0	0.0	2	0.0
OP 22	0	0.0	1	0.0
OP 23	0	0.0	0	0.0
OP 24	0	0.0	0	0.0

PV: PV array 1 potential temporary after-image

Receptor results ordered by category of glare

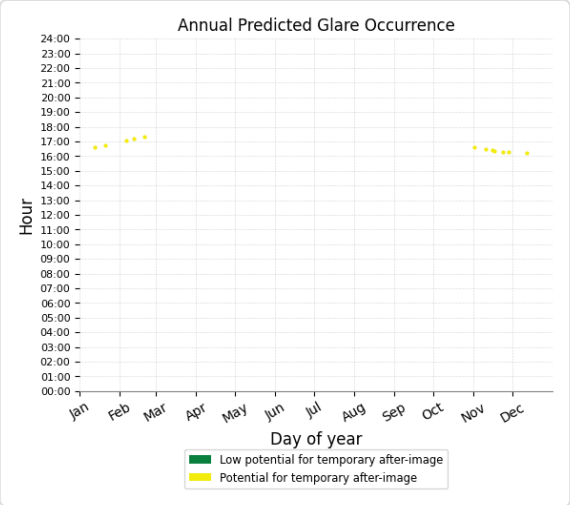
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
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OP 12	0	0.0	8	0.1
OP 13	1	0.0	322	5.4
OP 21	0	0.0	2	0.0
OP 22	0	0.0	1	0.0
OP 1	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
OP 20	0	0.0	0	0.0
OP 23	0	0.0	0	0.0
OP 24	0	0.0	0	0.0

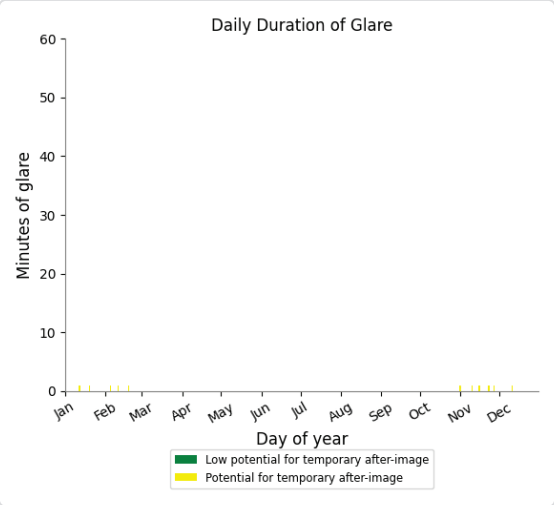
PV array 1 and Route 1

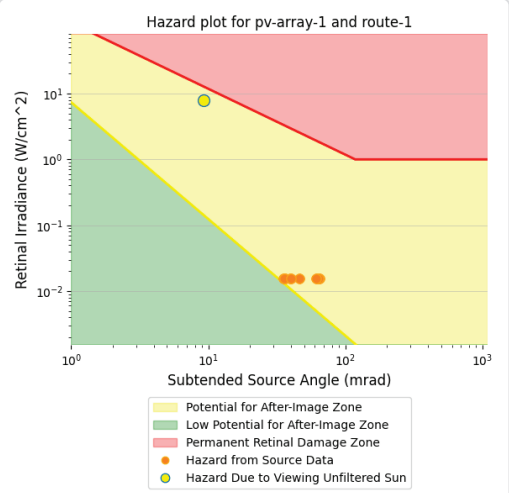
Receptor type: Route

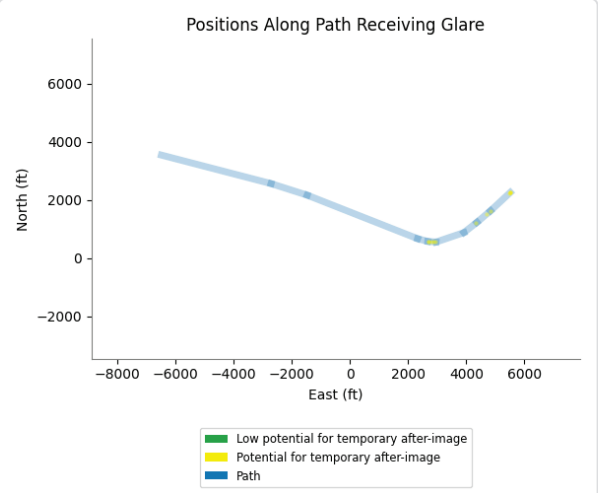
12 minutes of yellow glare

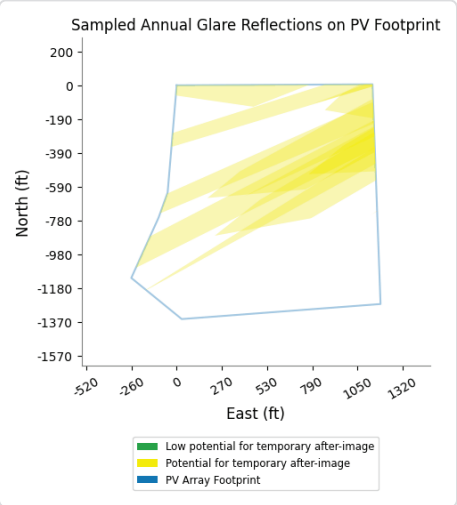
0 minutes of green glare









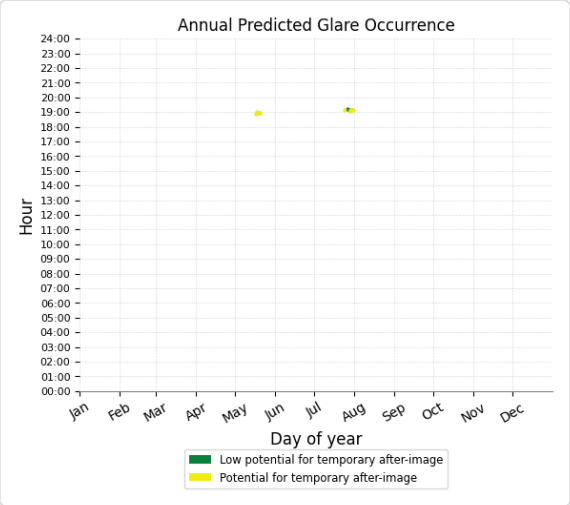


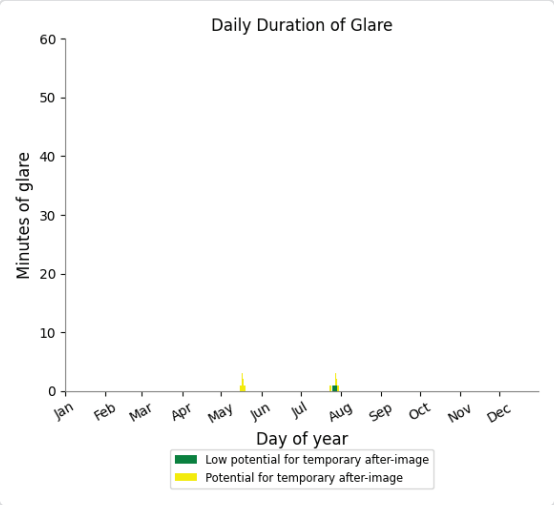
PV array 1 and Route 2

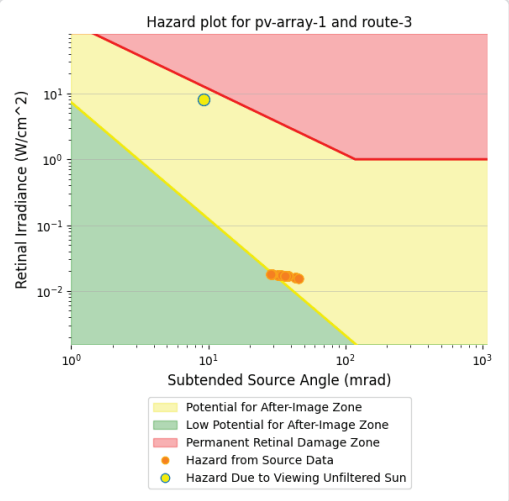
Receptor type: Route

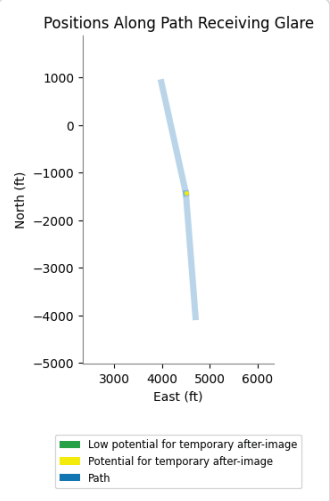
12 minutes of yellow glare

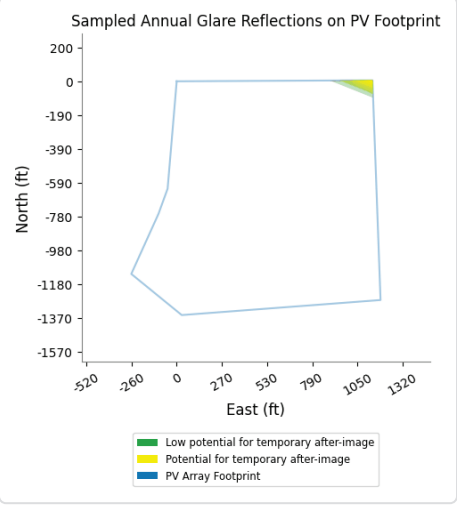
4 minutes of green glare









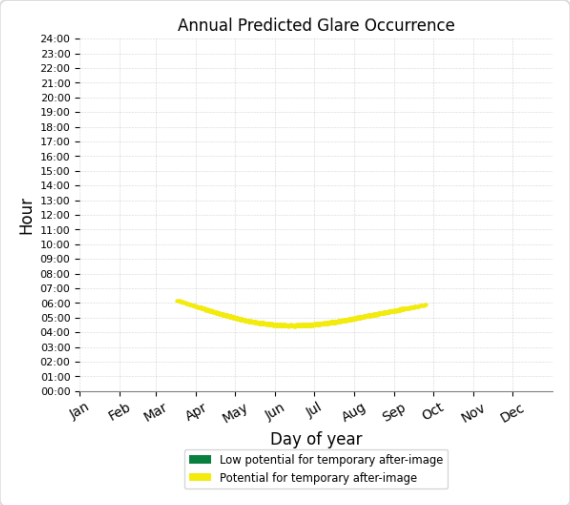


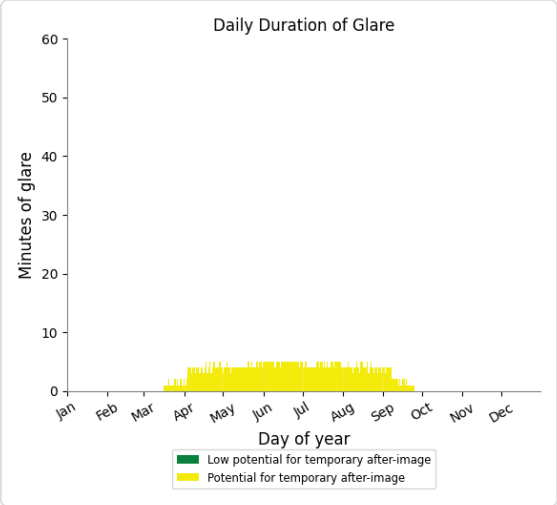
PV array 1 and Route 3

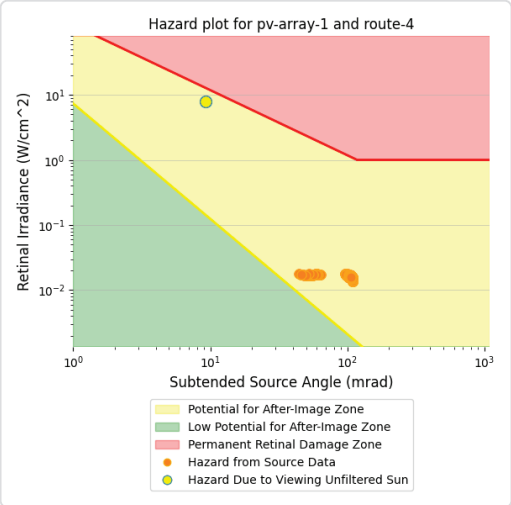
Receptor type: Route

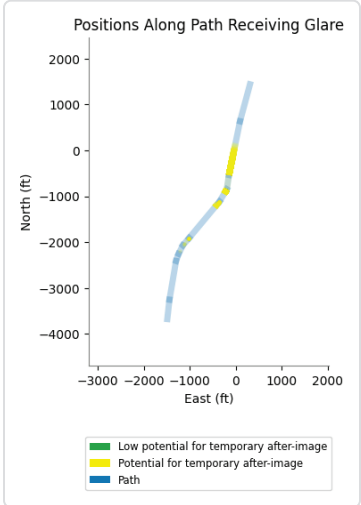
726 minutes of yellow glare

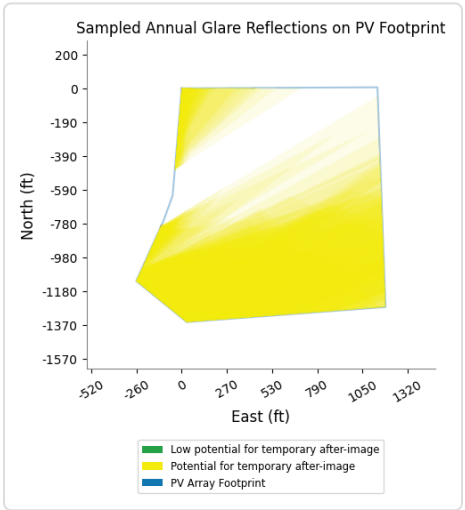
0 minutes of green glare





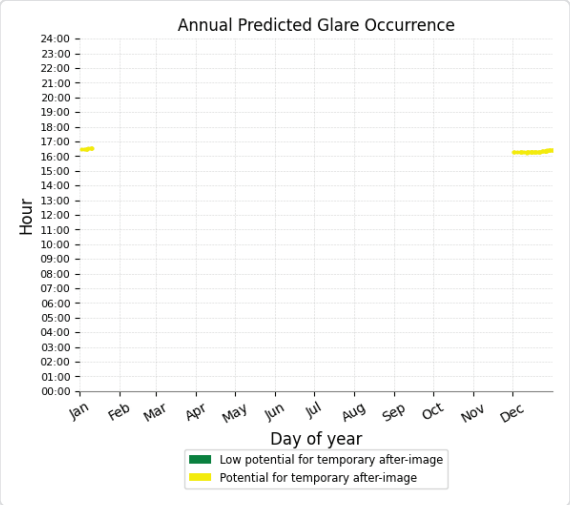


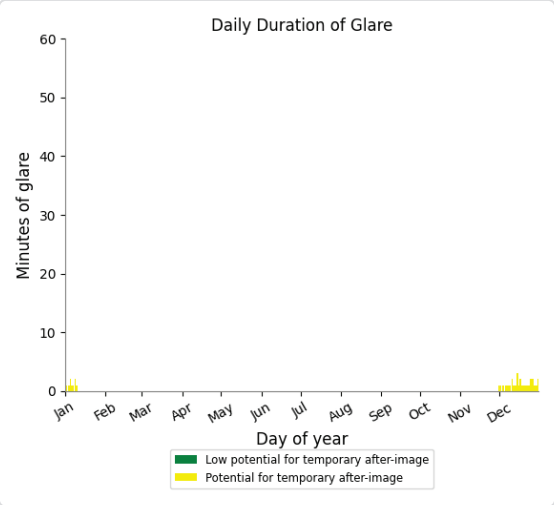


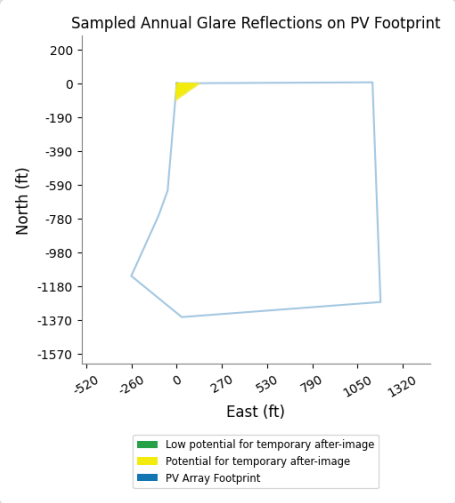


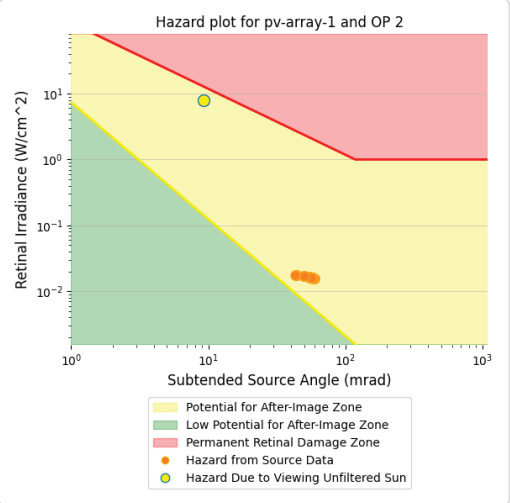
PV array 1 and OP 4

Receptor type: Observation Point
45 minutes of yellow glare
0 minutes of green glare



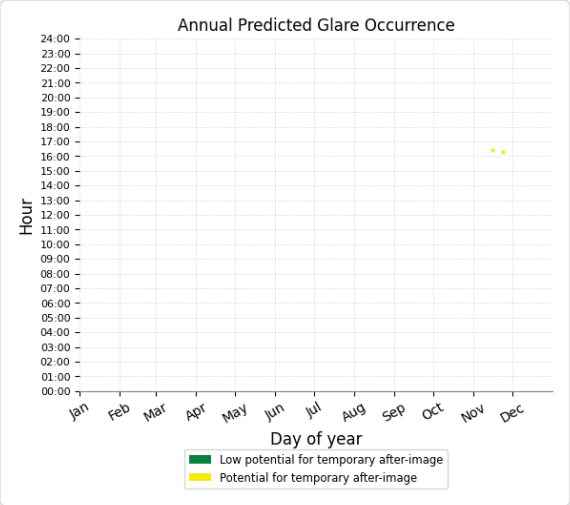


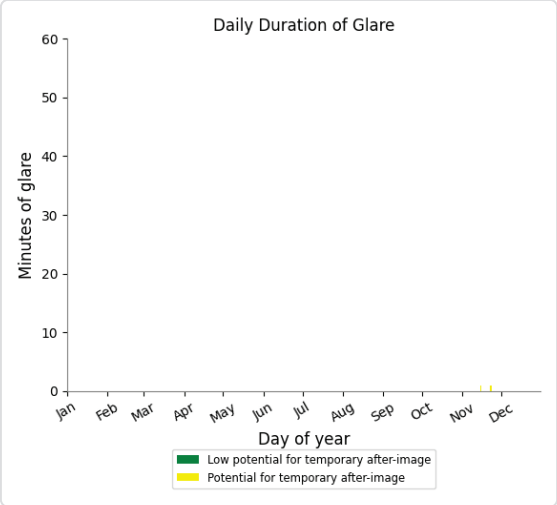


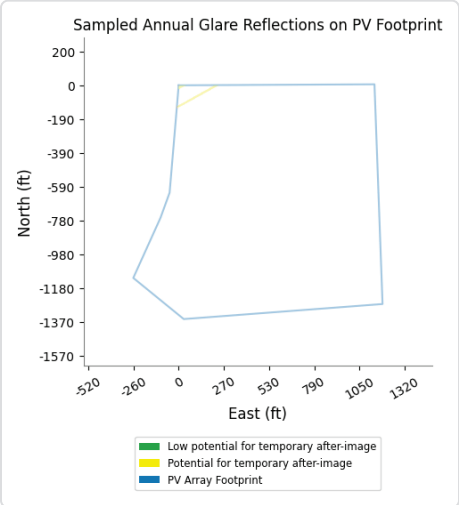


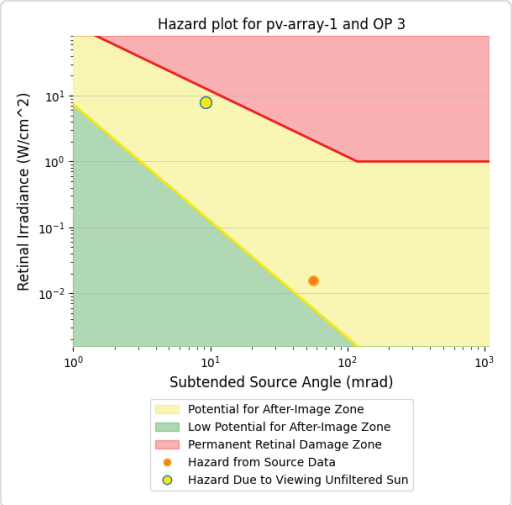
PV array 1 and OP 2

Receptor type: Observation Point
2 minutes of yellow glare
0 minutes of green glare



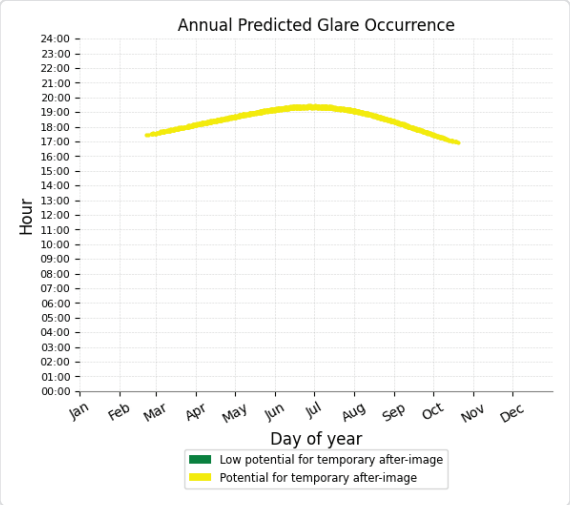


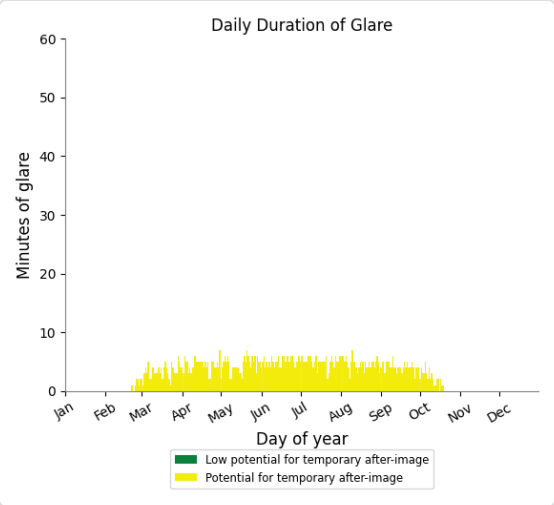


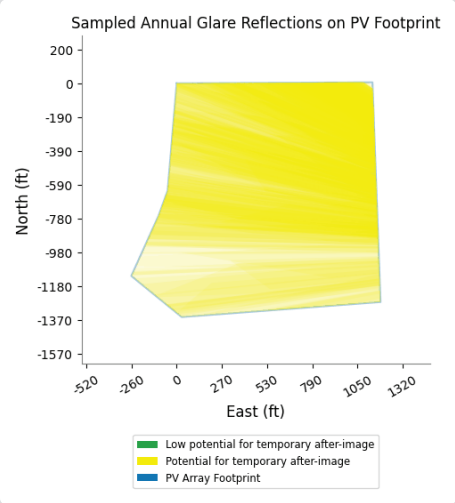


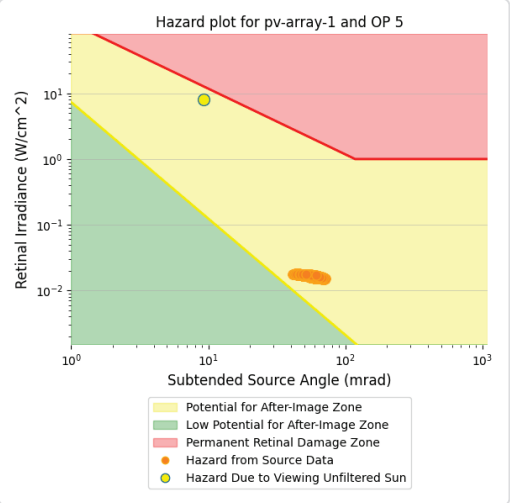
PV array 1 and OP 5

Receptor type: Observation Point
1,005 minutes of yellow glare
0 minutes of green glare







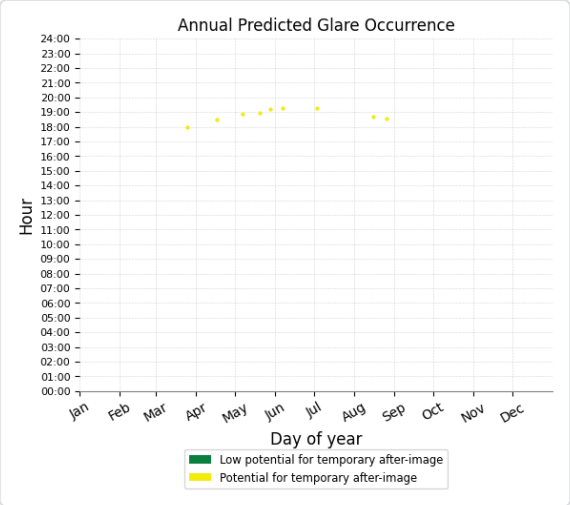


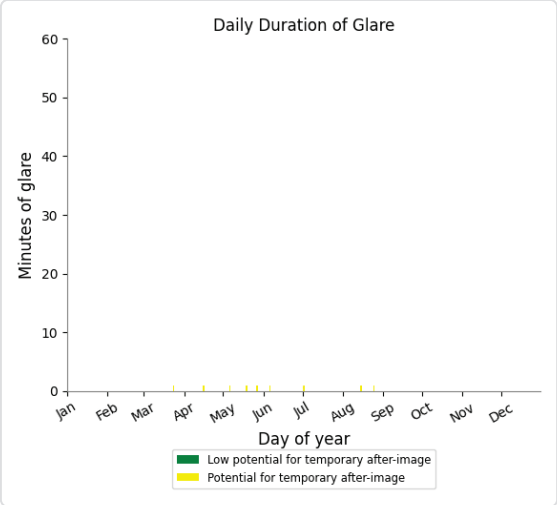
PV array 1 and OP 6

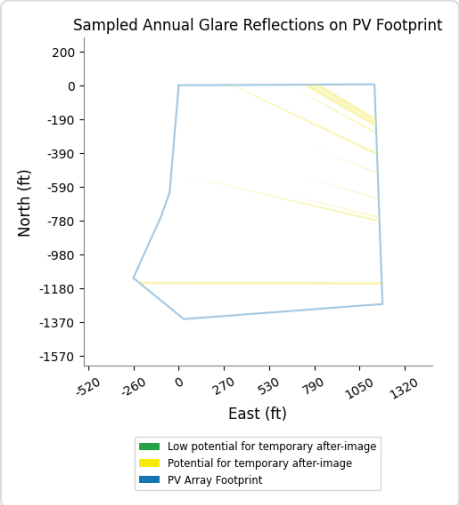
Receptor type: Observation Point

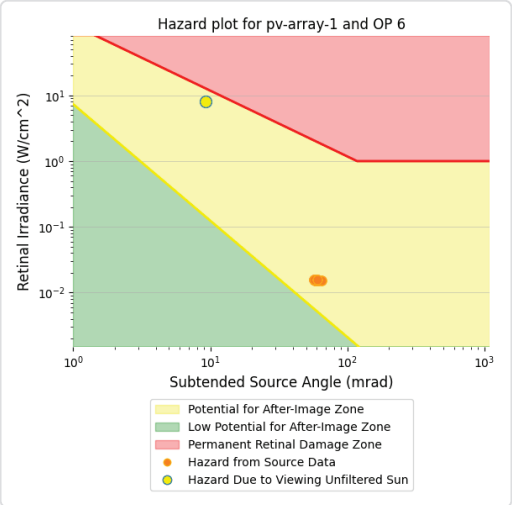
9 minutes of yellow glare

0 minutes of green glare







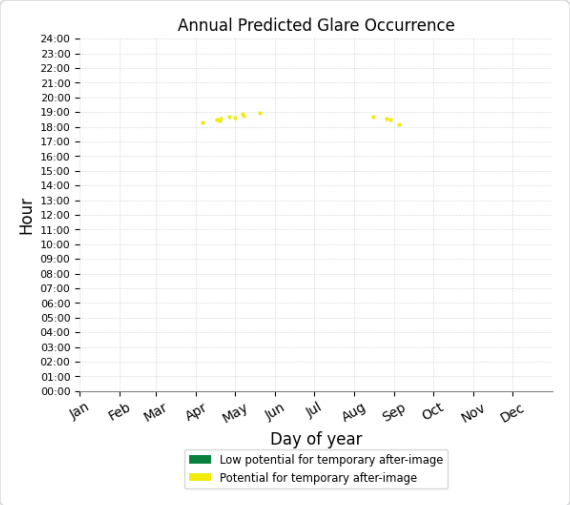


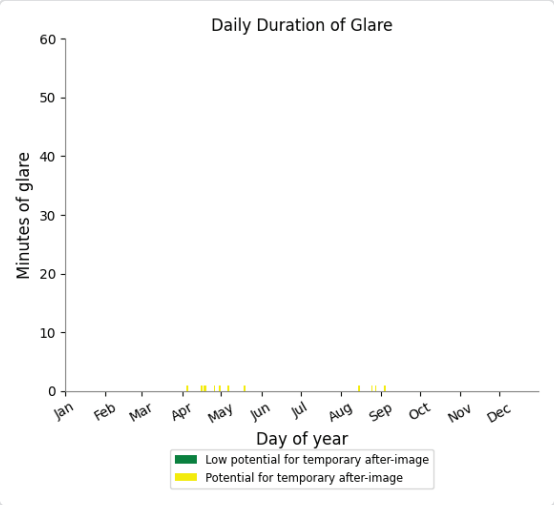
PV array 1 and OP 7

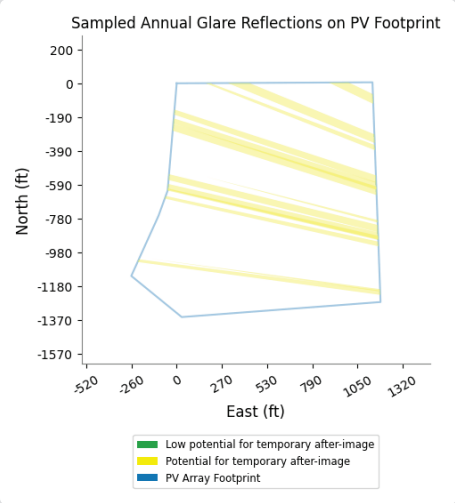
Receptor type: Observation Point

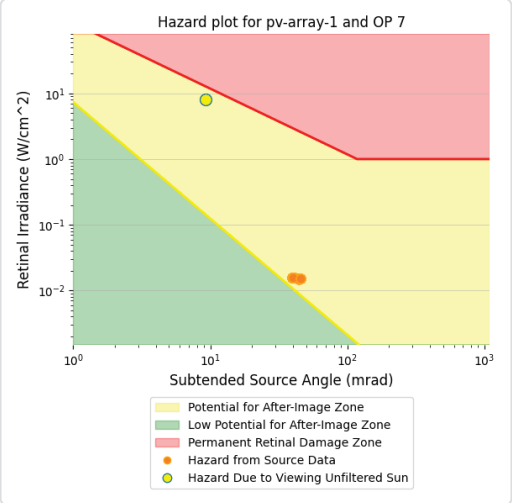
13 minutes of yellow glare

0 minutes of green glare



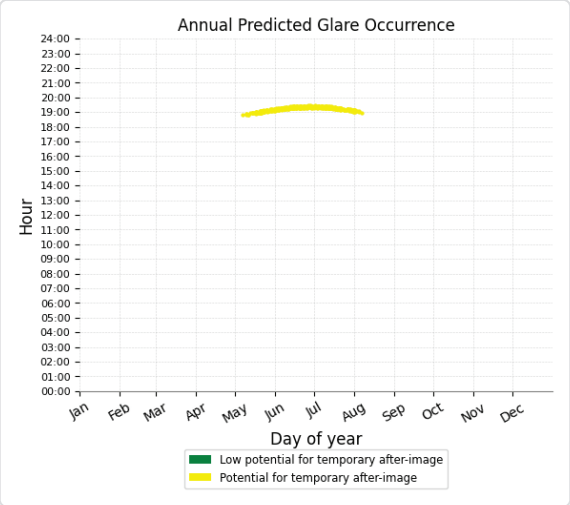


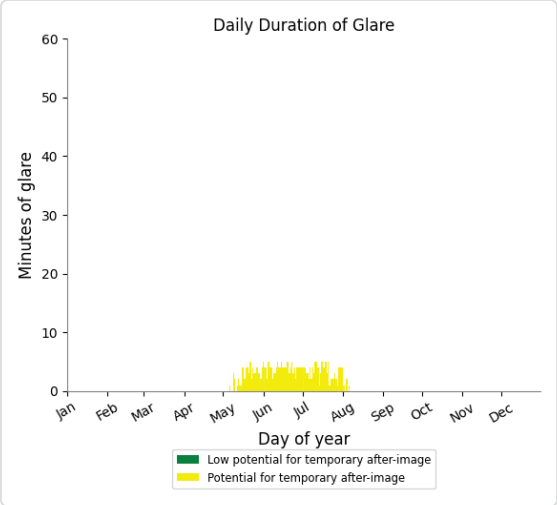


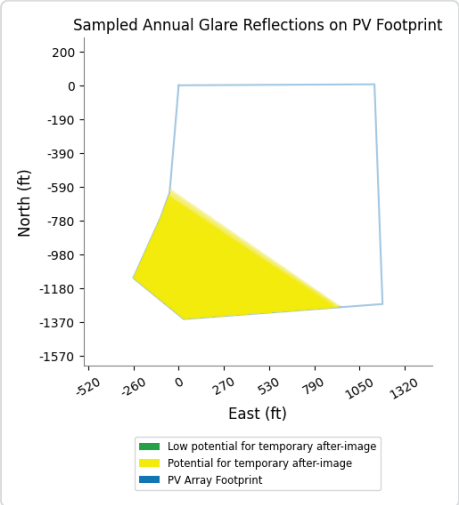


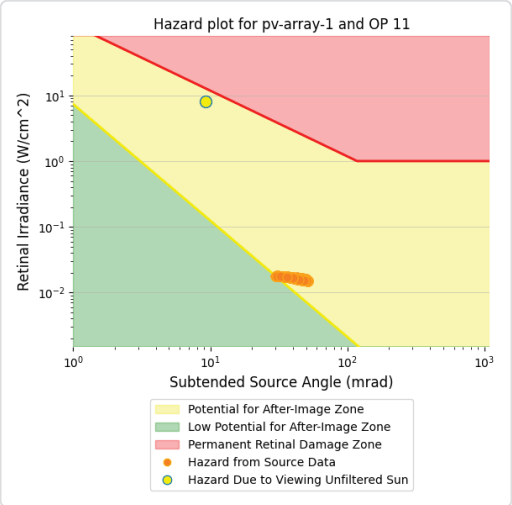
PV array 1 and OP 11

Receptor type: Observation Point
290 minutes of yellow glare
0 minutes of green glare







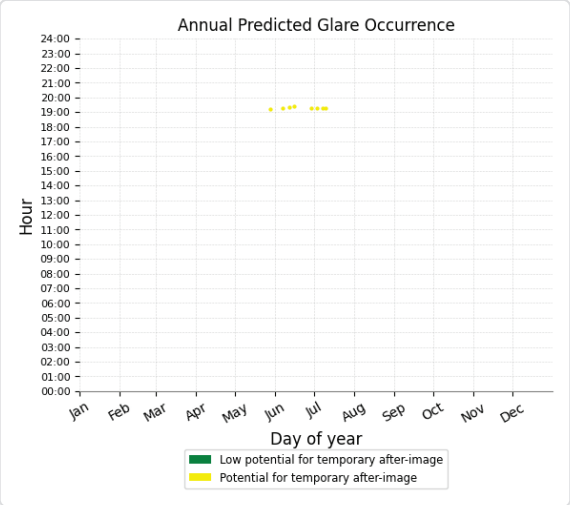


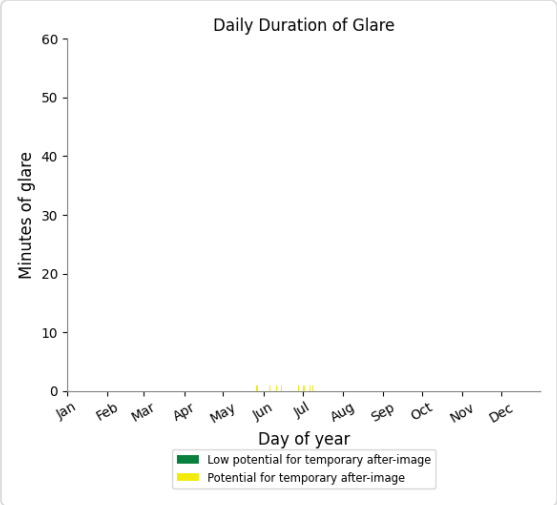
PV array 1 and OP 14

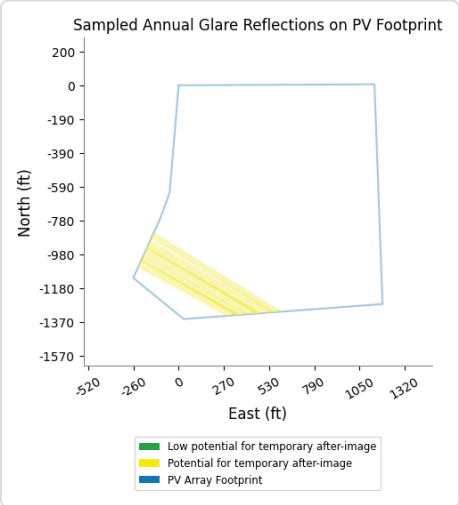
Receptor type: Observation Point

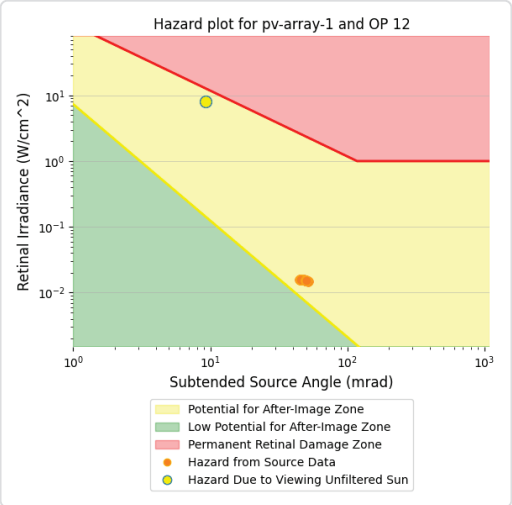
8 minutes of yellow glare

0 minutes of green glare



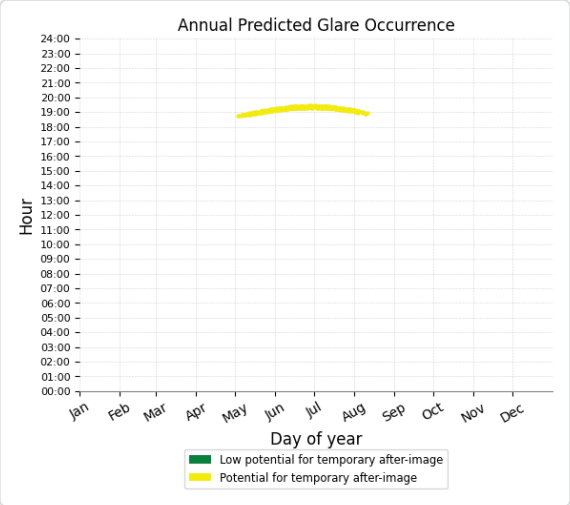


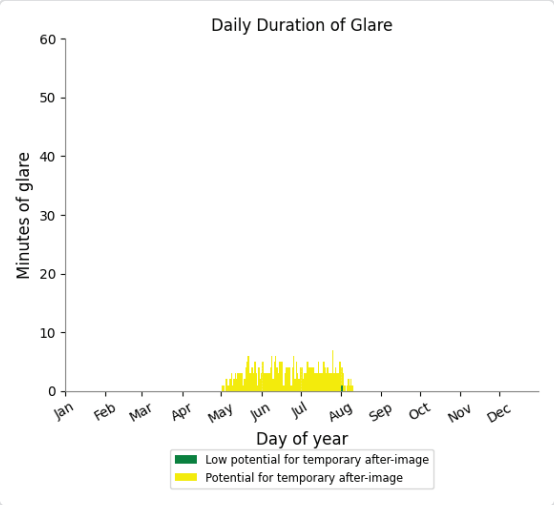


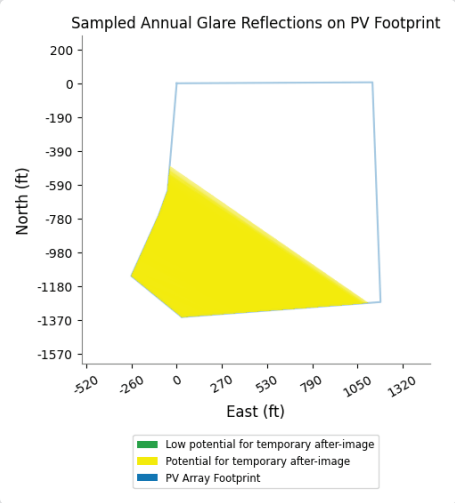


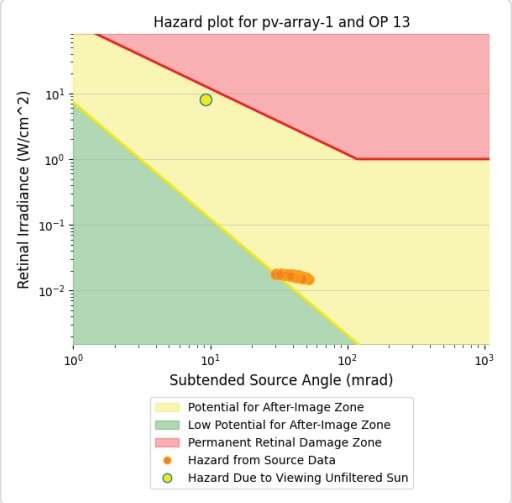
PV array 1 and OP 12

Receptor type: Observation Point
322 minutes of yellow glare
1 minutes of green glare







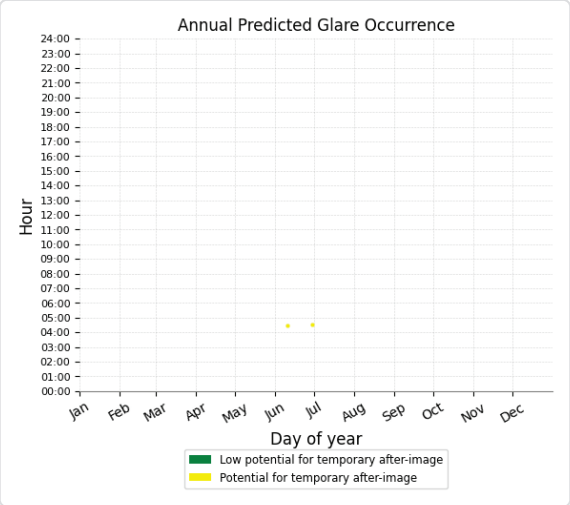


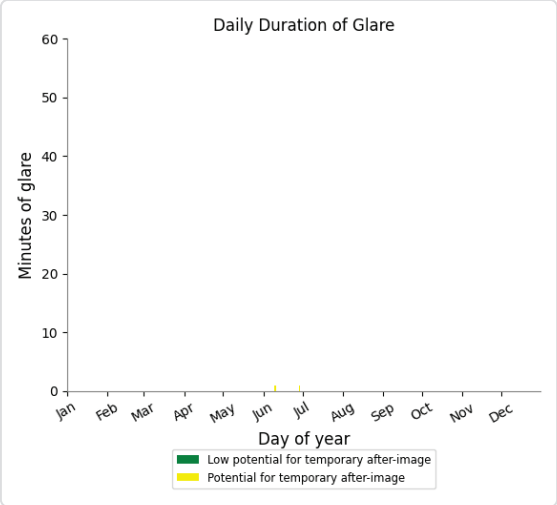
PV array 1 and OP 41

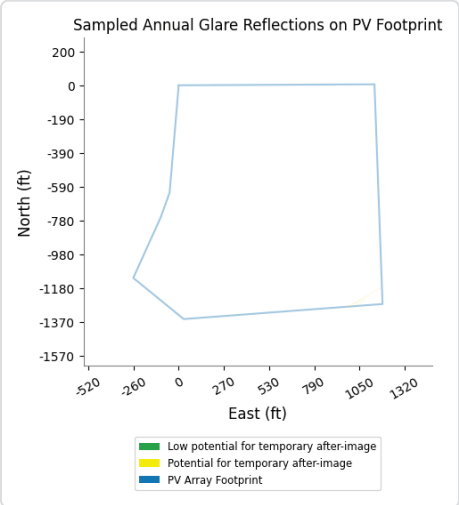
Receptor type: Observation Point

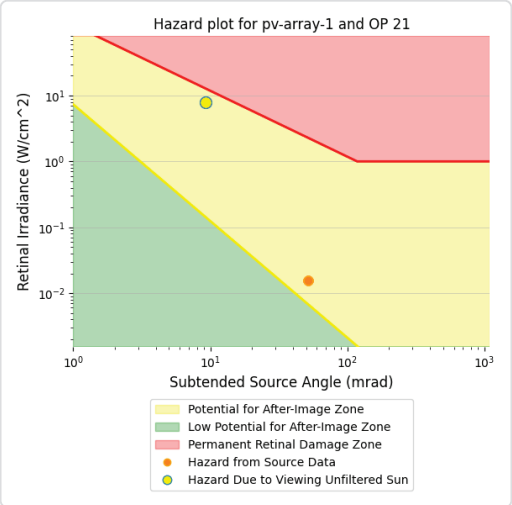
2 minutes of yellow glare

0 minutes of green glare



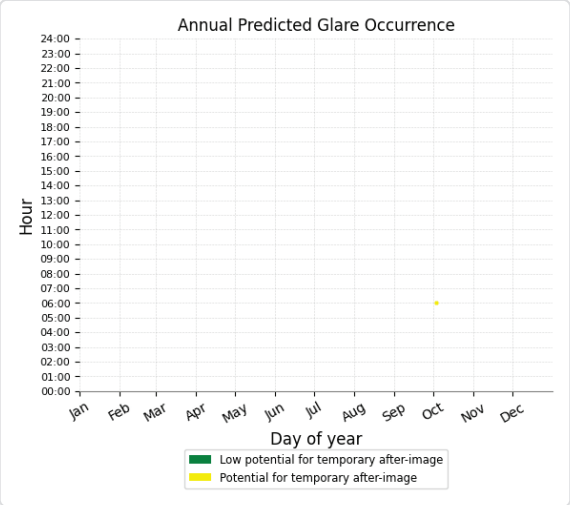


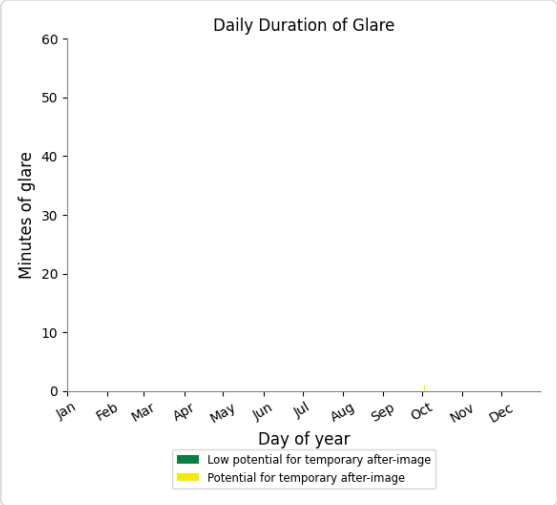


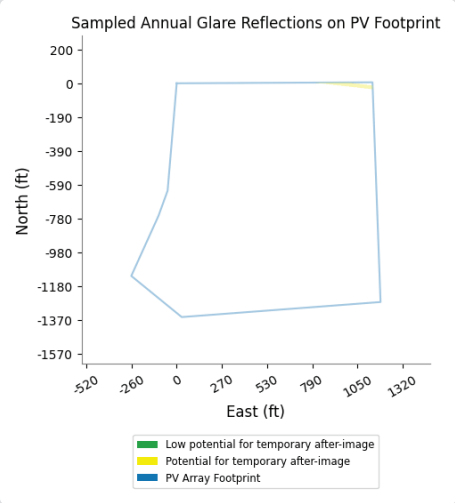


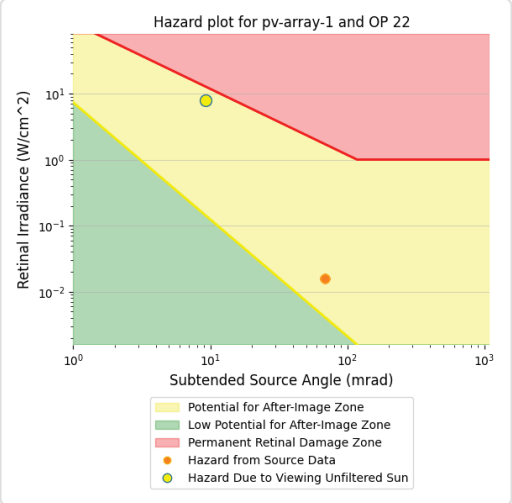
PV array 1 and OP 44

Receptor type: Observation Point
1 minutes of yellow glare
0 minutes of green glare









PV array 1 and OP 1

Receptor type: Observation Point
No glare found

PV array 1 and OP 3

Receptor type: Observation Point
No glare found

PV array 1 and OP 8

Receptor type: Observation Point
No glare found

PV array 1 and OP 9

Receptor type: Observation Point
No glare found

PV array 1 and OP 10

Receptor type: Observation Point
No glare found

PV array 1 and OP 13

Receptor type: Observation Point
No glare found

PV array 1 and OP 15

Receptor type: Observation Point
No glare found

PV array 1 and OP 16

Receptor type: Observation Point
No glare found

PV array 1 and OP 17

Receptor type: Observation Point
No glare found

PV array 1 and OP 18

Receptor type: Observation Point
No glare found

PV array 1 and OP 19

Receptor type: Observation Point
No glare found

PV array 1 and OP 40

Receptor type: Observation Point
No glare found

PV array 1 and OP 42

Receptor type: Observation Point
No glare found

PV array 1 and OP 43

Receptor type: Observation Point
No glare found

Assumptions

"Green" glare is glare with low potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
"Yellow" glare is glare with potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.
The algorithm does not rigorously represent the detailed geometry of a system; detailed features such as gaps between modules, variable height of the PV array, and support structures may impact actual glare results. However, we have validated our models against several systems, including a PV array causing glare to the air-traffic control tower at Manchester-Boston Regional Airport and several sites in Albuquerque, and the tool accurately predicted the occurrence and intensity of glare at different times and days of the year.
Several V1 calculations utilize the PV array centroid, rather than the actual glare spot location, due to algorithm limitations. This may affect results for large PV footprints. Additional analyses of array sub-sections can provide additional information on expected glare. This primarily affects V1 analyses of path receptors.
Random number computations are utilized by various steps of the annual hazard analysis algorithm. Predicted minutes of glare can vary between runs as a result. This limitation primarily affects analyses of Observation Point receptors, including ATCTs. Note that the SGHAT/ ForgeSolar methodology has always relied on an analytical, qualitative approach to accurately determine the overall hazard (i.e. green vs. yellow) of expected glare on an annual basis.
The analysis does not automatically consider obstacles (either man-made or natural) between the observation points and the prescribed solar installation that may obstruct observed glare, such as trees, hills, buildings, etc.
The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Additional analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on related limitations.)
The variable direct normal irradiance (DNI) feature (if selected) scales the user-prescribed peak DNI using a typical clear-day irradiance profile. This profile has a lower DNI in the mornings and evenings and a maximum at solar noon. The scaling uses a clear-day irradiance profile based on a normalized time relative to sunrise, solar noon, and sunset, which are prescribed by a sun-position algorithm and the latitude and longitude obtained from Google maps. The actual DNI on any given day can be affected by cloud cover, atmospheric attenuation, and other environmental factors.
The ocular hazard predicted by the tool depends on a number of environmental, optical, and human factors, which can be uncertain. We provide input fields and typical ranges of values for these factors so that the user can vary these parameters to see if they have an impact on the results. The speed of SGHAT allows expedited sensitivity and parametric analyses.
The system output calculation is a DNI-based approximation that assumes clear, sunny skies year-round. It should not be used in place of more rigorous modeling methods.
Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid based on aggregated research data. Actual ocular impact outcomes encompass a continuous, not discrete, spectrum.
Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
Refer to the Help page at **www.forgesolar.com/help/** for assumptions and limitations not listed here.

Default glare analysis parameters and observer eye characteristics (for reference only):

- Analysis time interval: 1 minute
- Ocular transmission coefficient: 0.5
- Pupil diameter: 0.002 meters
- Eye focal length: 0.017 meters
- Sun subtended angle: 9.3 milliradians

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Mail Processing Center
Federal Aviation Administration
Southwest Regional Office
Obstruction Evaluation Group
10101 Hillwood Parkway
Fort Worth, TX 76177

Aeronautical Study No.
2022-AGL-15657-OE

Issued Date: 08/12/2022

Scott Osborn
TPE IL KE106, LLC
3720 S. Dahlia Street
Denver, CO 80237

**** DETERMINATION OF NO HAZARD TO AIR NAVIGATION ****

The Federal Aviation Administration has conducted an aeronautical study under the provisions of 49 U.S.C., Section 44718 and if applicable Title 14 of the Code of Federal Regulations, part 77, concerning:

Structure:	Solar Panel KE106
Location:	Bristol, IL
Latitude:	41-41-44.16N NAD 83
Longitude:	88-25-20.98W
Heights:	650 feet site elevation (SE) 15 feet above ground level (AGL) 665 feet above mean sea level (AMSL)

This aeronautical study revealed that the structure does not exceed obstruction standards and would not be a hazard to air navigation provided the following condition(s), if any, is(are) met:

See attachment for additional condition(s) or information.
Based on this evaluation, marking and lighting are not necessary for aviation safety. However, if marking/ lighting are accomplished on a voluntary basis, we recommend it be installed in accordance with FAA Advisory circular 70/7460-1 M.

This determination expires on 02/12/2024 unless:

(a) the construction is started (not necessarily completed) and FAA Form 7460-2, Notice of Actual Construction or Alteration, is received by this office.
(b) extended, revised, or terminated by the issuing office.
(c) the construction is subject to the licensing authority of the Federal Communications Commission (FCC) and an application for a construction permit has been filed, as required by the FCC, within 6 months of the date of this determination. In such case, the determination expires on the date prescribed by the FCC for completion of construction, or the date the FCC denies the application.

NOTE: REQUEST FOR EXTENSION OF THE EFFECTIVE PERIOD OF THIS DETERMINATION MUST BE E-FILED AT LEAST 15 DAYS PRIOR TO THE EXPIRATION DATE. AFTER RE-EVALUATION OF CURRENT OPERATIONS IN THE AREA OF THE STRUCTURE TO DETERMINE THAT NO

SIGNIFICANT AERONAUTICAL CHANGES HAVE OCCURRED, YOUR DETERMINATION MAY BE ELIGIBLE FOR ONE EXTENSION OF THE EFFECTIVE PERIOD.

This determination is based, in part, on the foregoing description which includes specific coordinates, heights, frequency(ies) and power. Any changes in coordinates, heights, and frequencies or use of greater power, except those frequencies specified in the Colo Void Clause Coalition; Antenna System Co-Location; Voluntary Best Practices, effective 21 Nov 2007, will void this determination. Any future construction or alteration, including increase to heights, power, or the addition of other transmitters, requires separate notice to the FAA.This determination includes all previously filed frequencies and power for this structure.

If construction or alteration is dismantled or destroyed, you must submit notice to the FAA within 5 days after the construction or alteration is dismantled or destroyed.

This determination does include temporary construction equipment such as cranes, derricks, etc., which may be used during actual construction of the structure. However, this equipment shall not exceed the overall heights as indicated above. Equipment which has a height greater than the studied structure requires separate notice to the FAA.

This determination concerns the effect of this structure on the safe and efficient use of navigable airspace by aircraft and does not relieve the sponsor of compliance responsibilities relating to any law, ordinance, or regulation of any Federal, State, or local government body.

If we can be of further assistance, please contact our office at (816) 329-2525, or natalie.schmalbeck@faa.gov. On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2022-AGL-15657-OE.

Signature Control No: 542230381-547794923 (DNE)
Natalie Schmalbeck
Technician

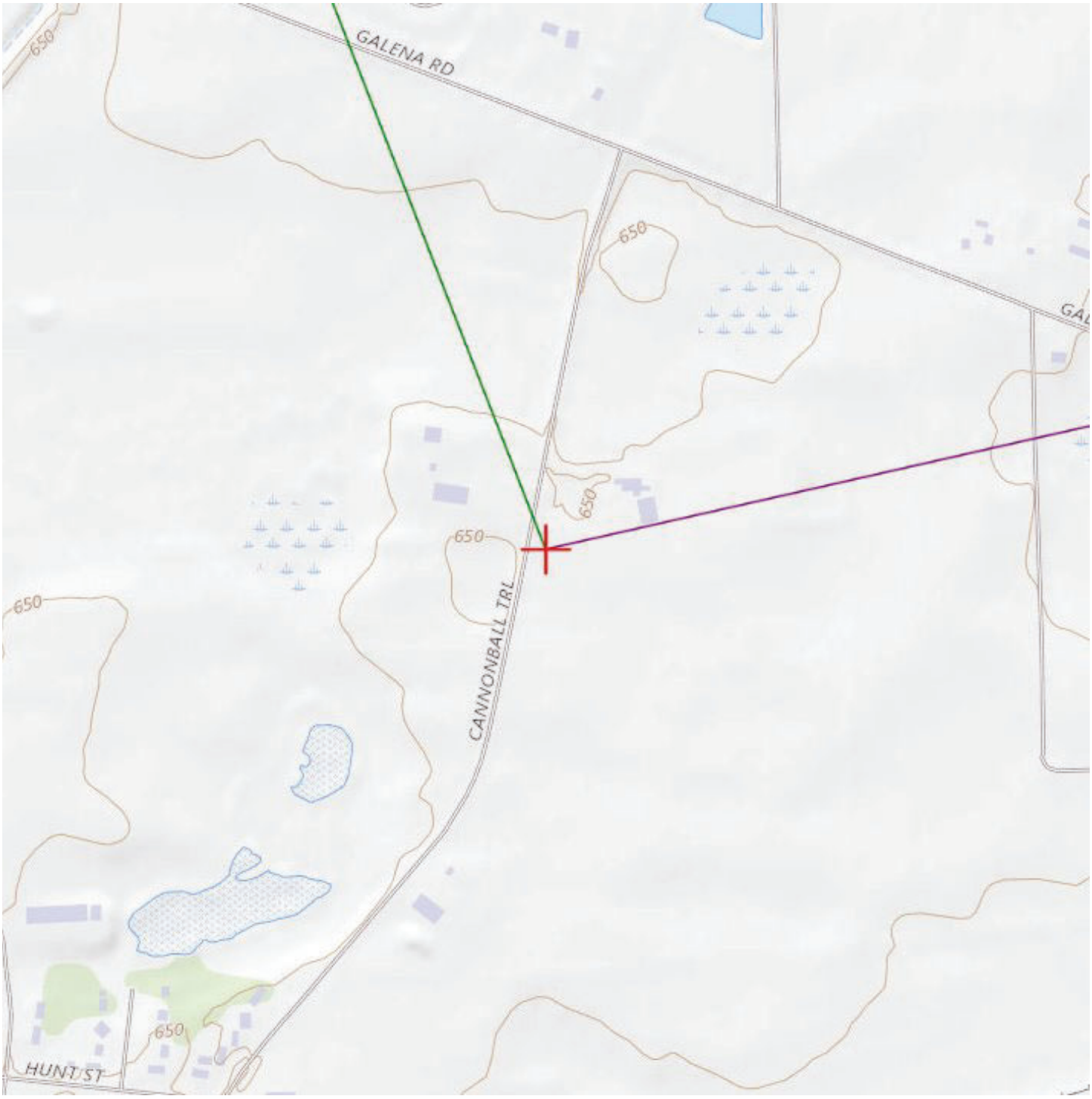
Attachment(s)
Additional Information
Map(s)

Additional information for ASN 2022-AGL-15657-OE

As part of an FAA determination, we do not evaluate the following structures:
. Security fencing
. Security light poles
. Any utility poles used to tie into the National Grid/power company
. Anything taller than the proposed height of 15 ft. AGL to include any associated construction equipment that may exceed the AMSL height.

If any of these are pertinent, please check if "NOTICE IS REQUIRED" and submit studies if applicable.

Verified Map for ASN 2022-AGL-15657-OE



APPENDIX N – CONTAMINANT AND WATER STUDIES

WHITE PAPER

Health and Safety Impacts of Solar Photovoltaics

By Tommy Cleveland
May 2017



NC CLEAN ENERGY TECHNOLOGY CENTER

NC STATE UNIVERSITY

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Health and Safety Impacts of Solar Photovoltaics

The increasing presence of utility-scale solar photovoltaic (PV) systems (sometimes referred to as solar farms) is a rather new development in North Carolina's landscape. Due to the new and unknown nature of this technology, it is natural for communities near such developments to be concerned about health and safety impacts. Unfortunately, the quick emergence of utility-scale solar has cultivated fertile grounds for myths and half-truths about the health impacts of this technology, which can lead to unnecessary fear and conflict.

Photovoltaic (PV) technologies and solar inverters are not known to pose any significant health dangers to their neighbors. The most important dangers posed are increased highway traffic during the relative short construction period and dangers posed to trespassers of contact with high voltage equipment. This latter risk is mitigated by signage and the security measures that industry uses to deter trespassing. As will be discussed in more detail below, risks of site contamination are much less than for most other industrial uses because PV technologies employ few toxic chemicals and those used are used in very small quantities. Due to the reduction in the pollution from fossil-fuel-fired electric generators, the overall impact of solar development on human health is overwhelmingly positive. This pollution reduction results from a partial replacement of fossil-fuel fired generation by emission-free PV-generated electricity, which reduces harmful sulfur dioxide (SO2), nitrogen oxides (NOx), and fine particulate matter (PM2.5). Analysis from the National Renewable Energy Laboratory and the Lawrence Berkeley National Laboratory, both affiliates of the U.S. Department of Energy, estimates the health-related air quality benefits to the southeast region from solar PV generators to be worth 8.0 ¢ per kilowatt-hour of solar generation.[1] This is in addition to the value of the electricity and suggests that the air quality benefits of solar are worth more than the electricity itself.

Even though we have only recently seen large-scale installation of PV technologies, the technology and its potential impacts have been studied since the 1950s. A combination of this solar-specific research and general scientific research has led to the scientific community having a good understanding of the science behind potential health and safety impacts of solar energy. This paper utilizes the latest scientific literature and knowledge of solar practices in N.C. to address the health and safety risks associated with solar PV technology. These risks are extremely small, far less than those associated with common activities such as driving a car, and vastly outweighed by health benefits of the generation of clean electricity.

This paper addresses the potential health and safety impacts of solar PV development in North Carolina, organized into the following four categories:
(1) Hazardous Materials
(2) Electromagnetic Fields (EMF)
(3) Electric Shock and Arc Flash
(4) Fire Safety

1 • Hazardous Materials

One of the more common concerns towards solar is that the panels (referred to as "modules" in the solar industry) consist of toxic materials that endanger public health. However, as shown in this section, solar energy systems may contain small amounts of toxic materials, but these materials do not endanger public health. To understand potential toxic hazards coming from a solar project, one

must understand system installation, materials used, the panel end-of-life protocols, and system operation. This section will examine these aspects of a solar farm and the potential for toxicity impacts in the following subsections:

(1.2) Project Installation/Construction
(1.2) System Components
  1.2.1 Solar Panels: Construction and Durability
  1.2.2 Photovoltaic technologies
    (a) Crystalline Silicon
    (b) Cadmium Telluride (CdTe)
    (c) CIS/CIGS
  1.2.3 Panel End of Life Management
  1.2.4 Non-panel System Components
(1.3) Operations and Maintenance

1.1 Project Installation/ Construction

The system installation, or construction, process does not require toxic chemicals or processes. The site is mechanically cleared of large vegetation, fences are constructed, and the land is surveyed to layout exact installation locations. Trenches for underground wiring are dug and support posts are driven into the ground. The solar panels are bolted to steel and aluminum support structures and wired together. Inverter pads are installed, and an inverter and transformer are installed on each pad. Once everything is connected, the system is tested, and only then turned on.



Figure 1: Utility-scale solar facility (5 MWAC) located in Catawba County. *Source: Strata Solar*

1.2 · System Components

1.2.1 Solar Panels: Construction and Durability

Solar PV panels typically consist of glass, polymer, aluminum, copper, and semiconductor materials that can be recovered and recycled at the end of their useful life.[2] Today there are two PV technologies used in PV panels at utility-scale solar facilities, silicon, and thin film. As of 2016, all thin film used in North Carolina solar facilities are cadmium telluride (CdTe) panels from the US manufacturer First Solar, but there are other thin film PV panels available on the market, such as Solar Frontier's CIGS panels. Crystalline silicon technology consists of silicon wafers which are made into cells and assembled into panels, thin film technologies consist of thin layers of semiconductor material deposited onto glass, polymer or metal substrates. While there are differences in the components and manufacturing processes of these two types of solar technologies, many aspects of their PV panel construction are very similar. Specifics about each type of PV chemistry as it relates to toxicity are covered in subsections a, b, and c in section 1.2.2; on crystalline silicon, cadmium telluride, and CIS/CIGS respectively. The rest of this section applies equally to both silicon and thin film panels.

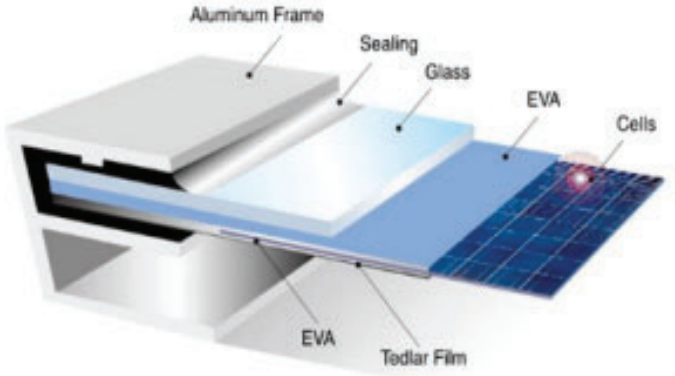


Figure 2: Components of crystalline silicon panels. The vast majority of silicon panels consist of a glass sheet on the topside with an aluminum frame providing structural support. Image Source: www.riteksolar.com.tw

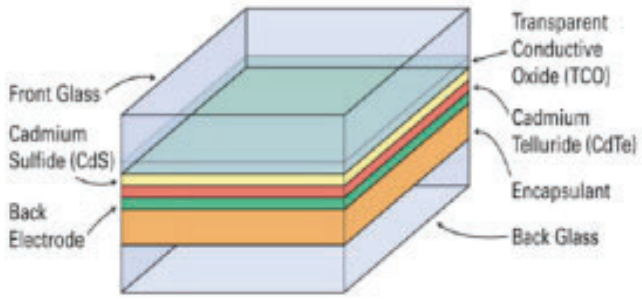


Figure 3: Layers of a common frameless thin-film panel (CdTe). Many thin film panels are frameless, including the most common thin-film panels, First Solar's CdTe. Frameless panels have protective glass on both the front and back of the panel. Layer thicknesses not to scale. Image Source: www.homepower.com

To provide decades of corrosion-free operation, PV cells in PV panels are encapsulated from air and moisture between two layers of plastic. The encapsulation layers are protected on the top with a layer of tempered glass and on the backside with a polymer sheet. Frameless modules include a protective layer of glass on the rear of the panel, which may also be tempered. The plastic ethylene-vinyl acetate (EVA) commonly provides the cell encapsulation. For decades, this same material has been used between layers of tempered glass to give car windshields and hurricane windows their great strength. In the same way that a car windshield cracks but stays intact, the EVA layers in PV panels keep broken panels intact (see Figure 4). Thus, a damaged module does not generally create small pieces of debris; instead, it largely remains together as one piece.



Figure 4: The mangled PV panels in this picture illustrate the nature of broken solar panels; the glass cracks but the panel is still in one piece. Image Source: http://img.alibaba.com/photo/115259576/broken_solar_panel.jpg

PV panels constructed with the same basic components as modern panels have been installed across the globe for well over thirty years.[3] The long-term durability and performance demonstrated over these decades, as well as the results of accelerated lifetime testing, helped lead to an industrystandard 25-year power production warranty for PV panels. These power warranties warrant a PV panel to produce at least 80% of their original nameplate production after 25 years of use. A recent SolarCity and DNV GL study reported that today's quality PV panels should be expected to reliably and efficiently produce power for thirty-five years.[4]

Local building codes require all structures, including ground mounted solar arrays, to be engineered to withstand anticipated wind speeds, as defined by the local wind speed requirements. Many racking products are available in versions engineered for wind speeds of up to 150 miles per hour, which is significantly higher than the wind speed requirement anywhere in North Carolina. The strength of PV mounting structures were demonstrated during Hurricane Sandy in 2012 and again during Hurricane Matthew in 2016. During Hurricane Sandy, the many large-scale solar facilities in New Jersey and New York at that time suffered only minor damage.[5] In the fall of 2016, the US and Caribbean experienced destructive winds and torrential rains from Hurricane Matthew, yet one leading solar tracker manufacturer reported that their numerous systems in the impacted area received zero damage from wind or flooding.[6]

In the event of a catastrophic event capable of damaging solar equipment, such as a tornado, the system will almost certainly have property insurance

that will cover the cost to cleanup and repair the project. It is in the best interest of the system owner to protect their investment against such risks. It is also in their interest to get the project repaired and producing full power as soon as possible. Therefore, the investment in adequate insurance is a wise business practice for the system owner. For the same reasons, adequate insurance coverage is also generally a requirement of the bank or firm providing financing for the project.

1.2.2 Photovoltaic (PV) Technologies

a. Crystalline Silicon

This subsection explores the toxicity of silicon-based PV panels and concludes that they do not pose a material risk of toxicity to public health and safety. Modern crystalline silicon PV panels, which account for over 90% of solar PV panels installed today, are, more or less, a commodity product. The overwhelming majority of panels installed in North Carolina are crystalline silicon panels that are informally classified as Tier I panels. Tier I panels are from well-respected manufacturers that have a good chance of being able to honor warranty claims. Tier I panels are understood to be of high quality, with predictable performance, durability, and content. Well over 80% (by weight) of the content of a PV panel is the tempered glass front and the aluminum frame, both of which are common building materials. Most of the remaining portion are common plastics, including polyethylene terephthalate in the backsheet, EVA encapsulation of the PV cells, polyphenyl ether in the junction box, and polyethylene insulation on the wire leads. The active, working components of the system are the silicon photovoltaic cells, the small electrical leads connecting them together, and to the wires coming out of the back of the panel. The electricity generating and conducting components makeup less than 5% of the weight of most panels. The PV cell itself is nearly 100% silicon, and silicon is the second most common element in the Earth's crust. The silicon for PV cells is obtained by high-temperature processing of quartz sand (SiO2) that removes its oxygen molecules. The refined silicon is converted to a PV cell by adding extremely small amounts of boron and phosphorus, both of which are common and of very low toxicity.

The other minor components of the PV cell are also generally benign; however, some contain lead, which is a human toxicant that is particularly harmful to young children. The minor components include an extremely thin antireflective coating (silicon nitride or titanium dioxide), a thin layer of aluminum on the rear, and thin strips of silver alloy that are screen-printed on the front and rear of cell.[7] In order for the front and rear electrodes to make effective electrical contact with the proper layer of the PV cell, other materials (called glass frit) are mixed with the silver alloy and then heated to etch the metals into the cell. This glass frit historically contains a small amount of lead (Pb) in the form of lead oxide. The 60 or 72 PV cells in a PV panel are connected by soldering thin solder-covered copper tabs from the back of one cell to the front of the next cell. Traditionally a tin-based solder containing some lead (Pb) is used, but some manufacturers have switched to lead-free solder. The glass frit and/or the solder may contain trace amounts of other metals, potentially including some with human toxicity such as cadmium. However, testing to simulate the potential for leaching from broken panels, which is discussed in more detail below, did not find a potential toxicity threat from these trace elements. Therefore, the tiny amount of lead in the grass frit and the solder is the only part of silicon PV panels with a potential to create a negative health impact. However, as described below, the very limited amount of lead involved and its strong physical and chemical attachment to other components of the PV panel means that even in worst-case scenarios the health hazard it poses is insignificant.

As with many electronic industries, the solder in silicon PV panels has historically been a leadbased solder, often 36% lead, due to the superior properties of such solder. However, recent advances in lead-free solders have spurred a trend among PV panel manufacturers to reduce or remove the lead in their panels. According to the 2015 Solar Scorecard from the Silicon Valley Toxics Coalition, a group that tracks environmental responsibility of photovoltaic panel manufacturers, fourteen companies (increased from twelve companies in 2014) manufacture PV panels certified to meet the European Restriction of Hazardous Substances (RoHS) standard. This means that the amount of cadmium and lead in the panels they manufacture fall below the RoHS thresholds, which are set by the European Union and serve as the world's de facto standard for hazardous substances in manufactured goods.[8] The Restriction of Hazardous Substances (RoHS) standard requires that the maximum concentration found in any homogenous material in a produce is less than 0.01% cadmium and less than 0.10% lead, therefore, any solder can be no more than 0.10% lead.[9]

While some manufacturers are producing PV panels that meet the RoHS standard, there is no requirement that they do so because the RoHS Directive explicitly states that the directive does not apply to photovoltaic panels.[10] The justification for this is provided in item 17 of the current RoHS Directive: "The development of renewable forms of energy is one of the Union's key objectives, and the contribution made by renewable energy sources to environmental and climate objectives is crucial. Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources (4) recalls that there should be coherence between those objectives and other Union environmental legislation. Consequently, this Directive should not prevent the development of renewable energy technologies that have no negative impact on health and the environment and that are sustainable and economically viable."

The use of lead is common in our modern economy. However, only about 0.5% of the annual lead consumption in the U.S. is for electronic solder for all uses; PV solder makes up only a tiny portion of this 0.5%. Close to 90% of lead consumption in the US is in batteries, which do not encapsulate the pounds of lead contained in each typical automotive battery. This puts the lead in batteries at great risk of leaching into the environment. Estimates for the lead in a single PV panel with lead-based solder range from 1.6 to 24 grams of lead, with 13g (less than half of an ounce) per panel seen most often in the literature.[11] At 13 g/panel[12], each panel contains one-half of the lead in a typical 12-gauge shotgun shell. This amount equates to roughly 1/750th of the lead in a single car battery. In a panel, it is all durably encapsulated from air or water for the full life of the panel.[14]

As indicated by their 20 to 30-year power warranty, PV modules are designed for a long service life, generally over 25 years. For a panel to comply with its 25-year power warranty, its internal components, including lead, must be sealed from any moisture. Otherwise, they would corrode and the panel's output would fall below power warranty levels. Thus, the lead in operating PV modules is not at risk of release to the environment during their service lifetime. In extreme experiments, researchers have shown that lead can leach from crushed or pulverized panels.[15, 16] However, more real-world tests designed to represent typical trash compaction that are used to classify waste as hazardous or non-hazardous show no danger from leaching.[17,18] For more information about PV panel end-of-life, see the Panel Disposal section.

As illustrated throughout this section, silicon-based PV panels do not pose a material threat to public health and safety. The only aspect of the panels with potential toxicity concerns is the very small amount of lead in some panels. However, any lead in a panel is well sealed from environmental exposure for the operating lifetime of the solar panel and thus not at risk of release into the environment.

b. Cadmium Telluride (CdTe) PV Panels

This subsection examines the components of a cadmium telluride (CdTe) PV panel. Research demonstrates that they pose negligible toxicity risk to public health and safety while significantly reducing the public's exposure to cadmium by reducing coal emissions. As of mid-2016, a few hundred MWs of cadmium telluride (CdTe) panels, all manufactured by the U.S. company First Solar, have been installed in North Carolina.

Questions about the potential health and environmental impacts from the use of this PV technology are related to the concern that these panels contain cadmium, a toxic heavy metal. However, scientific studies have shown that cadmium telluride differs from cadmium due to its high chemical and thermal stability.[19] Research has shown that the tiny amount of cadmium in these panels does not pose a health or safety risk.[20] Further, there are very compelling reasons to welcome its adoption due to reductions in unhealthy pollution associated with burning coal. Every GWh of electricity generated by burning coal produces about 4 grams of cadmium air emissions.[21] Even though North Carolina produces a significant fraction of our electricity from coal, electricity from solar offsets much more natural gas than coal due to natural gas plants being able to adjust their rate of production more easily and quickly. If solar electricity offsets 90% natural gas and 10% coal, each 5-megawatt (5 MWAC, which is generally 7 MWDC) CdTe solar facility in North Carolina keeps about 157 grams, or about a third of a pound, of cadmium *out* of our environment.[22, 23]

Cadmium is toxic, but all the approximately 7 grams of cadmium in one CdTe panel is in the form of a chemical compound cadmium telluride,[24] which has 1/100th the toxicity of free cadmium.[25] Cadmium telluride is a very stable compound that is non-volatile and non-soluble in water. Even in the case of a fire, research shows that less than 0.1% of the cadmium is released when a CdTe panel is exposed to fire. The fire melts the glass and encapsulates over 99.9% of the cadmium in the molten glass.[27]

It is important to understand the source of the cadmium used to manufacture CdTe PV panels. The cadmium is a byproduct of zinc and lead refining. The element is collected from emissions and waste streams during the production of these metals and combined with tellurium to create the CdTe used in PV panels. If the cadmium were not collected for use in the PV panels or other products, it would otherwise either be stockpiled for future use, cemented and buried, or disposed of.[28] Nearly all the cadmium in old or broken panels can be recycled which can eventually serve as the primary source of cadmium for new PV panels.[29]

Similar to silicon-based PV panels, CdTe panels are constructed of a tempered glass front, one instead of two clear plastic encapsulation layers, and a rear heat strengthened glass backing (together >98% by weight). The final product is built to withstand exposure to the elements without significant damage for over 25 years. While not representative of damage that may occur in the field or even at a landfill, laboratory evidence has illustrated that when panels are ground into a fine powder, very acidic water is able to leach portions of the cadmium and tellurium,[30] similar to the process used to recycle CdTe panels. Like many silicon-based panels, CdTe panels are reported (as far back ask 1998[31] to pass the EPA's Toxic Characteristic Leaching Procedure (TCLP) test, which tests the potential for crushed panels in a landfill to leach hazardous substances into groundwater.[32] Passing this test means that they are classified as non-hazardous waste and can be deposited in landfills.[33,34] For more information about PV panel end-of-life, see the Panel Disposal section.

There is also concern of environmental impact resulting from potential catastrophic events involving CdTe PV panels. An analysis of worst-case scenarios for environmental impact from CdTe PV

panels, including earthquakes, fires, and floods, was conducted by the University of Tokyo in 2013. After reviewing the extensive international body of research on CdTe PV technology, their report concluded, "Even in the worst-case scenarios, it is unlikely that the Cd concentrations in air and sea water will exceed the environmental regulation values."[35] In a worst-case scenario of damaged panels abandoned on the ground, insignificant amounts of cadmium will leach from the panels. This is because this scenario is much less conducive (larger module pieces, less acidity) to leaching than the conditions of the EPA's TCLP test used to simulate landfill conditions, which CdTe panels pass.[36]

First Solar, a U.S. company, and the only significant supplier of CdTe panels, has a robust panel take-back and recycling program that has been operating commercially since 2005.[37] The company states that it is "committed to providing a commercially attractive recycling solution for photovoltaic (PV) power plant and module owners to help them meet their module (end of life) EOL obligation simply, costeffectively and responsibly." First Solar global recycling services to their customers to collect and recycle panels once they reach the end of productive life whether due to age or damage. These recycling service agreements are structured to be financially attractive to both First Solar and the solar panel owner. For First Solar, the contract provides the company with an affordable source of raw materials needed for new panels and presumably a diminished risk of undesired release of Cd. The contract also benefits the solar panel owner by allowing them to avoid tipping fees at a waste disposal site. The legal contract helps provide peace of mind by ensuring compliance by both parties when considering the continuing trend of rising disposal costs and increasing regulatory requirements.

c. CIS/CIGS and other PV technologies

Copper indium gallium selenide PV technology, often referred to as CIGS, is the second most common type of thin-film PV panel but a distant second behind CdTe. CIGS cells are composed of a thin layer of copper, indium, gallium, and selenium on a glass or plastic backing. None of these elements are very toxic, although selenium is a regulated metal under the Federal Resource Conservation and Recovery Act (RCRA).[38] The cells often also have an extremely thin layer of cadmium sulfide that contains a tiny amount of cadmium, which is toxic. The promise of high efficiency CIGS panels drove heavy investment in this technology in the past. However, researchers have struggled to transfer high efficiency success in the lab to low-cost full-scale panels in the field.[39] Recently, a CIGS manufacturer based in Japan, Solar Frontier, has achieved some market success with a rigid, glass-faced CIGS module that competes with silicon panels. Solar Frontier produces the majority of CIS panels on the market today.[40] Notably, these panels are RoHS compliant,[41] thus meeting the rigorous toxicity standard adopted by the European Union even thought this directive exempts PV panels. The authors are unaware of any completed or proposed utility-scale system in North Carolina using CIS/CIGS panels.

1.2.3 Panel End-of-Life Management

Concerns about the volume, disposal, toxicity, and recycling of PV panels are addressed in this subsection. To put the volume of PV waste into perspective, consider that by 2050, when PV systems installed in 2020 will reach the end of their lives, it is estimated that the global annual PV panel waste tonnage will be 10% of the 2014 global e-waste tonnage.[42] In the U.S., end-of-life disposal of solar products is governed by the Federal Resource Conservation and Recovery Act (RCRA), as well as state policies in some situations. RCRA separates waste into hazardous (not accepted at ordinary landfill) and solid waste (generally accepted

at ordinary landfill) based on a series of rules. According to RCRA, the way to determine if a PV panel is classified as hazardous waste is the Toxic Characteristic Leaching Procedure (TCLP) test. This EPA test is designed to simulate landfill disposal and determine the risk of hazardous substances leaching out of the landfill.[43,44,45] Multiple sources report that most modern PV panels (both crystalline silicon and cadmium telluride) pass the TCLP test.[46,47] Some studies found that some older (1990s) crystalline silicon panels, and perhaps some newer crystalline silicon panels (specifics are not given about vintage of panels tested), do not pass the lead (Pb) leachate limits in the TCLP test.[48,49]

The test begins with the crushing of a panel into centimeter-sized pieces. The pieces are then mixed in an acid bath. After tumbling for eighteen hours, the fluid is tested for forty hazardous substances that all must be below specific threshold levels to pass the test. Research comparing TCLP conditions to conditions of damaged panels in the field found that simulated landfill conditions provide overly conservative estimates of leaching for field-damaged panels.[50] Additionally, research in Japan has found no detectable Cd leaching from cracked CdTe panels when exposed to simulated acid rain.[51]

Although modern panels can generally be landfilled, they can also be recycled. Even though recent waste volume has not been adequate to support significant PV-specific recycling infrastructure, the existing recycling industry in North Carolina reports that it recycles much of the current small volume of broken PV panels. In an informal survey conducted by the NC Clean Energy Technology Center survey in early 2016, seven of the eight large active North Carolina utility-scale solar developers surveyed reported that they send damaged panels back to the manufacturer and/or to a local recycler. Only one developer reported sending damaged panels to the landfill.

The developers reported at that time that they are usually paid a small amount per panel by local recycling firms. In early 2017, a PV developer reported that a local recycler was charging a small fee per panel to recycle damaged PV panels. The local recycling firm known to authors to accept PV panels described their current PV panel recycling practice as of early 2016 as removing the aluminum frame for local recycling and removing the wire leads for local copper recycling. The remainder of the panel is sent to a facility for processing the non-metallic portions of crushed vehicles, referred to as “fluff” in the recycling industry.[52] This processing within existing general recycling plants allows for significant material recovery of major components, including glass which is 80% of the module weight, but at lower yields than PV-specific recycling plants. Notably almost half of the material value in a PV panel is in the few grams of silver contained in almost every PV panel produced today. In the long-term, dedicated PV panel recycling plants can increase treatment capacities and maximize revenues resulting in better output quality and the ability to recover a greater fraction of the useful materials.[53] PV-specific panel recycling technologies have been researched and implemented to some extent for the past decade, and have been shown to be able to recover over 95% of PV material (semiconductor) and over 90% of the glass in a PV panel.[54]

A look at global PV recycling trends hints at the future possibilities of the practice in our country. Europe installed MW-scale volumes of PV years before the U.S. In 2007, a public-private partnership between the European Union and the solar industry set up a voluntary collection and recycling system called PV CYCLE. This arrangement was later made mandatory under the EU’s WEEE directive, a program for waste electrical and electronic equipment.[55] Its member companies (PV panel producers) fully finance the association. This makes it possible for end-users to return the member companies’ defective panels for recycling at any of the over 300 collection points around

Europe without added costs. Additionally, PV CYCLE will pick up batches of 40 or more used panels at no cost to the user. This arrangement has been very successful, collecting and recycling over 13,000 tons by the end of 2015.[56]

In 2012, the WEEE Directive added the end-of-life collection and recycling of PV panels to its scope.[57] This directive is based on the principle of extended-producer-responsibility. It has a global impact because producers that want to sell into the EU market are legally responsible for end-of-life management. Starting in 2018, this directive targets that 85% of PV products "put in the market" in Europe are recovered and 80% is prepared for reuse and recycling.

The success of the PV panel collection and recycling practices in Europe provides promise for the future of recycling in the U.S. In mid-2016, the US Solar Energy Industry Association (SEIA) announced that they are starting a national solar panel recycling program with the guidance and support of many leading PV panel producers.[58] The program will aggregate the services offered by recycling vendors and PV manufacturers, which will make it easier for consumers to select a cost-effective and environmentally responsible end-of-life management solution for their PV products. According to SEIA, they are planning the program in an effort to make the entire industry landfill-free. In addition to the national recycling network program, the program will provide a portal for system owners and consumers with information on how to responsibly recycle their PV systems.

While a cautious approach toward the potential for negative environmental and/or health impacts from retired PV panels is fully warranted, this section has shown that the positive health impacts of reduced emissions from fossil fuel combustion from PV systems more than outweighs any potential risk. Testing shows that silicon and CdTe panels are both safe to dispose of in landfills, and are also safe in worst case conditions of abandonment or damage in a disaster. Additionally, analysis by local engineers has found that the current salvage value of the equipment in a utility scale PV facility generally exceeds general contractor estimates for the cost to remove the entire PV system.[59,60,61]

1.2.4 Non-Panel System Components

(racking, wiring, inverter, transformer)

While previous toxicity subsections discussed PV panels, this subsection describes the non-panel components of utility-scale PV systems and investigates any potential public health and safety concerns. The most significant non-panel component of a ground-mounted PV system is the mounting structure of the rows of panels, commonly referred to as "racking". The vertical post portion of the racking is galvanized steel and the remaining aboveground racking components are either galvanized steel or aluminum, which are both extremely common and benign building materials. The inverters that make the solar generated electricity ready to send to the grid have weather-proof steel enclosures that protect the working components from the elements. The only fluids that they might contain are associated with their cooling systems, which are not unlike the cooling system in a computer. Many inverters today are RoHS compliant.

The electrical transformers (to boost the inverter output voltage to the voltage of the utility connection point) do contain a liquid cooling oil. However, the fluid used for that function is either a nontoxic mineral oil or a biodegradable non-toxic vegetable oil, such as BIOTEMP from ABB. These vegetable transformer oils have the additional advantage of being much less flammable than traditional mineral oils. Significant health hazards are associated with old transformers containing cooling oil with toxic PCBs. Transfers with PCB-containing oil were common before PCBs were outlawed in the U.S. in 1979. PCBs still exist in older transformers in the field across the country.

Other than a few utility research sites, there are no batteries on- or off-site associated with utility-scale solar energy facilities in North Carolina, avoiding any potential health or safety concerns related to battery technologies. However, as battery technologies continue to improve and prices continue to decline we are likely to start seeing some batteries at solar facilities. Lithium ion batteries currently dominate the world utility-scale battery market, which are not very toxic. No non-panel system components were found to pose any health or environmental dangers.

1.4 Operations and Maintenance – Panel Washing and Vegetation Control

Throughout the eastern U.S., the climate provides frequent and heavy enough rain to keep panels adequately clean. This dependable weather pattern eliminates the need to wash the panels on a regular basis. Some system owners may choose to wash panels as often as once a year to increase production, but most in N.C. do not regularly wash any PV panels. Dirt build up over time may justify panel washing a few times over the panels' lifetime; however, nothing more than soap and water are required for this activity.

The maintenance of ground-mounted PV facilities requires that vegetation be kept low, both for aesthetics and to avoid shading of the PV panels. Several approaches are used to maintain vegetation at NC solar facilities, including planting of limited-height species, mowing, weed-eating, herbicides, and grazing livestock (sheep). The following descriptions of vegetation maintenance practices are based on interviews with several solar developers as well as with three maintenance firms that together are contracted to maintain well over 100 of the solar facilities in N.C. The majority of solar facilities in North Carolina maintain vegetation primarily by mowing. Each row of panels has a single row of supports, allowing sickle mowers to mow under the panels. The sites usually require mowing about once a month during the growing season. Some sites employ sheep to graze the site, which greatly reduces the human effort required to maintain the vegetation and produces high quality lamb meat.[62]

In addition to mowing and weed eating, solar facilities often use some herbicides. Solar facilities generally do not spray herbicides over the entire acreage; rather they apply them only in strategic locations such as at the base of the perimeter fence, around exterior vegetative buffer, on interior dirt roads, and near the panel support posts. Also unlike many row crop operations, solar facilities generally use only general use herbicides, which are available over the counter, as opposed to restricted use herbicides commonly used in commercial agriculture that require a special restricted use license. The herbicides used at solar facilities are primarily 2-4-D and glyphosate (Round-up®), which are two of the most common herbicides used in lawns, parks, and agriculture across the country. One maintenance firm that was interviewed sprays the grass with a class of herbicide known as a growth regulator in order to slow the growth of grass so that mowing is only required twice a year. Growth regulators are commonly used on highway roadsides and golf courses for the same purpose. A commercial pesticide applicator license is required for anyone other than the landowner to apply herbicides, which helps ensure that all applicators are adequately educated about proper herbicide use and application. The license must be renewed annually and requires passing of a certification exam appropriate to the area in which the applicator wishes to work. Based on the limited data available, it appears that solar facilities in N.C. generally use significantly less herbicides per acre than most commercial agriculture or lawn maintenance services.

2. Electromagnetic Fields (EMF)

PV systems do not emit any material during their operation; however, they do generate electromagnetic fields (EMF), sometimes referred to as radiation. EMF produced by electricity is non-ionizing radiation, meaning the radiation has enough energy to move atoms in a molecule around (experienced as heat), but not enough energy to remove electrons from an atom or molecule (ionize) or to damage DNA. As shown below, modern humans are all exposed to EMF throughout our daily lives without negative health impact. Someone outside of the fenced perimeter of a solar facility is not exposed to significant EMF from the solar facility. Therefore, there is no negative health impact from the EMF produced in a solar farm. The following paragraphs provide some additional background and detail to support this conclusion.

Since the 1970s, some have expressed concern over potential health consequences of EMF from electricity, but no studies have ever shown this EMF to cause health problems.[63] These concerns are based on some epidemiological studies that found a slight increase in childhood leukemia associated with average exposure to residential power-frequency magnetic fields above 0.3 to 0.4 μT (microteslas) (equal to 3.0 to 4.0 mG (milligauss)). μT and mG are both units used to measure magnetic field strength. For comparison, the average exposure for people in the U.S. is one mG or 0.1 μT, with about 1% of the population with an average exposure in excess of 0.4 μT (or 4 mG).[64] These epidemiological studies, which found an association but not a causal relationship, led the World Health Organization's International Agency for Research on Cancer (IARC) to classify ELF magnetic fields as "possibly carcinogenic to humans". Coffee also has this classification. This classification means there is limited evidence but not enough evidence to designate as either a "probable carcinogen" or "human carcinogen". Overall, there is very little concern that ELF EMF damages public health. The only concern that does exist is for long-term exposure above 0.4 μT (4 mG) that may have some connection to increased cases of childhood leukemia. In 1997, the National Academies of Science were directed by Congress to examine this concern and concluded:

"Based on a comprehensive evaluation of published studies relating to the effects of power-frequency electric and magnetic fields on cells, tissues, and organisms (including humans), the conclusion of the committee is that the current body of evidence does not show that exposure to these fields presents a human-health hazard. Specifically, no conclusive and consistent evidence shows that exposures to residential electric and magnetic fields produce cancer, adverse neurobehavioral effects, or reproductive and developmental effects."[65]

There are two aspects to electromagnetic fields, an electric field and a magnetic field. The electric field is generated by voltage and the magnetic field is generated by electric current, i.e., moving electrons. A task group of scientific experts convened by the World Health Organization (WHO) in 2005 concluded that there were no substantive health issues related to electric fields (0 to 100,000 Hz) at levels generally encountered by members of the public.[66] The relatively low voltages in a solar facility and the fact that electric fields are easily shielded (i.e., blocked) by common materials, such as plastic, metal, or soil means that there is no concern of negative health impacts from the electric fields generated by a solar facility. Thus, the remainder of this section addresses magnetic fields. Magnetic fields are not shielded by most common materials and thus can easily pass through them. Both types of fields are strongest close to the source of electric generation and weaken quickly with distance from the source.

The direct current (DC) electricity produced by PV panels produce stationary (0 Hz) electric and magnetic fields. Because of minimal concern about potential risks of stationary fields, little scientific research has examined stationary fields' impact on human health.[67] In even the largest PV facilities, the DC voltages and currents are not very high. One can illustrate the weakness of the EMF generated by a PV panel by placing a compass on an operating solar panel and observing that the needle still points north.

While the electricity throughout the majority of a solar site is DC electricity, the inverters convert this DC electricity to alternating current (AC) electricity matching the 60 Hz frequency of the grid. Therefore, the inverters and the wires delivering this power to the grid are producing non-stationary EMF, known as extremely low frequency (ELF) EMF, normally oscillating with a frequency of 60 Hz. This frequency is at the low-energy end of the electromagnetic spectrum. Therefore, it has less energy than other commonly encountered types of non-ionizing radiation like radio waves, infrared radiation, and visible light.

The wide use of electricity results in background levels of ELF EMFs in nearly all locations where people spend time – homes, workplaces, schools, cars, the supermarket, etc. A person's average exposure depends upon the sources they encounter, how close they are to them, and the amount of time they spend there.[68] As stated above, the average exposure to magnetic fields in the U.S. is estimated to be around one mG or 0.1 μT, but can vary considerably depending on a person's exposure to EMF from electrical devices and wiring.[69] At times we are often exposed to much higher ELF magnetic fields, for example when standing three feet from a refrigerator the ELF magnetic field is 6 mG and when standing three feet from a microwave oven the field is about 50 mG.[70] The strength of these fields diminish quickly with distance from the source, but when surrounded by electricity in our homes and other buildings moving away from one source moves you closer to another. However, unless you are inside of the fence at a utility-scale solar facility or electrical substation it is impossible to get very close to the EMF sources. Because of this, EMF levels at the fence of electrical substations containing high voltages and currents are considered "generally negligible".[71,72]

The strength of ELF-EMF present at the perimeter of a solar facility or near a PV system in a commercial or residential building is significantly lower than the typical American's average EMF exposure.[73,74] Researchers in Massachusetts measured magnetic fields at PV projects and found the magnetic fields dropped to very low levels of 0.5 mG or less, and in many cases to less than background levels (0.2 mG), at distances of no more than nine feet from the residential inverters and 150 feet from the utility-scale inverters.[75] Even when measured within a few feet of the utility-scale inverter, the ELF magnetic fields were well below the International Commission on Non-Ionizing Radiation Protection's recommended magnetic field level exposure limit for the general public of 2,000 mG.[76] It is typical that utility scale designs locate large inverters central to the PV panels that feed them because this minimizes the length of wire required and shields neighbors from the sound of the inverter's cooling fans. Thus, it is rare for a large PV inverter to be within 150 feet of the project's security fence.

Anyone relying on a medical device such as pacemaker or other implanted device to maintain proper heart rhythm may have concern about the potential for a solar project to interfere with the operation of his or her device. However, there is no reason for concern because the EMF outside of the solar facility's fence is less than 1/1000 of the level at which manufacturers test for ELF EMF interference, which is 1,000 mG.[77] Manufacturers of potentially affected implanted devices often provide advice on electromagnetic interference that includes avoiding letting the implanted device get too close to certain sources of fields such as some

household appliances, some walkie-talkies, and similar transmitting devices. Some manufacturers' literature does not mention high-voltage power lines, some say that exposure in public areas should not give interference, and some advise not spending extended periods of time close to power lines.[78]

3. Electric Shock and Arc Flash Hazards

There is a real danger of electric shock to anyone entering any of the electrical cabinets such as combiner boxes, disconnect switches, inverters, or transformers; or otherwise coming in contact with voltages over 50 Volts.[79] Another electrical hazard is an arc flash, which is an explosion of energy that can occur in a short circuit situation. This explosive release of energy causes a flash of heat and a shockwave, both of which can cause serious injury or death. Properly trained and equipped technicians and electricians know how to safely install, test, and repair PV systems, but there is always some risk of injury when hazardous voltages and/or currents are present. Untrained individuals should not attempt to inspect, test, or repair any aspect of a PV system due to the potential for injury or death due to electric shock and arc flash, The National Electric Code (NEC) requires appropriate levels of warning signs on all electrical components based on the level of danger determined by the voltages and current potentials. The national electric code also requires the site to be secured from unauthorized visitors with either a six-foot chain link fence with three strands of barbed wire or an eight-foot fence, both with adequate hazard warning signs.

4. Fire Safety

The possibility of fires resulting from or intensified by PV systems may trigger concern among the general public as well as among firefighters. However, concern over solar fire hazards should be limited because only a small portion of materials in the panels are flammable, and those components cannot self-support a significant fire. Flammable components of PV panels include the thin layers of polymer encapsulates surrounding the PV cells, polymer backsheets (framed panels only), plastic junction boxes on rear of panel, and insulation on wiring. The rest of the panel is composed of non-flammable components, notably including one or two layers of protective glass that make up over three quarters of the panel's weight.

Heat from a small flame is not adequate to ignite a PV panel, but heat from a more intense fire or energy from an electrical fault can ignite a PV panel.[80] One real-world example of this occurred during July 2015 in an arid area of California. Three acres of grass under a thin film PV facility burned without igniting the panels mounted on fixed-tilt racks just above the grass.[81] While it is possible for electrical faults in PV systems on homes or commercial buildings to start a fire, this is extremely rare.[82] Improving understanding of the PV-specific risks, safer system designs, and updated fire-related codes and standards will continue to reduce the risk of fire caused by PV systems.

PV systems on buildings can affect firefighters in two primary ways, 1) impact their methods of fighting the fire, and 2) pose safety hazard to the firefighters. One of the most important techniques that firefighters use to suppress fire is ventilation of a building's roof. This technique allows superheated toxic gases to quickly exit the building. By doing so, the firefighters gain easier and safer access to the building, Ventilation of the roof also makes the challenge of putting out the fire easier. However, the placement of rooftop PV panels may interfere with ventilating the roof by limiting access to desired venting locations.

New solar-specific building code requirements are working to minimize these concerns. Also, the

latest National Electric Code has added requirements that make it easier for first responders to safely and effectively turn off a PV system. Concern for firefighting a building with PV can be reduced with proper fire fighter training, system design, and installation. Numerous organizations have studied fire fighter safety related to PV. Many organizations have published valuable guides and training programs. Some notable examples are listed below.

- The International Association of Fire Fighters (IAFF) and International Renewable Energy Council (IREC) partnered to create an online training course that is far beyond the PowerPoint click-andview model. The self-paced online course, "Solar PV Safety for Fire Fighters," features rich video content and simulated environments so fire fighters can practice the knowledge they've learned. www.iaff.org/pvsafetytraining
- Photovoltaic Systems and the Fire Code: Office of NC Fire Marshal
- Fire Service Training, Underwriter's Laboratory
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- Bridging the Gap: Fire Safety & Green Buildings, National Association of State Fire Marshalls
- Guidelines for Fire Safety Elements of Solar Photovoltaic Systems, Orange County Fire Chiefs Association
- Solar Photovoltaic Installation Guidelines, California Department of Forestry & Fire Protection, Office of the State Fire Marshall
- PV Safety & Firefighting, Matthew Paiss, Homepower Magazine
- PV Safety and Code Development: Matthew Paiss, Cooperative Research Network

Summary

The purpose of this paper is to address and alleviate concerns of public health and safety for utility-scale solar PV projects. Concerns of public health and safety were divided and discussed in the four following sections: (1) Toxicity, (2) Electromagnetic Fields, (3) Electric Shock and Arc Flash, and (4) Fire. In each of these sections, the negative health and safety impacts of utility-scale PV development were shown to be negligible, while the public health and safety benefits of installing these facilities are significant and far outweigh any negative impacts.

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Solar Panels. Photo by Mariana Proenca on Unsplash

"Clean Energy in Michigan" Series, Number 12

Facts about solar panels: PFAS contamination

By Dr. Annick Anctil, Michigan State University

Q: Do solar panels contribute to PFAS contamination?

Multiple states have raised concerns about PFAS contamination from solar farms, largely citing academic research on how PFAS could *potentially* be used in photovoltaic (PV) solar panels.[1] The fact is that PFAS is *not* customarily used in solar panels because safer, effective alternatives have already been developed and commercialized. Moreover, no studies have shown the presence or leaching of PFAS from PV panels—either while they are in active use or at the end of their life (e.g., in a landfill).

Anatomy of a solar panel

These three parts of a solar panel cause confusion about the presence of PFAS.

Self-Cleaning Coat

A self-cleaning coating on the top of a solar panel helps reduce dust, pollen, and snow adhesion, extending both the power output and the lifetime of the panel.[2] Multiple self-cleaning coating options are available on the market, many of which make use of non-hazardous silicon-based chemistry.[3] Confusion comes from the fact that some other commercialized self-cleaning coating options do make use of PFAS-based chemicals, although even those do not degrade under normal use.

Adhesives

PV panels are sealed from the elements to maximize power output and lifetime. While PFAS chemicals are found in certain adhesives, such as carpentry glues, they are not typically used in sealant adhesives for solar panels.[4] Instead, solar adhesives are based on silicone polymers, which are well known for their lack of negative health impacts and remarkable stability.[5]

Substrate

PV modules are housed in a weather-resistant substrate that offers additional protection from the elements. Thin-film PV units use glass as the substrate, while crystalline silicon PV units use a polymer substrate, which has led to the rumors of

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Find this document and more about the project online at graham.umich.edu/climate-energy/energy-futures.

potential PFAS use in solar panels. The most common polymer used in silicon PV units is Tedlar, a weather resistant polymer that is *not* a PFAS compound itself and makes no use of PFAS during its manufacturing process.[6] Far more common materials, like those used in construction projects and weather resistant fabrics, present a higher risk of PFAS exposure than PV. In fact, a recent study found that these more common materials release PFAS under conditions where solar panels do not, indicating that PFAS exposure risk may be higher sitting on outdoor furniture, for example, than living next to a solar farm.[7]

What is PFAS anyway?

Per/Poly Fluoro-Alkyl Substances, PFAS for short, are a class of chemical compounds. PFAS are used in several industries for their unique properties, notably their ability to create coatings that are highly water repellent.

PFAS are extremely persistent within the environment, not breaking down over time. Certain PFAS compounds have been linked to human health issues–notably low infant birth weights, increased risk of certain cancers, and thyroid issues. As a result of their persistence and toxicity, those PFAS compounds that pose a significant risk have been banned from use and production, and subsequently replaced with safer alternatives.

It's important to note that not all PFAS compounds are dangerous. Some PFAS compounds, such as Teflon, are much more stable and present no risk to human health under normal conditions of use.[8]

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Health and Safety Impacts of Solar Photovoltaics:

A California-Focused Forward to the Health and Safety Impacts of Solar Photovoltaics white paper published by the N.C. Clean Energy Technology Center at North Carolina State University in May 2017

By: Thomas H. Cleveland, P.E., lead author of the North Carolina white paper
RE: Soscol Ferry Road Solar, a proposed 1.98 MW_{AC} PV facility in Napa, CA
Date: July 31, 2019

For the last several years North Carolina (NC) has trailed only California in the capacity of annual solar photovoltaic (PV) installed. For most of that time North Carolina's PV development was nearly entirely distribution-connected ground-mounted solar facilities, most commonly 5 MW_{AC} projects. More recently, North Carolina is developing a mixture of transmission-connected PV facilities between 20 and 75 MW_{AC} and distribution-connected facilities of 1 to 5 MW_{AC}, but still has relatively few commercial or residential PV projects. As the state quickly transitioned from zero utility-scale solar facilities to over 400 utility-scale solar facilities concerns about the health and safety impacts of photovoltaics were raised at countless public hearings across the state and in many meetings of state officials and regulators, including several NC general assembly committee meetings. These concerns led to several years of engagement on this topic by the NC Clean Energy Technology Center at North Carolina State University that resulted in a detailed, peer-reviewed university white paper on the latest scientific understanding regarding PV health and safety impacts, with a focus on North Carolina.

Naturally, there is also interest in the potential health and safety impacts of PV in California, where there is significantly more installed solar capacity than in North Carolina, in a mixture of residential, commercial, and small- and large-scale ground-mounted utility-scale solar projects. While there are massive similarities between the PV installations and their potential health and safety impacts in each state, there are some differences in policy, climate, industry practices, electricity regulation, and more that are worth highlighting. This forward is an attempt by the lead researcher and author of the North Carolina white paper to provide a supplement to the original paper that clearly demonstrates the applicability of the paper to PV in California and to offer California-specific supplements or modifications where the original paper had a North Carolina focus.

Most importantly, all the white paper's conclusions about the negligible negative health and safety impacts of photovoltaics apply fully in California, as well as anywhere in the United States. Similarly, there is nothing unique about the 1.98 MW_{AC} Soscol Ferry Road Solar project that would cause any health or safety impacts different than those discussed in the N.C. white paper.

Throughout the white paper there are instances of North Carolina-specific information, or issues where the situation in California is different than it is in North Carolina. The following is a list of the significant instances of either situation, in the order they appear in the white paper, along with the relevant California-specific information.

- Type of PV Technology Used: Crystalline silicon, Cadmium Telluride (CdTe), and CIGS are all being installed in California as they are in N.C. Since the publication of the N.C. report the author has confirmed the recent installation of utility-scale projects using CIGS modules, but these are still not common. Like in NC, the majority of the current PV installation capacity in California is crystalline silicon, also like NC these are generally Tier I modules. The Soscol Ferry Rd. project will use Tier I crystalline silicon modules.
- Design Wind Speed: The ASCE 7-2016 design wind speed in the vast majority of California, including in Napa County where the Soscol Ferry Road Solar project is located, is 90-95 MPH, which is much lower than the design wind speeds of hurricane-prone eastern N.C. where most PV development in the state is located. A few mountainous regions of California have design wind speeds over 100 MPG, however these extreme

terrains are unlikely to install ground-mounted PV systems.

- Offset Electricity Fuel Mix: The white paper includes a rough estimation that the fuel mix of the generators offset by PV energy production in N.C. is 90% natural gas and 10% coal. From this mix an estimate of the reduction in cadmium emissions due to PV was calculated. The 10% coal estimate is certainly too high for California. An offset fuel mix for California could be reasonably estimated as 100% natural gas, resulting in about 75% of the cadmium emissions savings calculated for NC.
- PV Module Recycling: The white paper included local reports from PV developers in North Carolina of recycling damaged PV modules. It is quite possible that the same is occurring in California, but the author does not have data on the current common waste management practices for damaged PV modules in California. The Electric Power Research Institute (EPRI) published two extensive reports on the Photovoltaic Module Recycling in the United States (April 2018) and Insights in Photovoltaic Recycling Processes in Europe (December 2017), which are great sources for current information on PV module recycling. The EPRI report on recycling in the U.S. states that there are commercial recyclers in the U.S. accepting and recycling PV modules, using processes not unlike those described in the white paper.
- PV Module Washing: Unlike North Carolina, many regions of California regularly experience long periods of time with little to no rain, which can result in enough accumulation of dirt on the PV modules that it justifies occasionally washing the modules to renew their performance. In North Carolina there is generally a heavy rain often enough to keep the panels clean enough to not require manual panel washing. This difference does not have an impact on the health or safety impact of the photovoltaic modules other than perhaps some increased risk of electric shock when washing the modules. Proper installation, maintenance, and washing techniques should reduce this risk to near zero.
- Vegetation Maintenance: The climate in many regions of California, including Napa County where the Soscol Ferry Road Solar project is located, cause the growth of vegetation requiring maintenance to be less vigorous than the vegetation in moist North Carolina. Thus, PV sites in California use similar vegetation maintenance techniques to North Carolina however they need to spend less time and make fewer trips to adequately maintain vegetation on site.
- California Hazardous Waste Policy:
    - As explained in the white paper, in the United States a waste material is considered hazardous waste if the results of a Toxicity Characteristic Leaching Procedure (TCLP) test find concentrations of any of 40 hazardous chemicals above the allowed EPA concentration limit for that chemical. However, in California, materials must additionally meet the more stringent Hazardous Waste Control Law (HWCL), which is like the Reduction of Hazardous Substances (ROHS) directive, adopted in February 2003 by the European Union (EU).[i]
    - In 2015, California passed SB-489 directing the CA DTSC (Department of Toxic Substances Control) to write rules to reclassify PV modules as universal waste, even if they fail TCLP. These rules exclude physically damaged, fractured, or fragmented PV modules that are no longer recognizable as PV modules.[ii] A primary goal of the legislation is to allow producers of waste PV modules to avoid difficult and costly waste determination procedures. In April 2019 the CA DTSC proposed rules to implement SB-489. After the public comment period that ended in June 2019 DTSC may adjust and adopt the rules.[iii]

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Health and Safety Impacts of Solar Photovoltaics

MAY 2017



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Health and Safety Impacts of Solar Photovoltaics

The increasing presence of utility-scale solar photovoltaic (PV) systems (sometimes referred to as solar farms) is a rather new development in North Carolina's landscape. Due to the new and unknown nature of this technology, it is natural for communities near such developments to be concerned about health and safety impacts. Unfortunately, the quick emergence of utility-scale solar has cultivated fertile grounds for myths and half-truths about the health impacts of this technology, which can lead to unnecessary fear and conflict.

Photovoltaic (PV) technologies and solar inverters are not known to pose any significant health dangers to their neighbors. The most important dangers posed are increased highway traffic during the relative short construction period and dangers posed to trespassers of contact with high voltage equipment. This latter risk is mitigated by signage and the security measures that industry uses to deter trespassing. As will be discussed in more detail below, risks of site contamination are much less than for most other industrial uses because PV technologies employ few toxic chemicals and those used are used in very small quantities. Due to the reduction in the pollution from fossil-fuel-fired electric generators, the overall impact of solar development on human health is overwhelmingly positive. This pollution reduction results from a partial replacement of fossil-fuel fired generation by emission-free PV-generated electricity, which reduces harmful sulfur dioxide (SO_2), nitrogen oxides (NO_x), and fine particulate matter ($PM_{2.5}$). Analysis from the National Renewable Energy Laboratory and the Lawrence Berkeley National Laboratory, both affiliates of the U.S. Department of Energy, estimates the health-related air quality benefits to the southeast region from solar PV generators to be worth 8.0 ¢ per kilowatt-hour of solar generation.[1] This is in addition to the value of the electricity and suggests that the air quality benefits of solar are worth more than the electricity itself.

Even though we have only recently seen large-scale installation of PV technologies, the technology and its potential impacts have been studied since the 1950s. A combination of this solar-specific research and general scientific research has led to the scientific community having a good understanding of the science behind potential health and safety impacts of solar energy. This paper utilizes the latest scientific literature and knowledge of solar practices in N.C. to address the health and safety risks associated with solar PV technology. These risks are extremely small, far less than those associated with common activities such as driving a car, and vastly outweighed by health benefits of the generation of clean electricity.

This paper addresses the potential health and safety impacts of solar PV development in North Carolina, organized into the following four categories:

(1) Hazardous Materials
(2) Electromagnetic Fields (EMF)
(3) Electric Shock and Arc Flash
(4) Fire Safety

1. Hazardous Materials

One of the more common concerns towards solar is that the panels (referred to as "modules" in the solar industry) consist of toxic materials that endanger public health. However, as shown in this section, solar energy systems may contain small amounts of toxic materials, but these materials do not endanger public health. To understand potential toxic hazards coming from a solar project, one must understand system installation, materials used, the panel end-of-life protocols, and system operation. This section will examine these aspects of a solar farm and the potential for toxicity impacts in the following subsections:

(1.2) Project Installation/Construction
(1.2) System Components
    1.2.1 Solar Panels: Construction and Durability
    1.2.2 Photovoltaic technologies
        (a) Crystalline Silicon
        (b) Cadmium Telluride (CdTe)
        (c) CIS/CIGS
    1.2.3 Panel End of Life Management
    1.2.4 Non-panel System Components
(1.3) Operations and Maintenance

1.1 Project Installation/Construction

The system installation, or construction, process does not require toxic chemicals or processes. The site is mechanically cleared of large vegetation, fences are constructed, and the land is surveyed to layout exact installation locations. Trenches for underground wiring are dug and support posts are driven into the ground. The solar panels are bolted to steel and aluminum support structures and wired together. Inverter pads are installed, and an inverter and transformer are installed on each pad. Once everything is connected, the system is tested, and only then turned on.



Figure 1: Utility-scale solar facility (5 MW_{AC}) located in Catawba County. Source: Strata Solar

1.2 System Components

1.2.1 Solar Panels: Construction and Durability

Solar PV panels typically consist of glass, polymer, aluminum, copper, and semiconductor materials that can be recovered and recycled at the end of their useful life.[2] Today there are two PV technologies used in PV panels at utility-scale solar facilities, silicon, and thin film. As of 2016, all thin film used in North Carolina solar facilities are cadmium telluride (CdTe) panels from the US manufacturer First Solar, but there are other thin film PV panels available on the market, such as Solar Frontier's CIGS panels. Crystalline silicon technology consists of silicon wafers which are made into cells and assembled into panels, thin film technologies consist of thin layers of semiconductor material deposited onto glass, polymer or metal substrates. While there are differences in the components and manufacturing processes of these two types of solar technologies, many aspects of their PV panel construction are very similar. Specifics about each type of PV chemistry as it relates to toxicity are covered in subsections a, b, and c in section 1.2.2; on crystalline silicon, cadmium telluride, and CIS/CIGS respectively. The rest of this section applies equally to both silicon and thin film panels.

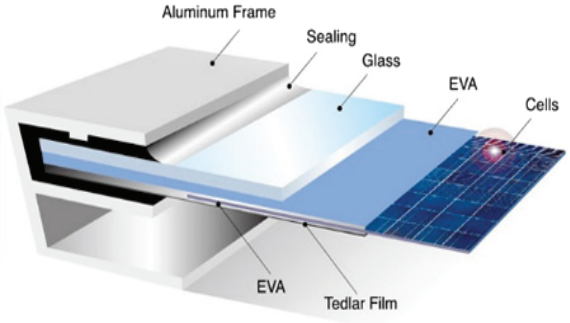


Figure 2: Components of crystalline silicon panels. The vast majority of silicon panels consist of a glass sheet on the topside with an aluminum frame providing structural support. Image Source: www.riteksolar.com.tw

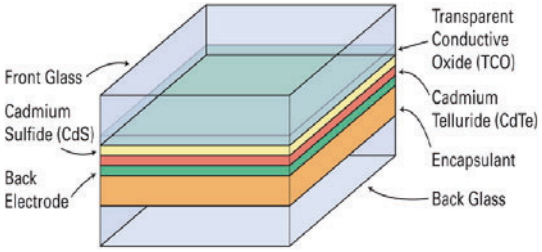


Figure 3: Layers of a common frameless thin-film panel (CdTe). Many thin film panels are frameless, including the most common thin-film panels, First Solar's CdTe. Frameless panels have protective glass on both the front and back of the panel. Layer thicknesses not to scale. Image Source: www.homepower.com

To provide decades of corrosion-free operation, PV cells in PV panels are encapsulated from air and moisture between two layers of plastic. The encapsulation layers are protected on the top with a layer of tempered glass and on the backside with a polymer sheet. Frameless modules include a protective layer of glass on the rear of the panel, which may also be tempered. The plastic ethylene-vinyl acetate (EVA) commonly provides the cell encapsulation. For decades, this same material has been used between layers of tempered glass to give car windshields and hurricane windows their great strength. In the same way that a car windshield cracks but stays intact, the EVA layers in PV panels keep broken panels intact (see Figure 4). Thus, a damaged module does not generally create small pieces of debris; instead, it largely remains together as one piece.



Figure 4: The mangled PV panels in this picture illustrate the nature of broken solar panels; the glass cracks but the panel is still in one piece. Image Source: http://img.alibaba.com/photo/115259576/broken_solar_panel.jpg

PV panels constructed with the same basic components as modern panels have been installed across the globe for well over thirty years.[3] The long-term durability and performance demonstrated over these decades, as well as the results of accelerated lifetime testing, helped lead to an industry-standard 25-year power production warranty for PV panels. These power warranties warrant a PV panel to produce at least 80% of their original nameplate production after 25 years of use. A recent SolarCity and DNV GL study reported that today's quality PV panels should be expected to reliably and efficiently produce power for thirty-five years.[4]

Local building codes require all structures, including ground mounted solar arrays, to be engineered to withstand anticipated wind speeds, as defined by the local wind speed requirements. Many racking products are available in versions engineered for wind speeds of up to 150 miles per hour, which is significantly higher than the wind speed requirement anywhere in North Carolina. The strength of PV mounting structures were demonstrated during Hurricane Sandy in 2012 and again during Hurricane Matthew in 2016. During Hurricane Sandy, the many large-scale solar facilities in New Jersey and New York at that time suffered only minor damage.[5] In the fall of 2016, the US and Caribbean experienced destructive winds and torrential rains from Hurricane Matthew, yet one leading solar tracker manufacturer reported that their numerous systems in the impacted area received zero damage from wind or flooding.[6]

In the event of a catastrophic event capable of damaging solar equipment, such as a tornado, the system will almost certainly have property insurance that will cover the cost to cleanup and repair the project. It is in the best interest of the system owner to protect their investment against such risks. It is also in their interest to get the project repaired and producing full power as soon as possible. Therefore, the investment in adequate insurance is a wise business practice for the system owner. For the same

reasons, adequate insurance coverage is also generally a requirement of the bank or firm providing financing for the project.

1.2.2 Photovoltaic (PV) Technologies

a. Crystalline Silicon

This subsection explores the toxicity of silicon-based PV panels and concludes that they do not pose a material risk of toxicity to public health and safety. Modern crystalline silicon PV panels, which account for over 90% of solar PV panels installed today, are, more or less, a commodity product. The overwhelming majority of panels installed in North Carolina are crystalline silicon panels that are informally classified as Tier I panels. Tier I panels are from well-respected manufacturers that have a good chance of being able to honor warranty claims. Tier I panels are understood to be of high quality, with predictable performance, durability, and content. Well over 80% (by weight) of the content of a PV panel is the tempered glass front and the aluminum frame, both of which are common building materials. Most of the remaining portion are common plastics, including polyethylene terephthalate in the backsheet, EVA encapsulation of the PV cells, polyphenyl ether in the junction box, and polyethylene insulation on the wire leads. The active, working components of the system are the silicon photovoltaic cells, the small electrical leads connecting them together, and to the wires coming out of the back of the panel. The electricity generating and conducting components makeup less than 5% of the weight of most panels. The PV cell itself is nearly 100% silicon, and silicon is the second most common element in the Earth's crust. The silicon for PV cells is obtained by high-temperature processing of quartz sand (SiO_2) that removes its oxygen molecules. The refined silicon is converted to a PV cell by adding extremely small amounts of boron and phosphorus, both of which are common and of very low toxicity.

The other minor components of the PV cell are also generally benign; however, some contain lead, which is a human toxicant that is particularly harmful to young children. The minor components include an extremely thin antireflective coating (silicon nitride or titanium dioxide), a thin layer of aluminum on the rear, and thin strips of silver alloy that are screen-printed on the front and rear of cell.[7] In order for the front and rear electrodes to make effective electrical contact with the proper layer of the PV cell, other materials (called glass frit) are mixed with the silver alloy and then heated to etch the metals into the cell. This glass frit historically contains a small amount of lead (Pb) in the form of lead oxide. The 60 or 72 PV cells in a PV panel are connected by soldering thin solder-covered copper tabs from the back of one cell to the front of the next cell. Traditionally a tin-based solder containing some lead (Pb) is used, but some manufacturers have switched to lead-free solder. The glass frit and/or the solder may contain trace amounts of other metals, potentially including some with human toxicity such as cadmium. However, testing to simulate the potential for leaching from broken panels, which is discussed in more detail below, did not find a potential toxicity threat from these trace elements. Therefore, the tiny amount of lead in the grass frit and the solder is the only part of silicon PV panels with a potential to create a negative health impact. However, as described below, the very limited amount of lead involved and its strong physical and chemical attachment to other components of the PV panel means that even in worst-case scenarios the health hazard it poses is insignificant.

As with many electronic industries, the solder in silicon PV panels has historically been a lead-based solder, often 36% lead, due to the superior properties of such solder. However, recent advances in lead-free solders have spurred a trend among PV panel manufacturers to reduce or remove the lead in their panels. According to the 2015 Solar Scorecard from the Silicon Valley Toxics Coalition, a group that tracks environmental responsibility of photovoltaic panel manufacturers, fourteen companies (increased from twelve companies in 2014) manufacture PV panels certified to meet the European Restriction of

Hazardous Substances (RoHS) standard. This means that the amount of cadmium and lead in the panels they manufacture fall below the RoHS thresholds, which are set by the European Union and serve as the world's de facto standard for hazardous substances in manufactured goods.[8] The Restriction of Hazardous Substances (RoHS) standard requires that the maximum concentration found in any homogenous material in a produce is less than 0.01% cadmium and less than 0.10% lead, therefore, any solder can be no more than 0.10% lead.[9]

While some manufacturers are producing PV panels that meet the RoHS standard, there is no requirement that they do so because the RoHS Directive explicitly states that the directive does not apply to photovoltaic panels.[10] The justification for this is provided in item 17 of the current RoHS Directive: "The development of renewable forms of energy is one of the Union's key objectives, and the contribution made by renewable energy sources to environmental and climate objectives is crucial. Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources (4) recalls that there should be coherence between those objectives and other Union environmental legislation. Consequently, this Directive should not prevent the development of renewable energy technologies that have no negative impact on health and the environment and that are sustainable and economically viable."

The use of lead is common in our modern economy. However, only about 0.5% of the annual lead consumption in the U.S. is for electronic solder for all uses; PV solder makes up only a tiny portion of this 0.5%. Close to 90% of lead consumption in the US is in batteries, which do not encapsulate the pounds of lead contained in each typical automotive battery. This puts the lead in batteries at great risk of leaching into the environment. Estimates for the lead in a single PV panel with lead-based solder range from 1.6 to 24 grams of lead, with 13g (less than half of an ounce) per panel seen most often in the literature.[11] At 13 g/panel[12], each panel contains one-half of the lead in a typical 12-gauge shotgun shell. This amount equates to roughly 1/750th of the lead in a single car battery. In a panel, it is all durably encapsulated from air or water for the full life of the panel.[14]

As indicated by their 20 to 30-year power warranty, PV modules are designed for a long service life, generally over 25 years. For a panel to comply with its 25-year power warranty, its internal components, including lead, must be sealed from any moisture. Otherwise, they would corrode and the panel's output would fall below power warranty levels. Thus, the lead in operating PV modules is not at risk of release to the environment during their service lifetime. In extreme experiments, researchers have shown that lead can leach from crushed or pulverized panels.[15, 16] However, more real-world tests designed to represent typical trash compaction that are used to classify waste as hazardous or non-hazardous show no danger from leaching.[17, 18] For more information about PV panel end-of-life, see the Panel Disposal section.

As illustrated throughout this section, silicon-based PV panels do not pose a material threat to public health and safety. The only aspect of the panels with potential toxicity concerns is the very small amount of lead in some panels. However, any lead in a panel is well sealed from environmental exposure for the operating lifetime of the solar panel and thus not at risk of release into the environment.

b. Cadmium Telluride (CdTe) PV Panels

This subsection examines the components of a cadmium telluride (CdTe) PV panel. Research demonstrates that they pose negligible toxicity risk to public health and safety while significantly reducing the public's exposure to cadmium by reducing coal emissions. As of mid-2016, a few hundred MWs of

cadmium telluride (CdTe) panels, all manufactured by the U.S. company First Solar, have been installed in North Carolina.

Questions about the potential health and environmental impacts from the use of this PV technology are related to the concern that these panels contain cadmium, a toxic heavy metal. However, scientific studies have shown that cadmium telluride differs from cadmium due to its high chemical and thermal stability.[19] Research has shown that the tiny amount of cadmium in these panels does not pose a health or safety risk.[20] Further, there are very compelling reasons to welcome its adoption due to reductions in unhealthy pollution associated with burning coal. Every GWh of electricity generated by burning coal produces about 4 grams of cadmium air emissions.[21] Even though North Carolina produces a significant fraction of our electricity from coal, electricity from solar offsets much more natural gas than coal due to natural gas plants being able to adjust their rate of production more easily and quickly. If solar electricity offsets 90% natural gas and 10% coal, each 5-megawatt (5 MW_{AC}, which is generally 7 MW_{DC}) CdTe solar facility in North Carolina keeps about 157 grams, or about a third of a pound, of cadmium *out of* our environment.[22, 23]

Cadmium is toxic, but all the approximately 7 grams of cadmium in one CdTe panel is in the form of a chemical compound cadmium telluride,[24] which has $1/100^{th}$ the toxicity of free cadmium.[25] Cadmium telluride is a very stable compound that is non-volatile and non-soluble in water. Even in the case of a fire, research shows that less than 0.1% of the cadmium is released when a CdTe panel is exposed to fire. The fire melts the glass and encapsulates over 99.9% of the cadmium in the molten glass.[27]

It is important to understand the source of the cadmium used to manufacture CdTe PV panels. The cadmium is a byproduct of zinc and lead refining. The element is collected from emissions and waste streams during the production of these metals and combined with tellurium to create the CdTe used in PV panels. If the cadmium were not collected for use in the PV panels or other products, it would otherwise either be stockpiled for future use, cemented and buried, or disposed of.[28] Nearly all the cadmium in old or broken panels can be recycled which can eventually serve as the primary source of cadmium for new PV panels.[29]

Similar to silicon-based PV panels, CdTe panels are constructed of a tempered glass front, one instead of two clear plastic encapsulation layers, and a rear heat strengthened glass backing (together >98% by weight). The final product is built to withstand exposure to the elements without significant damage for over 25 years. While not representative of damage that may occur in the field or even at a landfill, laboratory evidence has illustrated that when panels are ground into a fine powder, very acidic water is able to leach portions of the cadmium and tellurium,[30] similar to the process used to recycle CdTe panels. Like many silicon-based panels, CdTe panels are reported (as far back ask 1998[31]) to pass the EPA's Toxic Characteristic Leaching Procedure (TCLP) test, which tests the potential for crushed panels in a landfill to leach hazardous substances into groundwater.[32] Passing this test means that they are classified as non-hazardous waste and can be deposited in landfills.[33, 34] For more information about PV panel end-of-life, see the Panel Disposal section.

There is also concern of environmental impact resulting from potential catastrophic events involving CdTe PV panels. An analysis of worst-case scenarios for environmental impact from CdTe PV panels, including earthquakes, fires, and floods, was conducted by the University of Tokyo in 2013. After reviewing the extensive international body of research on CdTe PV technology, their report concluded, "Even in the worst-case scenarios, it is unlikely that the Cd concentrations in air and sea water will exceed the environmental regulation values."[35] In a worst-case scenario of damaged panels abandoned on the ground, insignificant amounts of cadmium will leach from the panels. This is because this scenario is

much less conducive (larger module pieces, less acidity) to leaching than the conditions of the EPA's TCLP test used to simulate landfill conditions, which CdTe panels pass.[36]

First Solar, a U.S. company, and the only significant supplier of CdTe panels, has a robust panel take-back and recycling program that has been operating commercially since 2005.[37] The company states that it is "committed to providing a commercially attractive recycling solution for photovoltaic (PV) power plant and module owners to help them meet their module (end of life) EOL obligation simply, cost-effectively and responsibly." First Solar global recycling services to their customers to collect and recycle panels once they reach the end of productive life whether due to age or damage. These recycling service agreements are structured to be financially attractive to both First Solar and the solar panel owner. For First Solar, the contract provides the company with an affordable source of raw materials needed for new panels and presumably a diminished risk of undesired release of Cd. The contract also benefits the solar panel owner by allowing them to avoid tipping fees at a waste disposal site. The legal contract helps provide peace of mind by ensuring compliance by both parties when considering the continuing trend of rising disposal costs and increasing regulatory requirements.

c. CIS/CIGS and other PV technologies

Copper indium gallium selenide PV technology, often referred to as CIGS, is the second most common type of thin-film PV panel but a distant second behind CdTe. CIGS cells are composed of a thin layer of copper, indium, gallium, and selenium on a glass or plastic backing. None of these elements are very toxic, although selenium is a regulated metal under the Federal Resource Conservation and Recovery Act (RCRA).[38] The cells often also have an extremely thin layer of cadmium sulfide that contains a tiny amount of cadmium, which is toxic. The promise of high efficiency CIGS panels drove heavy investment in this technology in the past. However, researchers have struggled to transfer high efficiency success in the lab to low-cost full-scale panels in the field.[39] Recently, a CIGS manufacturer based in Japan, Solar Frontier, has achieved some market success with a rigid, glass-faced CIGS module that competes with silicon panels. Solar Frontier produces the majority of CIS panels on the market today.[40] Notably, these panels are RoHS compliant,[41] thus meeting the rigorous toxicity standard adopted by the European Union even thought this directive exempts PV panels. The authors are unaware of any completed or proposed utility-scale system in North Carolina using CIS/CIGS panels.

1.2.3 Panel End-of-Life Management

Concerns about the volume, disposal, toxicity, and recycling of PV panels are addressed in this subsection. To put the volume of PV waste into perspective, consider that by 2050, when PV systems installed in 2020 will reach the end of their lives, it is estimated that the global annual PV panel waste tonnage will be 10% of the 2014 global e-waste tonnage.[42] In the U.S., end-of-life disposal of solar products is governed by the Federal Resource Conservation and Recovery Act (RCRA), as well as state policies in some situations. RCRA separates waste into hazardous (not accepted at ordinary landfill) and solid waste (generally accepted at ordinary landfill) based on a series of rules. According to RCRA, the way to determine if a PV panel is classified as hazardous waste is the Toxic Characteristic Leaching Procedure (TCLP) test. This EPA test is designed to simulate landfill disposal and determine the risk of hazardous substances leaching out of the landfill.[43,44,45] Multiple sources report that most modern PV panels (both crystalline silicon and cadmium telluride) pass the TCLP test.[46,47] Some studies found that some older (1990s) crystalline silicon panels, and perhaps some newer crystalline silicon panels (specifics are not given about vintage of panels tested), do not pass the lead (Pb) leachate limits in the TCLP test.[48,49]

The test begins with the crushing of a panel into centimeter-sized pieces. The pieces are then mixed in an acid bath. After tumbling for eighteen hours, the fluid is tested for forty hazardous substances that all must be below specific threshold levels to pass the test. Research comparing TCLP conditions to conditions of damaged panels in the field found that simulated landfill conditions provide overly conservative estimates of leaching for field-damaged panels.[50] Additionally, research in Japan has found no detectable Cd leaching from cracked CdTe panels when exposed to simulated acid rain.[51]

Although modern panels can generally be landfilled, they can also be recycled. Even though recent waste volume has not been adequate to support significant PV-specific recycling infrastructure, the existing recycling industry in North Carolina reports that it recycles much of the current small volume of broken PV panels. In an informal survey conducted by the NC Clean Energy Technology Center survey in early 2016, seven of the eight large active North Carolina utility-scale solar developers surveyed reported that they send damaged panels back to the manufacturer and/or to a local recycler. Only one developer reported sending damaged panels to the landfill.

The developers reported at that time that they are usually paid a small amount per panel by local recycling firms. In early 2017, a PV developer reported that a local recycler was charging a small fee per panel to recycle damaged PV panels. The local recycling firm known to authors to accept PV panels described their current PV panel recycling practice as of early 2016 as removing the aluminum frame for local recycling and removing the wire leads for local copper recycling. The remainder of the panel is sent to a facility for processing the non-metallic portions of crushed vehicles, referred to as "fluff" in the recycling industry.[52] This processing within existing general recycling plants allows for significant material recovery of major components, including glass which is 80% of the module weight, but at lower yields than PV-specific recycling plants. Notably almost half of the material value in a PV panel is in the few grams of silver contained in almost every PV panel produced today. In the long-term, dedicated PV panel recycling plants can increase treatment capacities and maximize revenues resulting in better output quality and the ability to recover a greater fraction of the useful materials.[53] PV-specific panel recycling technologies have been researched and implemented to some extent for the past decade, and have been shown to be able to recover over 95% of PV material (semiconductor) and over 90% of the glass in a PV panel.[54]

A look at global PV recycling trends hints at the future possibilities of the practice in our country. Europe installed MW-scale volumes of PV years before the U.S. In 2007, a public-private partnership between the European Union and the solar industry set up a voluntary collection and recycling system called PV CYCLE. This arrangement was later made mandatory under the EU's WEEE directive, a program for waste electrical and electronic equipment.[55] Its member companies (PV panel producers) fully finance the association. This makes it possible for end-users to return the member companies' defective panels for recycling at any of the over 300 collection points around Europe without added costs. Additionally, PV CYCLE will pick up batches of 40 or more used panels at no cost to the user. This arrangement has been very successful, collecting and recycling over 13,000 tons by the end of 2015.[56]

In 2012, the WEEE Directive added the end-of-life collection and recycling of PV panels to its scope.[57] This directive is based on the principle of extended-producer-responsibility. It has a global impact because producers that want to sell into the EU market are legally responsible for end-of-life management. Starting in 2018, this directive targets that 85% of PV products "put in the market" in Europe are recovered and 80% is prepared for reuse and recycling.

The success of the PV panel collection and recycling practices in Europe provides promise for the future of recycling in the U.S. In mid-2016, the US Solar Energy Industry Association (SEIA) announced that they are starting a national solar panel recycling program with the guidance and support of many

leading PV panel producers.[58] The program will aggregate the services offered by recycling vendors and PV manufacturers, which will make it easier for consumers to select a cost-effective and environmentally responsible end-of-life management solution for their PV products. According to SEIA, they are planning the program in an effort to make the entire industry landfill-free. In addition to the national recycling network program, the program will provide a portal for system owners and consumers with information on how to responsibly recycle their PV systems.

While a cautious approach toward the potential for negative environmental and/or health impacts from retired PV panels is fully warranted, this section has shown that the positive health impacts of reduced emissions from fossil fuel combustion from PV systems more than outweighs any potential risk. Testing shows that silicon and CdTe panels are both safe to dispose of in landfills, and are also safe in worst case conditions of abandonment or damage in a disaster. Additionally, analysis by local engineers has found that the current salvage value of the equipment in a utility scale PV facility generally exceeds general contractor estimates for the cost to remove the entire PV system.[59, 60, 61]

1.2.4 Non-Panel System Components (racking, wiring, inverter, transformer)

While previous toxicity subsections discussed PV panels, this subsection describes the non-panel components of utility-scale PV systems and investigates any potential public health and safety concerns. The most significant non-panel component of a ground-mounted PV system is the mounting structure of the rows of panels, commonly referred to as "racking". The vertical post portion of the racking is galvanized steel and the remaining above-ground racking components are either galvanized steel or aluminum, which are both extremely common and benign building materials. The inverters that make the solar generated electricity ready to send to the grid have weather-proof steel enclosures that protect the working components from the elements. The only fluids that they might contain are associated with their cooling systems, which are not unlike the cooling system in a computer. Many inverters today are RoHS compliant.

The electrical transformers (to boost the inverter output voltage to the voltage of the utility connection point) do contain a liquid cooling oil. However, the fluid used for that function is either a non-toxic mineral oil or a biodegradable non-toxic vegetable oil, such as BIOTEMP from ABB. These vegetable transformer oils have the additional advantage of being much less flammable than traditional mineral oils. Significant health hazards are associated with old transformers containing cooling oil with toxic PCBs. Transfers with PCB-containing oil were common before PCBs were outlawed in the U.S. in 1979. PCBs still exist in older transformers in the field across the country.

Other than a few utility research sites, there are no batteries on- or off-site associated with utility-scale solar energy facilities in North Carolina, avoiding any potential health or safety concerns related to battery technologies. However, as battery technologies continue to improve and prices continue to decline we are likely to start seeing some batteries at solar facilities. Lithium ion batteries currently dominate the world utility-scale battery market, which are not very toxic. No non-panel system components were found to pose any health or environmental dangers.

1.4 Operations and Maintenance – Panel Washing and Vegetation Control

Throughout the eastern U.S., the climate provides frequent and heavy enough rain to keep panels adequately clean. This dependable weather pattern eliminates the need to wash the panels on a regular basis. Some system owners may choose to wash panels as often as once a year to increase production, but most in N.C. do not regularly wash any PV panels. Dirt build up over time may justify panel washing a few times over the panels' lifetime; however, nothing more than soap and water are required for this activity.

The maintenance of ground-mounted PV facilities requires that vegetation be kept low, both for aesthetics and to avoid shading of the PV panels. Several approaches are used to maintain vegetation at NC solar facilities, including planting of limited-height species, mowing, weed-eating, herbicides, and grazing livestock (sheep). The following descriptions of vegetation maintenance practices are based on interviews with several solar developers as well as with three maintenance firms that together are contracted to maintain well over 100 of the solar facilities in N.C. The majority of solar facilities in North Carolina maintain vegetation primarily by mowing. Each row of panels has a single row of supports, allowing sickle mowers to mow under the panels. The sites usually require mowing about once a month during the growing season. Some sites employ sheep to graze the site, which greatly reduces the human effort required to maintain the vegetation and produces high quality lamb meat.[62]

In addition to mowing and weed eating, solar facilities often use some herbicides. Solar facilities generally do not spray herbicides over the entire acreage; rather they apply them only in strategic locations such as at the base of the perimeter fence, around exterior vegetative buffer, on interior dirt roads, and near the panel support posts. Also unlike many row crop operations, solar facilities generally use only general use herbicides, which are available over the counter, as opposed to restricted use herbicides commonly used in commercial agriculture that require a special restricted use license. The herbicides used at solar facilities are primarily 2-4-D and glyphosate (Round-up®), which are two of the most common herbicides used in lawns, parks, and agriculture across the country. One maintenance firm that was interviewed sprays the grass with a class of herbicide known as a growth regulator in order to slow the growth of grass so that mowing is only required twice a year. Growth regulators are commonly used on highway roadsides and golf courses for the same purpose. A commercial pesticide applicator license is required for anyone other than the landowner to apply herbicides, which helps ensure that all applicators are adequately educated about proper herbicide use and application. The license must be renewed annually and requires passing of a certification exam appropriate to the area in which the applicator wishes to work. Based on the limited data available, it appears that solar facilities in N.C. generally use significantly less herbicides per acre than most commercial agriculture or lawn maintenance services.

2. Electromagnetic Fields (EMF)

PV systems do not emit any material during their operation; however, they do generate electromagnetic fields (EMF), sometimes referred to as radiation. EMF produced by electricity is non-ionizing radiation, meaning the radiation has enough energy to move atoms in a molecule around (experienced as heat), but not enough energy to remove electrons from an atom or molecule (ionize) or to damage DNA. As shown below, modern humans are all exposed to EMF throughout our daily lives without negative health impact. Someone outside of the fenced perimeter of a solar facility is not exposed to significant EMF from the solar facility. Therefore, there is no negative health impact from the EMF

produced in a solar farm. The following paragraphs provide some additional background and detail to support this conclusion.

Since the 1970s, some have expressed concern over potential health consequences of EMF from electricity, but no studies have ever shown this EMF to cause health problems.[63] These concerns are based on some epidemiological studies that found a slight increase in childhood leukemia associated with average exposure to residential power-frequency magnetic fields above 0.3 to 0.4 μT (microteslas) (equal to 3.0 to 4.0 mG (milligauss)). μT and mG are both units used to measure magnetic field strength. For comparison, the average exposure for people in the U.S. is one mG or 0.1 μT, with about 1% of the population with an average exposure in excess of 0.4 μT (or 4 mG).[64] These epidemiological studies, which found an association but not a causal relationship, led the World Health Organization's International Agency for Research on Cancer (IARC) to classify ELF magnetic fields as "possibly carcinogenic to humans". Coffee also has this classification. This classification means there is limited evidence but not enough evidence to designate as either a "probable carcinogen" or "human carcinogen". Overall, there is very little concern that ELF EMF damages public health. The only concern that does exist is for long-term exposure above 0.4 μT (4 mG) that may have some connection to increased cases of childhood leukemia. In 1997, the National Academies of Science were directed by Congress to examine this concern and concluded:

> "Based on a comprehensive evaluation of published studies relating to the effects of power-frequency electric and magnetic fields on cells, tissues, and organisms (including humans), the conclusion of the committee is that the current body of evidence does not show that exposure to these fields presents a human-health hazard. Specifically, no conclusive and consistent evidence shows that exposures to residential electric and magnetic fields produce cancer, adverse neurobehavioral effects, or reproductive and developmental effects."[65]

There are two aspects to electromagnetic fields, an electric field and a magnetic field. The electric field is generated by voltage and the magnetic field is generated by electric current, i.e., moving electrons. A task group of scientific experts convened by the World Health Organization (WHO) in 2005 concluded that there were no substantive health issues related to *electric* fields (0 to 100,000 Hz) at levels generally encountered by members of the public.[66] The relatively low voltages in a solar facility and the fact that electric fields are easily shielded (i.e., blocked) by common materials, such as plastic, metal, or soil means that there is no concern of negative health impacts from the electric fields generated by a solar facility. Thus, the remainder of this section addresses magnetic fields. Magnetic fields are not shielded by most common materials and thus can easily pass through them. Both types of fields are strongest close to the source of electric generation and weaken quickly with distance from the source.

The direct current (DC) electricity produced by PV panels produce stationary (0 Hz) electric and magnetic fields. Because of minimal concern about potential risks of stationary fields, little scientific research has examined stationary fields' impact on human health.[67] In even the largest PV facilities, the DC voltages and currents are not very high. One can illustrate the weakness of the EMF generated by a PV panel by placing a compass on an operating solar panel and observing that the needle still points north.

While the electricity throughout the majority of a solar site is DC electricity, the inverters convert this DC electricity to alternating current (AC) electricity matching the 60 Hz frequency of the grid. Therefore, the inverters and the wires delivering this power to the grid are producing non-stationary EMF, known as extremely low frequency (ELF) EMF, normally oscillating with a frequency of 60 Hz. This frequency is at the low-energy end of the electromagnetic spectrum. Therefore, it has less energy than

other commonly encountered types of non-ionizing radiation like radio waves, infrared radiation, and visible light.

The wide use of electricity results in background levels of ELF EMFs in nearly all locations where people spend time – homes, workplaces, schools, cars, the supermarket, etc. A person's average exposure depends upon the sources they encounter, how close they are to them, and the amount of time they spend there.[68] As stated above, the average exposure to magnetic fields in the U.S. is estimated to be around one mG or 0.1 μT, but can vary considerably depending on a person's exposure to EMF from electrical devices and wiring.[69] At times we are often exposed to much higher ELF magnetic fields, for example when standing three feet from a refrigerator the ELF magnetic field is 6 mG and when standing three feet from a microwave oven the field is about 50 mG.[70] The strength of these fields diminish quickly with distance from the source, but when surrounded by electricity in our homes and other buildings moving away from one source moves you closer to another. However, unless you are inside of the fence at a utility-scale solar facility or electrical substation it is impossible to get very close to the EMF sources. Because of this, EMF levels at the fence of electrical substations containing high voltages and currents are considered "generally negligible".[71, 72]

The strength of ELF-EMF present at the perimeter of a solar facility or near a PV system in a commercial or residential building is significantly lower than the typical American's average EMF exposure.[73, 74] Researchers in Massachusetts measured magnetic fields at PV projects and found the magnetic fields dropped to very low levels of 0.5 mG or less, and in many cases to less than background levels (0.2 mG), at distances of no more than nine feet from the residential inverters and 150 feet from the utility-scale inverters.[75] Even when measured within a few feet of the utility-scale inverter, the ELF magnetic fields were well below the International Commission on Non-Ionizing Radiation Protection's recommended magnetic field level exposure limit for the general public of 2,000 mG.[76] It is typical that utility scale designs locate large inverters central to the PV panels that feed them because this minimizes the length of wire required and shields neighbors from the sound of the inverter's cooling fans. Thus, it is rare for a large PV inverter to be within 150 feet of the project's security fence.

Anyone relying on a medical device such as pacemaker or other implanted device to maintain proper heart rhythm may have concern about the potential for a solar project to interfere with the operation of his or her device. However, there is no reason for concern because the EMF outside of the solar facility's fence is less than 1/1000 of the level at which manufacturers test for ELF EMF interference, which is 1,000 mG.[77] Manufacturers of potentially affected implanted devices often provide advice on electromagnetic interference that includes avoiding letting the implanted device get too close to certain sources of fields such as some household appliances, some walkie-talkies, and similar transmitting devices. Some manufacturers' literature does not mention high-voltage power lines, some say that exposure in public areas should not give interference, and some advise not spending extended periods of time close to power lines.[78]

3. Electric Shock and Arc Flash Hazards

There is a real danger of electric shock to anyone entering any of the electrical cabinets such as combiner boxes, disconnect switches, inverters, or transformers; or otherwise coming in contact with voltages over 50 Volts.[79] Another electrical hazard is an arc flash, which is an explosion of energy that can occur in a short circuit situation. This explosive release of energy causes a flash of heat and a shockwave, both of which can cause serious injury or death. Properly trained and equipped technicians and electricians know how to safely install, test, and repair PV systems, but there is always some risk of

injury when hazardous voltages and/or currents are present. Untrained individuals should not attempt to inspect, test, or repair any aspect of a PV system due to the potential for injury or death due to electric shock and arc flash, The National Electric Code (NEC) requires appropriate levels of warning signs on all electrical components based on the level of danger determined by the voltages and current potentials. The national electric code also requires the site to be secured from unauthorized visitors with either a six-foot chain link fence with three strands of barbed wire or an eight-foot fence, both with adequate hazard warning signs.

4. Fire Safety

The possibility of fires resulting from or intensified by PV systems may trigger concern among the general public as well as among firefighters. However, concern over solar fire hazards should be limited because only a small portion of materials in the panels are flammable, and those components cannot self-support a significant fire. Flammable components of PV panels include the thin layers of polymer encapsulates surrounding the PV cells, polymer backsheets (framed panels only), plastic junction boxes on rear of panel, and insulation on wiring. The rest of the panel is composed of non-flammable components, notably including one or two layers of protective glass that make up over three quarters of the panel's weight.

Heat from a small flame is not adequate to ignite a PV panel, but heat from a more intense fire or energy from an electrical fault can ignite a PV panel.[80] One real-world example of this occurred during July 2015 in an arid area of California. Three acres of grass under a thin film PV facility burned without igniting the panels mounted on fixed-tilt racks just above the grass.[81] While it is possible for electrical faults in PV systems on homes or commercial buildings to start a fire, this is extremely rare.[82] Improving understanding of the PV-specific risks, safer system designs, and updated fire-related codes and standards will continue to reduce the risk of fire caused by PV systems.

PV systems on buildings can affect firefighters in two primary ways, 1) impact their methods of fighting the fire, and 2) pose safety hazard to the firefighters. One of the most important techniques that firefighters use to suppress fire is ventilation of a building's roof. This technique allows superheated toxic gases to quickly exit the building. By doing so, the firefighters gain easier and safer access to the building, Ventilation of the roof also makes the challenge of putting out the fire easier. However, the placement of rooftop PV panels may interfere with ventilating the roof by limiting access to desired venting locations.

New solar-specific building code requirements are working to minimize these concerns. Also, the latest National Electric Code has added requirements that make it easier for first responders to safely and effectively turn off a PV system. Concern for firefighting a building with PV can be reduced with proper fire fighter training, system design, and installation. Numerous organizations have studied fire fighter safety related to PV. Many organizations have published valuable guides and training programs. Some notable examples are listed below.

- The International Association of Fire Fighters (IAFF) and International Renewable Energy Council (IREC) partnered to create an online training course that is far beyond the PowerPoint click-and-view model. The self-paced online course, "Solar PV Safety for Fire Fighters," features rich video content and simulated environments so fire fighters can practice the knowledge they've learned. www.iaff.org/pvsafetytraining
- Photovoltaic Systems and the Fire Code: Office of NC Fire Marshal
- Fire Service Training, Underwriter's Laboratory

- Firefighter Safety and Response for Solar Power Systems, National Fire Protection Research Foundation
- Bridging the Gap: Fire Safety & Green Buildings, National Association of State Fire Marshalls
- Guidelines for Fire Safety Elements of Solar Photovoltaic Systems, Orange County Fire Chiefs Association
- Solar Photovoltaic Installation Guidelines, California Department of Forestry & Fire Protection, Office of the State Fire Marshall
- PV Safety & Firefighting, Matthew Paiss, Homepower Magazine
- PV Safety and Code Development: Matthew Paiss, Cooperative Research Network

Summary

The purpose of this paper is to address and alleviate concerns of public health and safety for utility-scale solar PV projects. Concerns of public health and safety were divided and discussed in the four following sections: (1) Toxicity, (2) Electromagnetic Fields, (3) Electric Shock and Arc Flash, and (4) Fire. In each of these sections, the negative health and safety impacts of utility-scale PV development were shown to be negligible, while the public health and safety benefits of installing these facilities are significant and far outweigh any negative impacts.

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NC CLEAN ENERGY TECHNOLOGY CENTER

APPENDIX O – VIEWSHED

Aerial 1



Aerial 1, Year 5



Aerial 2



Aerial 2, Year 5



Aerial 3



Aerial 3, Year 5



Aerial 4



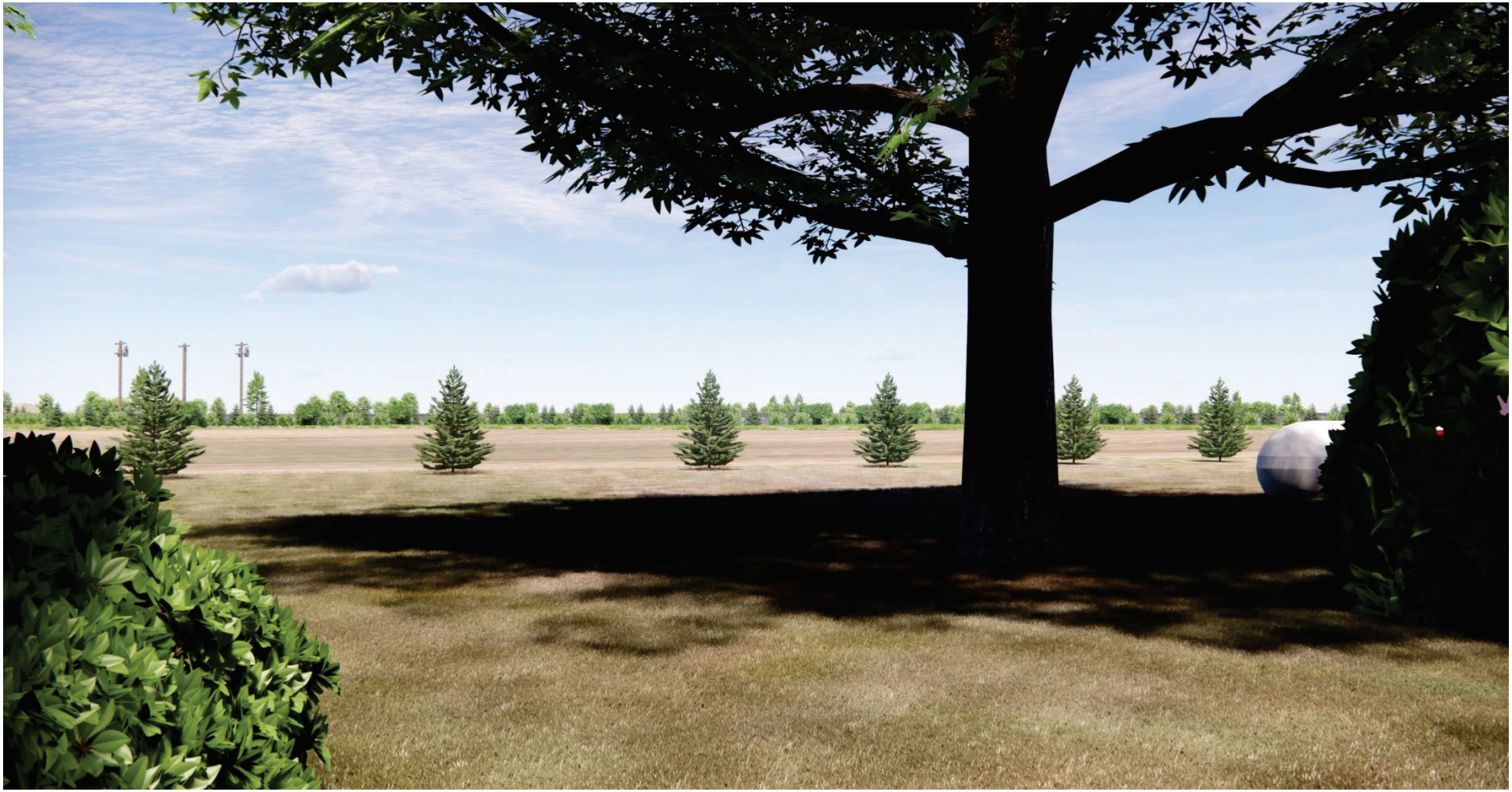
Aerial 4, Year 5



Behind Velazquez Home



Behind Velazquez Home, Year 5



Cannonball Trail, North of Project Access



TPE IL KE106, LLC

Cannonball Trail, North of Projet Acess, Year 5



TPE IL KE106, LLC

Church Entrance



Church Entrance, Year 5



APPENDIX P – FEMA FIRM MAP

88°26'15.88"W 41°44'24.01"N



88°22'29.16"W 41°40'12.65"N

FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR DRAFT FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) Zone A, V, A99
- With BFE or Depth Zone AE, AO, AH, VE, AR
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
- Future Conditions 1% Annual Chance Flood Hazard Zone X
- Area with Reduced Flood Risk due to Levee See Notes Zone X
- Area with Flood Risk due to Levee Zone D

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard Zone X
- Effective LOMRs
- Area of Undetermined Flood Hazard Zone D

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance / Water Surface Elevation
- Coastal Transect
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary

NOTES TO USERS

For information and questions about this Flood Insurance Rate Map (FIRM), available products associated with this FIRM, including historic versions, the current map date for each FIRM panel, how to order products, or the National Flood Insurance Program (NFIP) in general, please call the FEMA Map Information eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Flood Map Service Center website at https://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website.

Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be ordered directly from the Flood Map Service Center at the number listed above.

For community and countywide map dates, refer to the Flood Insurance Study Report for this jurisdiction.

To determine if flood insurance is available in this community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

Basemap information shown on this FIRM was provided in digital format by the United States Geological Survey (USGS). The basemap shown is the USGS National Map: Orthoimagery. Last refreshed October, 2020.

This map was exported from FEMA's National Flood Hazard Layer (NFHL) on 6/30/2022 11:31 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time. For additional information, please see the Flood Hazard Mapping Updates Overview Fact Sheet at https://www.fema.gov/media-library/assets/documents/118418

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards. This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date.

SCALE

Map Projection:
GCS, Geodetic Reference System 1980;
Vertical Datum: NAVD88
For information about the specific vertical datum for elevation features, datum conversions, or vertical monuments used to create this map, please see the Flood Insurance Study (FIS) Report for your community at https://msc.fema.gov

1 inch = 1,000 feet 1:12,000

0 500 1,000 2,000 3,000 4,000 Feet

N

0 105 210 420 630 840 Meters

FEMA National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP

PANEL 35 OF 225

Panel Contains:

COMMUNITY	NUMBER	PANEL
CITY OF YORKVILLE	170347	0035
KANE COUNTY	170896	0035
KENDALL COUNTY	170341	0035
VILLAGE OF MONTGOMERY	170328	0035
VILLAGE OF OSWEGO	170345	0035

MAP NUMBER
17093C0035H
EFFECTIVE DATE
January 08, 2014

APPENDIX Q – PROPERTY IMPACT STUDY

CohnReznick

www.cohnreznick.com

REAL ESTATE ADJACENT PROPERTY VALUE IMPACT REPORT:

Academic and Peer Authored Property Value Impact Studies, Research and Analysis of Existing Solar Facilities, and Market Participant and Assessor Interviews

Prepared For:

TPE Development, LLC

Submitted By:

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June 29, 2022



LETTER OF TRANSMITTAL

June 29, 2022

Adam Beal
Executive Vice President of Development
TPE Development, LLC
3720 South Dahlia Street
Denver, CO 80237

SUBJECT: Property Value Impact Report
An Analysis of Existing Solar Farms

To Whom it May Concern:

CohnReznick is pleased to submit the accompanying property values impact report for proposed solar energy uses in Illinois. Per the client's request, CohnReznick researched property transactions adjacent to existing solar farms, researched and analyzed articles and other published studies, and interviewed real estate professionals and Township/County Assessors active in the market where solar farms are located, to gain an understanding of actual market transactions in the presence of solar energy uses.

The purpose of this consulting assignment is to determine whether proximity to a renewable energy use (solar farm) has an impact adjacent property values. The intended use of our opinions and conclusions is to assist the client in addressing local concerns and to provide information that local bodies are required to consider in their evaluation of solar project use applications. We have not been asked to value any specific property, and we have not done so.

The client and intended user for the assignment is TPE Development, LLC ("Turning Point"). Additional intended users of our findings include Turning Point's designated project companies, all relevant permitting authorities for Turning Point's proposed solar projects in Illinois. The report may be used only for the aforementioned purpose and may not be distributed without the written consent of CohnReznick LLP ("CohnReznick").

This consulting assignment is intended to conform to the Uniform Standards of Professional Appraisal Practice (USPAP), the Code of Professional Ethics and Standards of Professional Appraisal Practice of the Appraisal Institute, as well as applicable state appraisal regulations.

Based on the analysis in the accompanying report, and subject to the definitions, assumptions, and limiting conditions expressed in the report, our findings are:

Disclaimer: This report is limited to the intended use, intended users (TPE Development, LLC, and it's designated project companies and others stated in the report as it relates to the evaluation of a proposed solar energy generating facility in Illinois), and purpose stated within. No part of this report may otherwise be reproduced or modified in any form, or by any means, without the prior written permission of CohnReznick LLP.

FINDINGS

I. Academic Studies *(pages 19-21):* CohnReznick reviewed and analyzed published academic studies that specifically analyzed the impact of solar facilities on nearby property values. These studies include multiple regression analyses of hundreds and thousands of sales transactions, and opinion surveys, for both residential homes and farmland properties in rural communities, which concluded existing solar facilities have had no negative impact on adjacent property values.

Peer Authored Studies: CohnReznick also reviewed studies prepared by other real estate valuation experts that specifically analyzed the impact of solar facilities on nearby property values. These studies found little to no measurable or consistent difference in value between the Test Area Sales and the Control Area Sales attributed to the proximity to existing solar farms and noted that solar energy uses are generally considered a compatible use.

II. CohnReznick Studies *(pages 22-92)*: Further, CohnReznick has performed 26 studies in over 15 states, of both residential and agricultural properties, in which we have determined that the existing solar facilities have not caused any consistent and measurable negative impact on property values.

For this Project, we have included 10 of these studies which are most similar to the subject in terms of general location and size, summarized as follows:

CohnReznick - Existing Solar Farms Studied

	Solar Farm	Location	Site Area (Acres)	Power Output (MW AC)	Date Project Completed	Impact on Surrounding Property Values
1	Portage Solar	Porter County, IN	56	2.0	Sep-12	No Impact
2	Lapeer (Demille & Turrill Solar)	Lapeer County, MI	270	48.0	May-17	No Impact
3	Grand Ridge Solar	LaSalle County, IL	158	20.0	Dec-10	No Impact
4	Woodland Solar	Isle of Wight County, VA	204	19.0	Dec-16	No Impact
5	Dominion Indy Solar III	Marion County, IN	134	8.6	Dec-13	No Impact
6	Sunfish Farm Solar	Wake County, NC	50	5.0	Dec-15	No Impact
7	Call Farms 3 Solar	Genesee County, NY	82	2.0	Jul-18	No Impact
8	IMPA Frankton	Madison County, IN	13	1.4	Jun-14	No Impact
9	Jefferson County Community	Jefferson County, CO	13	1.2	May-16	No Impact
10	Valparaiso Solar, LLC	Porter County, IN	28	1.0	Dec-12	No Impact

It is noted that proximity to the solar farms has not deterred sales of nearby agricultural land and residential single-family homes nor has it deterred the development of new single-family homes on adjacent land.

This report also includes two “Before and After” analysis, in which sales that occurred prior to the announcement and construction of the solar farm project were compared with sales that occurred after completion of the solar farm project, for both adjoining and non-adjoining properties. No measurable impact on property values was demonstrated.

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III. Market Participant Interviews *(pages 93-95)*: Our conclusions also consider interviews with over 45 County and Township Assessors, who have at least one solar farm in their jurisdiction, and in which they have determined that solar farms have not negatively affected adjacent property values.

With regards to the Project, we specifically interviewed Assessors in Illinois:

- In Otter Creek Township, in LaSalle County, Illinois, we spoke with Viki Crouch, the Township Assessor, who she said that *there has been no impact on property values due to their proximity to the **Grand Ridge Solar Farm***.
- We spoke with Ken Crowley, Rockford Township Assessor in Winnebago County, Illinois, who stated that he has seen *no impact on property values in his township as an effect of proximity to the **Rockford Solar Farm***.
- We spoke with James Weisiger, the Champaign Township Assessor in Champaign County, where the **University of Illinois Solar Farm** is located, and he noted *there appears to have been no impact on property values as a result of proximity to the solar farm*.

To give us additional insight as to how the market evaluates farmland and single-family homes with views of solar farms, we interviewed numerous real estate brokers and other market participants who were party to actual sales of property adjacent to solar; these professionals also confirmed that solar farms did not diminish property values or marketability in the areas they conducted their business.

IV. Solar Farm Factors on Harmony of Use *(pages 98-103)*: In the course of our research and studies, we have recorded information regarding the compatibility of these existing solar facilities and their adjoining uses, including the continuing development of land adjoining these facilities.

CONCLUSION

Considering all of the preceding, the data indicates that solar facilities do not have a negative impact on adjacent property values.

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If you have any questions or comments, please contact the undersigned. Thank you for the opportunity to be of service.

Very truly yours,

CohnReznick LLP



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SCOPE OF WORK

CLIENT AND INTENDED USERS

The client and intended user of this report is TPE Development, LLC and it's designated project companies; other intended users may include the client's legal and site development professionals. Additional intended users of our findings include all relevant permitting authorities for Turning Point's proposed solar projects in Illinois.

INTENDED USE

The intended use of our findings and conclusions is to address certain criteria required for the granting of approvals for proposed solar energy uses. We have not been asked to value any specific property, and we have not done so. The report may be used only for the aforementioned purpose and may not be distributed without the written consent of CohnReznick LLP ("CohnReznick").

PURPOSE

The purpose of this consulting assignment is to determine whether proximity to the proposed solar facility will result in an impact on adjacent property values.

DEFINITION OF VALUE

This report utilizes Market Value as the appropriate premise of value. Market value is defined as:

"The most probable price which a property should bring in a competitive and open market under all conditions requisite to a fair sale, the buyer and seller each acting prudently and knowledgeably, and assuming the price is not affected by undue stimulus. Implicit in this definition are the consummation of a sale as of a specified date and the passing of title from seller to buyer under conditions whereby:

1. Buyer and seller are typically motivated;
2. Both parties are well informed or well advised, and acting in what they consider their own best interests;
3. A reasonable time is allowed for exposure in the open market.
4. Payment is made in terms of cash in U.S. dollars or in terms of financial arrangements comparable thereto; and
5. The price represents the normal consideration for the property sold unaffected by special or creative financing or sales concessions granted by anyone associated with the sale."[1]

[1] Code of Federal Regulations, Title 12, Chapter I, Part 34.42[h]

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EFFECTIVE DATE & DATE OF REPORT

June 29, 2022 (Paired sale analyses contained within each study are periodically updated.)

PRIOR SERVICES

USPAP requires appraisers to disclose to the client any services they have provided in connection with the subject property in the prior three years, including valuation, consulting, property management, brokerage, or any other services.

This report is a compilation of the Existing Solar Farms which we have studied over the past year, and is not evaluating a specific subject site. In this instance, there is no “subject property” to disclose.

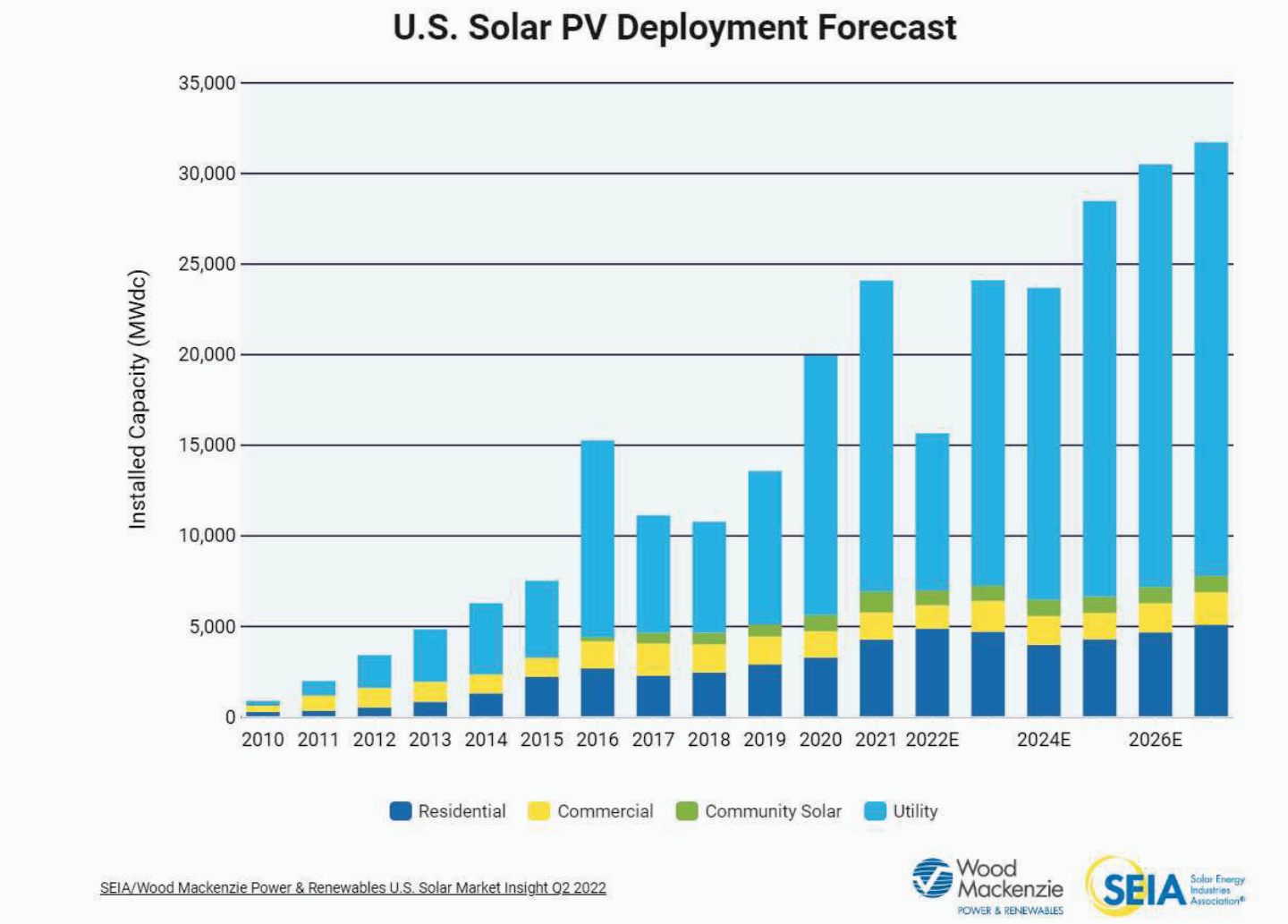
INSPECTION

Patricia L. McGarr, MAI, CRE, FRICS, Andrew R. Lines, MAI, and Erin C. Bowen, MAI have viewed the exterior of all comparable data referenced in this report in person, via photographs, or aerial imagery.

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OVERVIEW OF SOLAR DEVELOPMENT IN THE UNITED STATES

Solar development increased almost exponentially since 2010 in the United States as technology and the economic incentives (Solar Investment Tax Credits or ITC) made the installation of solar farms economically reasonable. The cost to install solar panels has dropped nationally by 70 percent from 2010 to 2020, a major reason leading to the increase in installations. A majority of these solar farm installations are attributed to larger-scale solar farm developments for utility purposes. The chart below portrays the historical increase on an annual basis of solar installations in the U.S. as a whole, as well as the base case projections through 2026, courtesy of research by Solar Energy Industries Association (SEIA) and Wood Mackenzie.



The United States installed a record of 23.6 Gigawatts (GW) DC of solar photovoltaic capacity for all the sectors, residential, commercial, community solar and utility-scale solar projects in 2021, an increase of 19 percent over 2020.

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Overall, solar power generation accounted for 46 percent of all new electricity-generating capacity additions from in 2021 and continues to make up the largest share of new generating capacity in the U.S.

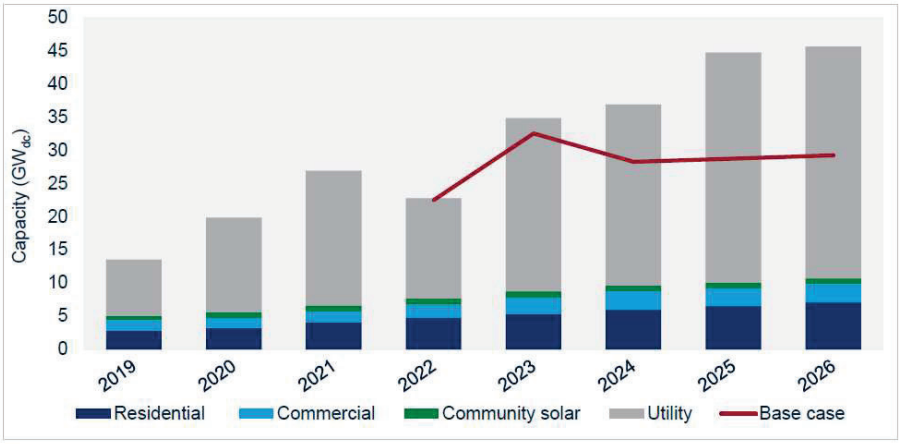
The US solar industry had the weakest quarter in two years for solar installation, with 3.9 gigawatts-direct current (GWdc) of capacity installed, a 24 percent decrease from the first quarter 2021. Supply chain constraints and shipment delays have slowed the installation process and as a result, the US solar industry is expected to have 15.6 GWdc installed in 2022.

Despite continued installation growth, 2022 is predicted to be challenging for the solar industry. Thanks to ongoing supply chain constraints and price increases, Wood Mackenzie has lowered the 2022 outlook by 25 percent, a decrease of 7.4 GWdc. However, the 2022 outlook for community solar segments have only been lowered by 0.3 percent.

The beginning dates for operation of multiple gigawatts of projects have been pushed from 2022 into 2023 or later. The projects likely to come online in 2022 already have secured equipment, as of the end of 2021.

The ITC extension scenario would result in an additional 43.5 GWdc of solar capacity over the next five years, most of which would come from utility-scale solar. The chart below presents the base case forecast for solar installations and projections for an ITC extension scenario.[2]

US solar forecast under an ITC extension scenario



Source: Wood Mackenzie

Recent articles show that over the past decade, the solar industry has experienced unprecedented growth. Among the factors contributing to its growth were government incentives, significant capacity additions from existing and new entrants and continual innovation. Solar farms offer a wide array of economic and environmental benefits to surrounding properties. Unlike other energy sources, solar energy does not produce emissions that may cause negative health effects or environmental damage. Solar farms produce a lower

[2] U.S. Solar Market Insight, Executive Summary, Q4 2021, Solar Energy Industries Association (SEIA).

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electromagnetic field exposure than most household appliances, such as TV and refrigerators, and studies have confirmed there are no health issues related to solar farms.[3]

Solar farm construction in rural areas has also dramatically increased the tax value of the land on which they are built, which has provided a financial boost to some counties. CohnReznick has studied real estate tax increases due to the installation of solar, which can range up to 10-12 times the rate for farmland. A majority of tax revenue is funneled back into the local area, and as much as 50 percent of increased tax revenue can typically be allocated to the local school district. By converting farmland to a passive solar use for the duration of the system's life, the solar energy use does not burden school systems, utilities, traffic, nor infrastructure as it is a passive use that does not increase population as say a residential subdivision would. In the state of Illinois, the fair cash value for a commercial solar energy system is based on its nameplate capacity per megawatt. Beginning assessment year 2018, in counties with fewer than 3,000,000 inhabitants, the fair cash value of a commercial solar energy system is $218,000 per megawatt of nameplate capacity. This includes the owner of the commercial solar energy system's interest in the land within the project boundaries and real property improvements. The chief county assessment officer (CCAO) will add an inflationary increase, called a "trending factor" to the 2018 value. The result is called the "trended real property cost basis." An amount for depreciation is then subtracted from the trended real property cost basis to determine the taxable value for the current assessment year.

Beyond creating jobs, solar farms are also benefiting the overall long-term agricultural health of the community. The unused land, and also all the land beneath the solar panels, will be left to rejuvenate naturally. In the long run this is a better use of land since the soil is allowed to recuperate instead of being ploughed and fertilized year after year. A solar farm can offer some financial security for the property owner over 20 to 25 years. Once solar panel racking systems are removed, the land can revert to its original use.[4]

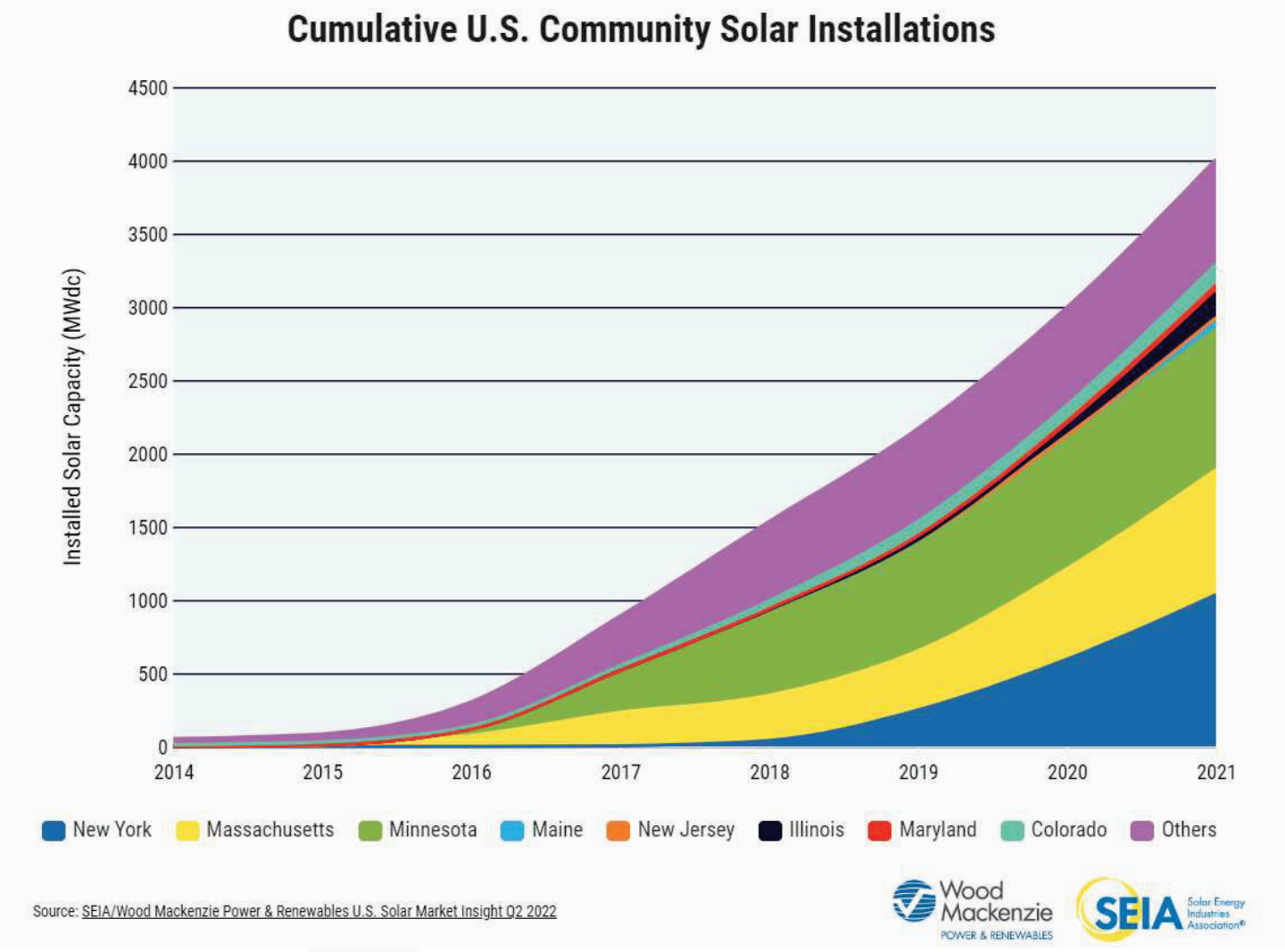
[3] "Electromagnetic Field and Public Health." Media Centre (2013): 1-4. World Health Organization.
[4] NC State Extension. (May 2016). Landowner Solar Leasing: Contract Terms Explained. Retrieved from: https://content.ces.ncsu.edu/landowner-solar-leasing-contract-terms-explained

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NATIONAL COMMUNITY SOLAR ENERGY PRODUCTION

Community solar projects (facilities that generate 5 MW AC or less of power) account for 4,900 MWdc of installed power in the U.S. as of the second quarter 2022, according to SEIA data. The community solar industry had a record setting year in 2021 with 957 MWdc installed, according to SEIA data. According to the U.S. Energy Information Administration (EIA) through March 2022, there are over 4,033 community solar facilities in operation across the country.

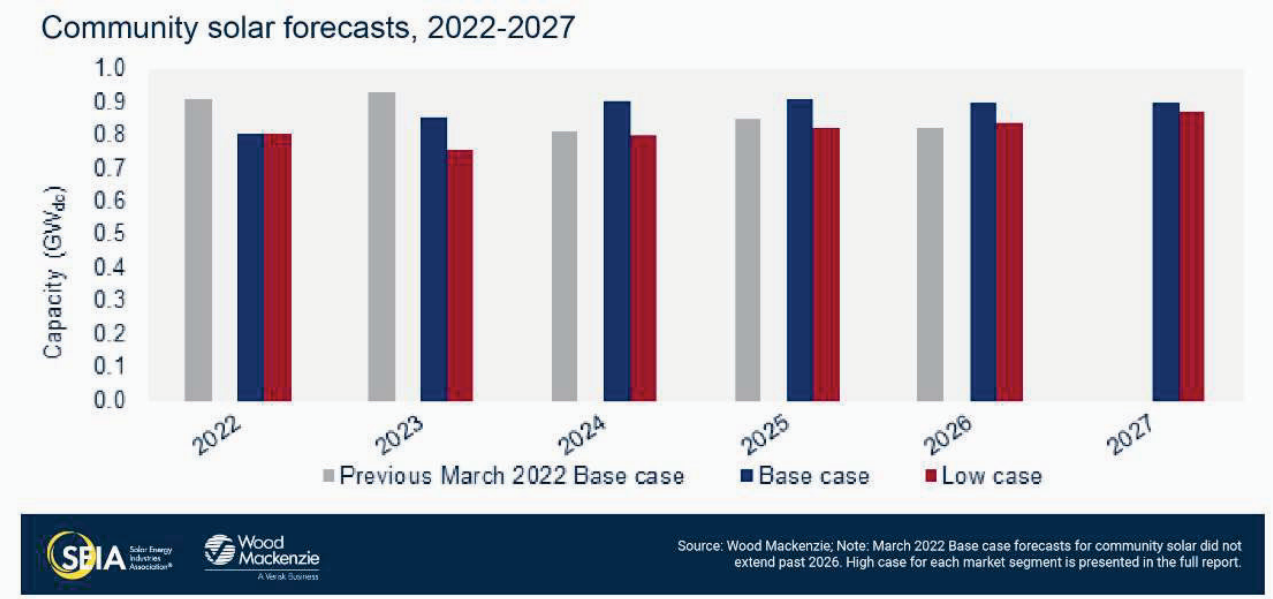
Community solar installations significantly grew year-over-year as of first quarter 2022, however, installations are down 59 percent from the fourth quarter 2021. Due to uncertainty around the anti-circumvention investigation, supply chain issues, and long timelines for new community solar policies, community solar installations are expected to contract in 2022. The growth of community solar installations from 2014 to 2021 is presented in the chart below. Illinois community solar installations rank in the top eight states.



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Reductions in some states are offset by increases in other markets, particularly in Illinois. The Illinois Energy Transition Act revives funding for the Adjustable Block Program, laying out a pathway for completing waitlisted projects. If an ITC extension is passed as part of the BBB Act, community solar would see a small 3 percent uplift from 2022 to 2027 compared to the base case, as shown in the chart below.



While early growth for community solar installations was led primarily by three key markets - New York, Minnesota, and Massachusetts - a growing list of states with community solar programs have helped diversify the market, creating large pipelines set to come to fruition over the next several years.

SOLAR ENERGY PRODUCTION IN ILLINOIS

As of the end of the first two quarters of 2022, Illinois had 641.3 MW AC of power installed in 112 facilities overall, ranking seventeenth in the U.S. for the capacity of solar installed. The vast majority of solar farms in Illinois are community solar facilities (105) generating 194.4 MW AC, of power as of March 2022, according to the EIA.

Illinois has 1,678.2 MW AC of solar power planned for installation through December 2022 in 12 facilities across the state. Nine of the planned solar installations in Illinois are utility scale and total 1,672.2 MW AC, or 99 percent of all planned installations. Additionally, there is a total of 3,712 MW planned over the next five years. The largest new solar facility in Illinois will be a 600 MW AC utility scale installation projected to become operational in December 2024 in Lee County, that is being developed by Steward Creek Solar. The total planned solar facilities will increase solar power generation in the state by approximately 262 percent.

There are 3 community solar projects planned for the state of Illinois before the end of 2022, generating a total of 6.0 MW AC of power.

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APPRAISAL THEORY – ADJACENT PROPERTY'S IMPACT ON VALUE

According to Randall Bell, PhD, MAI, author of text *Real Estate Damages,* published by the Appraisal Institute in 2016, understanding the market's perceptions on all factors that may have an influence on a property's desirability (and therefore its value) is essential in determining if a diminution or enhancement of value has occurred.[5] According to Dr. Bell:

> *"There is often a predisposition to believe that detrimental conditions automatically have a negative impact on property values. However, it is important to keep in mind that if a property's value is to be affected by a negative condition, whether internal or external to the property, that condition must be given enough weight in the decision-making process of buyers and sellers to have a material effect on pricing relative to all the other positive and negative attributes that influence the value of that particular property."*[6]

Market data and empirical research through the application of the three traditional approaches to value should be utilized to estimate the market value to determine if there is a material effect on pricing due, to the influence of a particular characteristic of or on a property.

A credible impact analysis is one that is logical, innate, testable and repeatable, prepared in conformity with approved valuation techniques. In order to produce credible assignment results, more than one valuation technique should be utilized for support for the primary method, or a check of reasonableness, such as utilization of more than one approach to value, conducting a literature review, or having discussions (testimony) with market participants.[7] CohnReznick implemented the scientific method[8] to determine if a detrimental condition of proximity to a solar farm exists, further described in the next section.

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[5] Bell, Randall, PhD, MAI. *Real Estate Damages. Third ed.* Chicago, IL: Appraisal Institute, 2016. (Pages 1-2)
[6] Ibid, Page 314
[7] Ibid, Pages 7-8
[8] The scientific method is a process that involves observation, development of a theory, establishment of a hypothesis, and testing. The valuation process applies principles of the scientific method as a model, based upon economic principles (primarily substitution) as the hypothesis. The steps for the scientific method are outlined as follows:

1. Identify the problem.
2. Collect relevant data.
3. Propose a hypothesis.
4. Test the hypothesis.
5. Assess the validity of the hypothesis.

Bell, Randall, PhD, MAI. *Real Estate Damages. Third ed.* Chicago, IL: Appraisal Institute, 2016. (Pages 314-316)

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METHODOLOGY

The purpose of this report is to determine whether proximity to the solar facility resulted in any measurable and consistent impact on adjacent property values. To test this hypothesis, CohnReznick identified three relevant techniques to test if a detrimental condition exists.

(1) A review of published studies;
(2) Paired sale analysis of properties adjacent to existing solar generating facilities, which may include repeat sale analyses or "Before and After" analyses; and,
(3) Interviews with real estate professionals and local real estate assessors.

The paired sales analysis is an effective method of determining if there is a detrimental impact on surrounding properties.

> *"One of the most useful applications of the sales comparison approach is paired sale analysis. This type of analysis may compare the subject property or similarly impacted properties called* ***Test Areas*** *(at Points B, C, D, E, or F) with unimpaired properties called* ***Control Areas*** *(Point A). A comparison may also be made between the unimpaired value of the subject property before and after the discovery of a detrimental condition. If a legitimate detrimental condition exists, there will likely be a* ***measurable and consistent difference*** *between the two sets of market data; if not, there will likely be no significant difference between the two sets of data. This process involves the study of a group of sales with a detrimental condition, which are then compared to a group of otherwise similar sales without the detrimental condition."*[9]

As an approved method, paired sales analysis can be utilized to extract the effect of a single characteristic on value. By definition, paired data analysis is "a quantitative technique used to identify and measure adjustments to the sale prices or rents of comparable properties; to apply this technique, sales or rental data on nearly identical properties is analyzed to isolate a single characteristic's effect on value or rent."[10] The text further describes that this method is theoretically sound when an abundance of market data, or sale transactions, is available for analysis.

Where data is available, CohnReznick has also prepared "Before and After" analyses or a Repeat Sale Analysis,[11] to determine if a detrimental impact has occurred.

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[9] Bell, Randall, PhD, MAI. *Real Estate Damages. Third ed.* Chicago, IL: Appraisal Institute, 2016. (Page 33)
[10] *The Appraisal of Real Estate 14th Edition.* Chicago, IL: Appraisal Institute, 2013.
[11] Another type of paired sales analysis involves studying the sale and subsequent resale of the same property. This method is used to determine the influence of time on market values or to determine the impact of a detrimental condition by comparing values before and after the discovery of the condition.
Bell, Randall, PhD, MAI. *Real Estate Damages. Third ed.* Chicago, IL: Appraisal Institute, 2016. (Page 35)

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SCOPE OF WORK

The scope of work utilized to test the hypothesis stated on the prior page is as follows:

1. Review published studies, assess credibility, and validity of conclusions;
2. Prepare paired sale analyses for existing solar farms as follows:
    2.1. Identify existing solar farms comparable to the proposed project to analyze;
    2.2. Define Test Area Sales and Control Areas Sales;
    2.3. Collect market data (sale transactions) for both Test Area and Control Area Sales;
    2.4. Analyze and confirm sales, including omission of sales that are not reflective of market value;
    2.5. Prepare comparative analysis of Test Area and Control Area sales, adjusting for market conditions;
    2.6. Interpret calculations; and
3. Conduct interviews with real estate professionals and local real estate assessors who have evaluated real property adjacent to existing solar farms.

It should be noted that our impact report data and methodology have been previously reviewed by our peer in the field – Kirkland Appraisals, LLC – as well as by the Solar Energy Industries Association (SEIA).

The following bullet points summarize important elements to consider in our scope of work:

- Due to the limited number of community solar projects that qualified for study in the state of Illinois, we have incorporated some regional utility scale projects and community solar projects in other states.

- Test Area Sales consists of sales that are adjacent to an existing solar facility. Ownership and sales history for each adjoining property to an existing solar farm through the effective date of this report is maintained within our workfile. Adjoining properties with no sales data or that sold prior to the announcement of the solar farm were excluded from further analysis.

- Control Area Sales are generally located in the same market area, although varies based on the general location of the existing solar farm under analysis. In rural areas, sales are identified first within the township, and expands radially outward through the county until a reliable set of data points is obtained.

- Control Area Sales are generally between 12 and 18 months before or after the date of the Test Area Sale(s), and are comparable in physical characteristics such as age, condition, style, and size.

- Sales of properties that sold in a non-arm's length transaction (such as a transaction between related parties, bank-owned transaction, or between adjacent owners) were excluded from analysis as these are not considered to be reflective of market value, as defined earlier in this report. The sales that remained after exclusions were considered for a paired sale analysis.

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- The methodology employed in this report for paired sale analysis does not rely on multiple subjective adjustments that are typical in many appraisals and single-paired sales analyses. Rather, the methodology remains objective, and the only adjustment required is for market conditions ;[12] the analysis relies upon market conditions trends tracked by credible agencies such as the Federal Housing Finance Agency ("FHFA"), who maintains a House Price Index ("HPI")[13] for macro and micro regions in the United States. A market conditions adjustment is a variable that affects all properties similarly and can be adjusted for in an objective manner.

- To make direct comparisons, the sale price of the Control Area Sales was adjusted for market conditions to a common date. In this analysis, the common date is the date of the Test Area Sale(s). After adjustment, any measurable difference between the sale prices would be indicative of a possible price impact by the solar facility.

- If there is more than one Test Area Sale to evaluate, the sales are grouped if they exhibit similar transactional and physical characteristics; otherwise, they are evaluated separately with their own respective Control Area Sale groups.

[12] Adjusting for market conditions is necessary as described in The Appraisal of Real Estate 14th Edition as follows: "Comparable sales that occurred under market conditions different from those applicable to the subject on the effective date of appraisal require adjustment for any differences that affect their values. An adjustment for market conditions is made if general property values have increased or decreased since the transaction dates."

[13] The FHFA HPI is a weighted, repeat-sales index, meaning that it measures average price changes in repeat sales or refinancings on the same properties. This information is obtained by reviewing repeat mortgage transactions on single-family properties whose mortgages have been purchased or securitized by Fannie Mae or Freddie Mac since January 1975. The FHFA HPI serves as a timely, accurate indicator of house price trends at various geographic levels. Because of the breadth of the sample, it provides more information than is available in other house price indexes.

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TECHNIQUE 1: REVIEW OF PUBLISHED STUDIES

The following is a discussion of various studies that consider the impact of solar farms on surrounding property values. The studies range from quantitative analysis to survey-based formal research to less formal analyses.

ACADEMIC REPORTS

There have been three academic reports that attempt to quantify the effect on property values due to proximity to solar.

i. The first report is a study completed by **The University of Texas at Austin**, published in May 2018.[14] The portion of the study focusing on property impact was an Opinion Survey of Assessors with no sales data or evidence included in the survey. The opinion survey was sent to 400 accessors nationwide and received only 37 responses. Of those 37 assessors, only 18 had assessed a home near a utility-scale solar installation, the remainder had not. Of the 18 assessors with experience in valuing homes near solar farms, 17 had not found any impact on home values near solar. Those are the actual facts in the study. A small number of those assessor respondents hypothetically surmised an impact, but none had evidence to support such statements.

   The paper admits that there is no actual sales data analyzed, and further denotes its own areas of weakness, including "This study did not differentiate between ground-mounted and rooftop installations." The author states on the last line of page 22: ***"Finally, to shift from perceived to actual property value impacts**, **future research can conduct analyses on home sales data to collect empirical evidence of actual property value impacts."***

   The paper concludes with a suggestion that a statistic hedonic regression model may better identify impacts. It should be noted that the type of statistical analysis that the author states is required to determine "*actual property value impacts*' was completed two years later by the following Academic Studies.

ii. The second report is a study prepared by a team at the **University of Rhode Island**, published in September 2020, "*Property Value Impacts of Commercial-Scale Solar Energy in Massachusetts and Rhode Island*."[15] The study utilized a hedonic pricing model, or multiple regression analysis, to quantify the effect of proximity on property values due to solar by studying existing solar installations in Massachusetts and Rhode Island. The study evaluated 208 solar facilities, 71,373 housing sales occurring within one-mile of the solar facilities (Test Group), and 343,921 sales between one-to-three

[14] Al-Hamoodah, Leila, et al. An Exploration of Property-Value Impacts Near Utility-Scale Solar Installations. Policy Research Project (PRP), LBJ School of Public Affairs, The University of Texas at Austin, May 2018, emp.lbl.gov/sites/default/files/property-value_impacts_near_utility-scale_solar_installations.pdf.

[15] Gaur, V. and C. Lang. (2020). Property Value Impacts of Commercial-Scale Solar Energy in Massachusetts and Rhode Island. Submitted to University of Rhode Island Cooperative Extension on September 29, 2020. Accessed at https://web.uri.edu/coopext/valuing-sitingoptions-for-commercial-scale-solar-energy-in-rhode-island/.

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miles (Control Group). Because it is a hedonic regression model, it allowed them to isolate specific variables that could impact value, including isolating rural and non-rural locations. The study defines "**Rural**," as an area having a "population density of 850 people per square mile or fewer."

The study provides data which found no negative impact to residential homes near solar arrays in rural areas: "these results suggest that [the Test Area] in rural areas ***is effectively zero*** (a statistically insignificant 0.1%), and that the negative externalities of solar arrays are only occurring in non-rural areas."[16] Further, the study tested to determine if the size of the installation impacted values, and found no evidence of differential property values impacts by the solar installation's size.

Thus, not only are there no impacts to homes in similar areas as the proposed Project, but any differences in the size of a solar farm are similarly not demonstrating an impact.

iii. The third report is a published study prepared by Dr. Nino Abashidze, School of Economics, Georgia Institute of Technology, dated October 20, 2020, entitled "*Utility Scale Solar Farms and Agricultural Land Values*." Abashidze examined 451 solar farms in North Carolina. "Across many samples and specifications, we find ***no direct negative or positive spillover effect of a solar farm construction on nearby agricultural land values.*** Although there are no direct effects of solar farms on nearby agricultural land values, we do find evidence that suggests construction of a solar farm may create a small, positive, option-value for land owners that is capitalized into land prices. Specifically, after construction of a nearby solar farm, we find that agricultural land that is also located near transmission infrastructure may increase modestly in value."

VALUATION EXPERT REPORTS

We have similarly considered property value impact studies prepared by other experts, which have also noted that the installation of utility-scale solar on a property has no measurable or consistent impact on adjoining property value. According to a report titled "Mapleton Solar Impact Study" from Kirkland Appraisals, LLC, conducted in Murfreesboro, North Carolina in September 2017, which studied 13 existing solar farms in the state, found that the solar farms had no impact on adjacent vacant residential, agricultural land, or residential homes. The paired sales data analysis in the report primarily consisted of low density residential and agricultural land uses and included one case where the solar farm adjoined to two dense subdivisions of homes.

Donald Fisher, ARA who has served six years as Chair of the American Society of Farm Managers and Rural Appraisers, and has prepared several market studies examining the impact of solar on residential values was quoted in a press release dated February 15, 2021 stating, "Most of the locations were in either suburban or

[16] The University of Rhode Island study's conclusion that there may be an impact to non-rural communities is surmised is that "land is abundant in rural areas, so the development of some land into solar does little to impact scarcity, whereas in non-rural areas it makes a noticeable impact.

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rural areas, and all of these studies found either a neutral impact or, ironically, a positive impact, where values on properties after the installation of solar farms went up higher than time trends."

REAL ESTATE ASSESSOR SOLAR IMPACT REPORTS

The Chisago County (Minnesota) Assessor's Office conducted their own study on property prices adjacent to and in the close vicinity of the North Star solar farm in Chisago County, Minnesota. At the November 2017 Chisago County Board meeting, John Keefe, the Chisago County Assessor, presented data from his study. He concluded that the North Star solar farm had, "no adverse impact" on property values. His study encompassed 15 parcels that sold and were adjacent or in the close vicinity to the solar farm between January 2016 and October 2017; the control group used for comparison comprised of over 700 sales within the county. Almost all of the [Test Area] properties sold were at a price above the assessed value. He further stated that, "It seems conclusive that valuation has not suffered."[17]

Furthermore, Grant County, Kentucky Property Value Administrator, Elliott Anderson, stated that Duke Energy built a solar farm near Crittenden, adjacent to existing homes on Claiborne Drive in December 2017. At the time of the interview, there have been nine arm's length homes sales on that street since the solar farm commenced operations. Each of those nine homes sold higher than its assessed value, and one over 32 percent higher. At the time, Anderson noted that several more lots were for sale by the developer and four more homes were currently under construction. Anderson said that *the solar farm had no impact either on adjoining home values or on marketability or desirability of those homes adjacent to the solar farm.*

CONCLUSION

These published studies and other valuation expert opinions conclude that there is no impact to property adjacent to established solar farms. These conclusions have been confirmed by academic studies utilizing large sales databases and regression analysis investigating this uses' potential impact on property values. Further, the conclusion has been confirmed by county assessors who have also investigated this adjacent land use' potential impact on property values.

[17] Chisago County Press: County Board Real Estate Update Shows No "Solar Effects" (11/03/2017)

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TECHNIQUE 2: PAIRED SALE ANALYSIS

SOLAR FARM 1: PORTAGE SOLAR FARM, PORTAGE, PORTER COUNTY, INDIANA

Coordinates: Latitude 41.333263, Longitude -87.093015

PIN: 64-06-19-176-001.000-015

Total Land Size: 56 AC

Date Project Announced: February 2012

Date Project Completed: September 2012

Output: 1.96 MW AC (1.5 MW DC)

The solar farm was developed by Ecos Energy, a subsidiary of Allco Renewable Energy Limited, and is currently owned by PLH, Inc. This solar panels are ground-mounted the facility has the capacity for 1.96 Megawatts (MW) AC of power, which is enough to power 300 homes. This solar farm consists of 7,128 solar modules which are of a fixed tilt installation and it contains three inverters.

The Surrounding Area: The Portage Solar Farm is located outside the City of Portage, in Portage Township, approximately 2.5 miles to the southeast of the city center. The solar farm is also approximately two miles northwest of South Haven, a neighboring residential community. Portage Township is in the northern portion of Porter County, which is in the northwestern corner of the state of Indiana. The solar farm is approximately 45 miles southeast of downtown Chicago.

The Immediate Area: This solar farm is located on the south side of Robbins Road, and is surrounded to the west, south, and east by agricultural land. Just beyond the agricultural land buffer, uses to the west and east area single family homes, and to the south is an apartment complex and a commercial development with an IMAX movie theater and restaurants. To the north of the solar farm, across Robbins Road uses consist of a residential subdivision and vacant land. The solar farm and surrounding properties have a Valparaiso mailing address.

The solar farm is fenced from adjacent properties by a fence that surrounds all of the solar panels. Natural vegetation borders the northern, and eastern sides of the larger agricultural parcel the solar farm is nestled within.

Real Estate Tax Information: The taxes on the 56 acres of farmland were $1,400 per year prior to the solar farm development. After the solar farm was developed, only 13 acres (23 percent of the site) were re-assessed and the remaining 43 acres continued to be farmed. The total real estate tax bill increased to $16,350 after the solar farm was built, including both uses on the site. This indicates that the real estate taxes for the solar farm increased from $25 per acre to $1,175 per acre after the solar farm was developed.

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The map below displays the solar farm parcel shaded in blue, and the adjoining properties (outlined in red). Adjoining Properties to the solar farm are numbered for subsequent analysis.



Portage Solar Farm - Adjoining Properties

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Portage Solar Farm - Adjoining Properties

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PAIRED SALES ANALYSIS

Adjoining Properties 1 and 7 (Test Area Sales) were each considered for a paired sales analysis. Adjoining Property 1 was analyzed as homestead-small farmland tract since at the time of purchase the site was used only as agricultural land. The buyer bought it as vacant land and subsequently built a home on the site. Adjoining Property 7 was analyzed as a single-family home use.

GROUP 1

For Adjoining Property 1 (Group 1), the property line is approximtately 836 feet from the closest solar panel and the residential home that was eventually built is approximately 1,228 feet from the closest solar panel. The following table outlines the other important characteristics of Adjoining Property 10.

Portage Solar Test Area Sale Group 1								
Adj. Property #	Address	Sale Price	Site Size (AC)	PI Index (Corn)	Year Built	Vacant at the Time of Sale	Sale Price per Acre	Sale Date
1	442 W 875 N, Valparaiso	$149,600	18.70	139.30	2017 (After Purchase)	Yes	$8,000	Feb-14

In Group 1, we analyzed nine Control Area Sales of homesteads-small farmland tracts that sold within a reasonable time frame from the sale date of Adjoining Property 1. All Control Area Sales were adjusted for market conditions using regression analysis to identify the appropriate monthly market conditions adjustment.

The result of our analysis for Group 1 is presented below.

CohnReznick Paired Sale Analysis Portage Solar Group 1		
No. of Sales	Potentially Impacted by Solar Farm	Adjusted Median Price Per Acre
Test Area Sales (1)	Adjoining solar farm	$8,000
Control Area Sales (9)	No: Not adjoining solar farm	$7,674
Difference between Unit Price of Test Area Sale and Adjusted Median Unit Price of Control Area Sales		**4.25%**

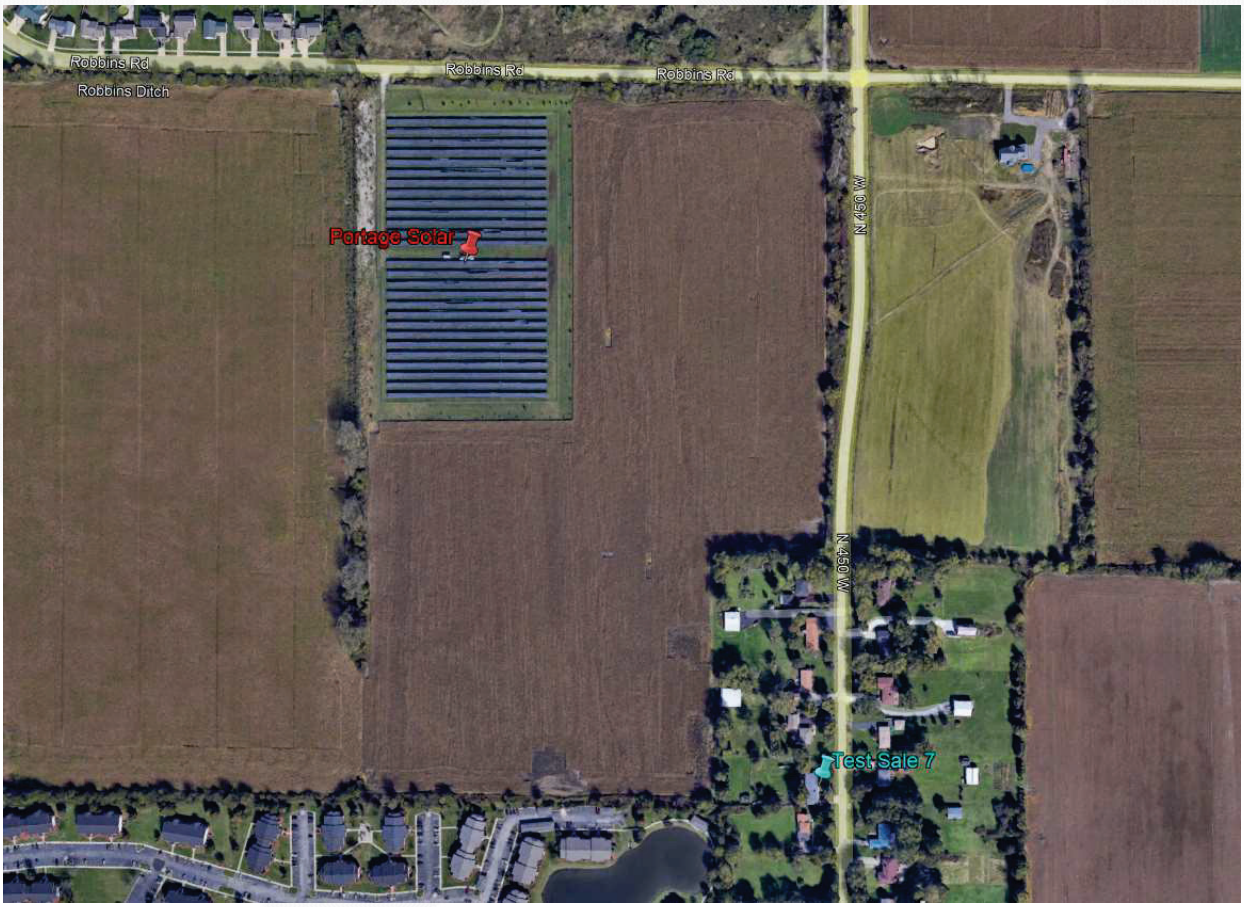
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GROUP 2

For Adjoining Property 7 (Group 2), the residential home is approximately 1,227 feet from the closest solar panel. The following table outlines the other important characteristics of Adjoining Property 7.

Portage Solar Test Area Sale Group 2									
Adj. Property #	Address	Sale Price	Site Size (AC)	Beds	Baths	Year Built	Square Feet	Sale Price per SF	Sale Date
7	836 N 450 W Valparaiso	$149,800	1.00	3.0	1.5	1964	1,776	$84.35	Sep-13

For Adjoining Property 7, we analyzed seven Control Area Sales of similar single family homes that sold within a reasonable time frame from the sale date of Adjoining Property 7. All Control Area Sales were adjusted for market conditions using regression analysis to identify the appropriate monthly market conditions adjustment.



Portage Solar - Group 2: Test Area Sale Map

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The result of our analysis for Group 2 is presented below.

CohnReznick Paired Sale Analysis Portage Solar Group 2		
No. of Sales	**Potentially Impacted by Solar Farm**	**Adjusted Median Price Per SF**
Test Area Sales (1)	Adjoining solar farm	$84.35
Control Area Sales (7)	No: Not adjoining solar farm	$84.27
Difference between Unit Price of Test Area Sale and Adjusted Median Unit Price of Control Area Sales		**0.10%**

Noting the relatively small price differentials between Test Area Sales and Control Area Sales, with both Test Area Sales (Adjoining Property 1 and 7) having higher unit sale prices than the respective Control Area Sales, it does not appear that the Portage Solar Farm had any negative impact on adjacent property values.

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SOLAR FARM 2: DTE LAPEER SOLAR PROJECT, LAPEER, MICHIGAN

Coordinates: Latitude 43.0368219316, Longitude -83.3369986251

PINs: L20-95-705-050-00, L20-98-008-003-00

Total Land Size: ±365 Acres

Date Project Announced: 2016

Date Project Completed: May 2017

Output: 48.28 MW AC



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The Surrounding Area: The DTE Lapeer solar farm is located just south of the City of Lapeer, in Lapeer County, Michigan and is a joint project between the City of Lapeer and DTE Electric Company. The solar farm was developed with Inovateus Solar MI, LLC to meet Michigan renewable energy standards. The solar farm features over 200,000 panels, a power output of 48.28 MW AC, and produces enough energy to power 14,000 homes. The Lapeer solar project was developed in two phases: the Demille Solar installation and the Turrill Solar installation. For purposes of our study, taken together, both installations are considered one solar farm.



DTE's Lapeer Solar Projects Demille and Turrill Solar installations

Lapeer is considered to be in the Tri-Cities area of central Michigan and is approximately 21 miles east of the City of Flint. Interstate-69 serves Lapeer and runs east-west just south of the solar farm. The two phases of the solar installation are on the east and west sides of Michigan State Route 24 from each other.

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The Immediate Area: Land uses surrounding the Demille installation include a correctional facility and industrial uses to the west, buffered by a mature stand of trees, a retail center to the northeast, other commercial uses to the east along MI-24/South Lapeer Road, and residential homes to the southeast. Interstate-69 runs south of the Demille solar installation.

The Turrill installation is surrounded to the north by a residential subdivision, to the north and east by industrial uses, to the south by vacant land and residential homes, and to the west by light commercial and professional uses along MI-24/South Lapeer Road. Hunter's Creek divides two sets of solar arrays in the Turrill installation.

The Demille installation adjoins Interstate-69 to the South; while a residential subdivision adjoins the solar farm to the east. To the northeast corner of the solar panels is a senior living facility, Stonegate Health Campus, developed before the solar facility.

Real Estate Tax Information:

Prior to the development of the solar farm, the land under the Demille and Turrill solar installations were municipal-owned and were not subject to property tax. After development, in 2017, the land became taxable and taxes were $82,889 total, as shown below.

PIN	Acres	2016 Taxes Paid	2017 Taxes Paid	Tax Increase	2016 Assessed Value	2017 Assessed Value	Value Increase
Lapeer County, MI							
L20-98-008-003-00*	110.84	$ -	$ 34,294	N/A	$ -	$ 726,700	N/A
L20-95-705-050-00*	254.84	$ -	$ 48,595	N/A	$ -	$ 1,029,750	N/A
TOTAL	**365.68**	**$ -**	**$ 82,889**	**N/A**	**$ -**	**$ 1,756,450**	**N/A**

* Prior to development as a solar farm, the parcels were municpal property without a taxable value.

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PAIRED SALE ANALYSIS

The maps, below, and on the following pages display properties adjoining the solar sites that are numbered in red for subsequent analysis.

Demille Solar Farm



DTE Lapeer Solar Projects - Demille Adjoining Properties

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DTE Lapeer Solar Projects - Demille Adjoining Properties

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Turrill Solar Farm



DTE Lapeer Solar Projects - Turrill Adjoining Properties

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DTE Lapeer Solar Projects - Turrill Adjoining Properties

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In reviewing Adjoining Properties to study in a Paired Sale Analysis, several properties and sales were considered but eliminated from further consideration as discussed below.

We identified eight Adjoining Properties that sold since the solar farm started operations in May of 2017: Adjoining Properties 3, 4, 7, 9, 10, and 16 for the Demille Solar Farm, and Adjoining Properties 3 and 4 for the Turrill Solar Farm. Of these properties, three were considered atypical for the area.

Adjoining Property 7 adjacent to the Demille Solar farm is a split-level home with a finished walk out basement with a pool. The typical home in the area has a traditional basement and pools are atypical. The unusual nature of this sale was confirmed with the selling broker, Renee Voss (see comments below). We note that this home sold twice after the construction of the solar farm, once in September 2018 and again in August 2019. The appreciate rate between the two sale dates are analyzed further later in this section.

Adjoining Property 16 just south of the Demille Solar Farm is a 10.1-acre lot that is buffered by trees. The home is atypical for the area, as most homes are situated on lots between 1-acre and 1.5-acres in size and were built before 1980; this home was built in 2008. We interviewed the broker Josh Holbrook (see comments below) who confirmed the atypical nature of this property.

Adjoining Property 3, just west of the Turrill Solar Farm, was a ranch home with 1,348 square feet on a lot that was just over one acre. Comparables for homes of this size, type, and lot size were not available in the immediate market area. It should be noted that the price per square foot for this home ($108.01) is significantly higher than median price per square foot of either data set we studied.

As a part of our research, we interviewed three local real estate brokers that sold homes adjacent to the Lapeer Solar farm. According to the brokers, there was no impact on the home prices or marketability due to the homes' proximity to the solar arrays.

Renee Voss of Coldwell Banker, selling broker of the raised ranch at 1138 Don Wayne Drive (Adjoining Property 7), which is adjacent to the Demille solar farm at the southeast corner, noted that there was no impact on this sale from the solar farm located to the rear. The home, which has a pool in the backyard, sold quickly with multiple offers, Voss stated.

Josh Holbrook, the selling broker of 1408 Turrill Road (known as Adjoining Property 16), located just south of the Demille Solar Farm, said the solar farm had no impact on the sale and that the community takes pride in the solar farm.

Anne Pence of National Realty Centers, the selling broker for 1126 Don Wayne Drive, a single-family home adjacent to the Demille solar farm (known as Test Area Sale 9), reported that "the solar farm did not have any effect on the sale of this home. The buyers did not care one bit about the solar field in the back yard. The fact is that you know no one is going to be behind you when they develop a solar farm in your back yard. And [sometimes the developer] put up trees to block the view. My in-laws also actually live at end of that street, even though they haven't sold or put their house on market, they don't mind the solar panels either. It's not an eyesore. And another house sold on that block, a raised ranch home, and it sold with no problems."

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GROUP 1 – DEMILLE

Adjoining Properties 3, 4, and 9 to the Demille Solar Farm were considered for a paired sales analysis, and we analyzed these properties as single-family home uses in Group 1. The improvements on these properties are located between 275 to 305 feet to the nearest solar panel.

Test Area Sales Group 1 - Demille Solar									
Adj. Property #	Address	Median Sale Price	Median Site Size (AC)	Median Beds	Median Baths	Median Year Built	Median Square Feet	Median Sale Date	Median Price PSF
3, 4, 9	1174 Alice Dr, 1168 Alice Dr, 1126 Don Wayne Drive	$165,000	0.50	3	2.0	1973	1,672	Jan-19	$105.26

We analyzed six Control Area Sales of single-family homes with similar construction and use that were not located in close proximity to the solar farm, that sold within a reasonable time frame from the median sale date of the Test Area Sales in Group 1. The Control Area Sales for Group 1 are ranch homes with three bedrooms and one and a half to two bathrooms. We excluded sales that were bank-owned, and those between related parties.



Lapeer Solar-Demille - Group 1: Test Area Sales Map

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Control Area Sales were adjusted for market conditions using the Federal Housing Finance Agency's House Price Index (HPI), a weighted, repeat-sales index measuring average price changes in repeat sales or refinancing of the same properties. The result of our analysis for DTE Lapeer Solar Project - Group 1-Demille is presented on the below.

CohnReznick Paired Sale Analysis DTE Lapeer Solar Group 1 - Demille Solar		
No. of Sales	**Potentially Impacted by Solar Farm**	**Adjusted Median Price Per SF**
Test Area Sales (3)	Adjoining solar farm	$105.26
Control Area Sales (6)	No: Not adjoining solar farm	$99.64
Difference between Unit Price of Test Area Sales and Adjusted Median Unit Price of Control Area Sales		**5.65%**

The days on market for the three Test Area Sales had a median of 29 days on market (ranging from 5 to 48 days), while the median days on market for the Control Area Sales was 21 days (ranging from 5 to 224 days), ***and we note no significant marketing time differential.***

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GROUP 2 – DEMILLE

Adjoining Property 10 to the Demille Solar Farm was considered for a paired sales analysis, and we analyzed this property as a single-family home use in Group 2. The improvements on this property are located approximately 315 to the nearest solar panel.

Test Area Sale Group 2 - Demille Solar										
Adj. Property #	Address	Sale Price	Median Site Size (AC)	Bedrooms	Bathrooms	Year Built/Renovated	Square Feet	Other Features	Sale Date	Price PSF
10	1120 Don Wayne Drive, Lapeer	$194,000	0.47	3	2.5	1976/2006	1,700	Above Ground Pool, Two Car Garage	Nov-19	$114.12

We analyzed five Control Area Sales of single-family homes with similar construction and use that were not located in close proximity to the solar farm, that sold within a reasonable time frame from the sale date of the Test Area Sale in Group 2. The Control Area Sales for Group 2 are similarly sized homes in Lapeer County with three to four bedrooms and one and half to three bathrooms, with an above-ground pool, and an attached garage. We excluded sales that were bank-owned, and those between related parties.



DTE Lapeer Solar-Demille - Group 2: Test Area Sales Map

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Control Area Sales were adjusted for market conditions using the Federal Housing Finance Agency's House Price Index (HPI), a weighted, repeat-sales index measuring average price changes in repeat sales or refinancing of the same properties. The result of our analysis for DTE Lapeer Solar Project - Group 2 is presented below.

CohnReznick Paired Sale Analysis DTE Lapeer Solar Group 2 - Demille Solar		
No. of Sales	**Potentially Impacted by Solar Farm**	**Adjusted Median Price Per SF**
Test Area Sales (1)	Adjoining solar farm	$114.12
Control Area Sales (5)	No: Not adjoining solar farm	$113.01
Difference between Unit Price of Test Area Sales and Adjusted Median Unit Price of Control Area Sales		**0.98%**

The marketing time for the Test Area Sales was 90 days on market, while the median marketing time for the Control Area Sales was 34 days (ranging from 3 to 73 days). We note the Test Area Sale was initially listed above its market value, as there was a listing price decline after a month on the market. We also note that after the final decrease of the list price, the Test Area Sale home was only on the market 51 more days, which is within the range exhibited by the Control Area Sales.

GROUP 3 – TURRILL

Adjoining Property 4 to the Turrill Solar Farm was analyzed separately since it is a two-story home on a larger lot than the Test Area Sale in Group 2. The home on Adjoining Property 4 is 290 feet from the property line to the nearest solar panel.

Test Area Sale Group 3 - Turrill Solar									
Adj. Property #	**Address**	**Median Sale Price**	**Median Site Size (AC)**	**Median Beds**	**Median Baths**	**Median Year Built**	**Median Square Feet**	**Median Sale Date**	**Median Price PSF**
4	1060 Cliff Drive	$200,500	1.30	4	2.5	1970	2,114	Sep-18	$94.84

We analyzed four single-family homes as Control Area Sales with similar construction that were not located in close proximity to the solar farm, that sold within a reasonable time frame from the sale date of Adjoining Property 4.

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The Control Area Sales for Group 3 are two-story homes with two to four bedrooms and 2.5 to 3 bathrooms. We excluded sales that were bank-owned, and those between related parties.



DTE Lapeer Solar-Turrill - Group 3: Test Area Sales Map

Control Area Sales were adjusted for market conditions using the Federal Housing Finance Agency's House Price Index (HPI), a weighted, repeat-sales index measuring average price changes in repeat sales or refinancing of the same properties. The result of our analysis for DTE Lapeer Solar Project-Turrill – Group 3 is presented on the following page.

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CohnReznick Paired Sale Analysis DTE Lapeer Solar Group 3 - Turrill Solar		
No. of Sales	**Potentially Impacted by Solar Farm**	**Adjusted Median Price Per SF**
Test Area Sale (1)	Adjoining solar farm	$94.84
Control Area Sales (4)	No: Not adjoining solar farm	$96.32
Difference between Unit Price of Test Area Sale and Adjusted Median Unit Price of Control Area Sales		**-1.53%**

The marketing time for the Test Area Sale was two days on market, while the median days on market for the Control Area Sales was 35 days (ranging from 11 to 177 days), ***and we note no negative marketing time differential.***

Noting no significant price differential in any of the three groups, it does not appear that the DTE Lapeer Solar Farm had any negative impact on adjacent property values.

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BEFORE & AFTER ANALYSIS – DEMILLE SOLAR PROJECT

We note two of the Test Area Sales in Group 1 of the Demille Solar project (Adjoining Properties 4 and 9), one sale in Group 2 of the Demille Solar farm (Adjoining Property 10), as well as Adjoining Property 7 have sold at least twice over the past 15 years. To determine if any of the rates of appreciation for these identified home sales were affected by the proximity to the Demille Solar farm, we prepared a Repeat-Sales Analysis on each identified adjoining property. First, we calculated the total appreciation between each sale of the same property, the number of months that elapsed between each sale, and determined the monthly appreciation rate. Then, we compared extracted appreciation rates reflected in the Federal Housing Finance Agency (FHFA) Home Price Index for Michigan's 48446 zip code (where the identified homes are located) over the same period. The index for zip codes is measured on a yearly basis and is presented below.

48446 Zip Code - Housing Price Index Change (Year over Year) Not Seasonally Adjusted

Five-Digit ZIP Code	Year	Annual Change (%)	HPI	HPI with 1990 base	HPI with 2000 base
48446	2004	2.02	438.38	206.29	111.35
48446	2005	3.68	454.53	213.89	115.45
48446	2006	-1.76	446.53	210.12	113.42
48446	2007	-6.35	418.17	196.78	106.22
48446	2008	-8.37	383.17	180.31	97.33
48446	2009	-10.62	342.49	161.16	86.99
48446	2010	-8.94	311.86	146.75	79.21
48446	2011	-6.89	290.37	136.64	73.75
48446	2012	0.29	291.22	137.04	73.97
48446	2013	7.27	312.39	147.00	79.35
48446	2014	7.10	334.56	157.43	84.98
48446	2015	5.10	351.63	165.47	89.32
48446	2016	6.10	373.08	175.56	94.76
48446	2017	6.74	398.23	187.39	101.15
48446	2018	5.96	421.96	198.56	107.18
48446	2019	5.74	446.17	209.95	113.33
48446	2020	4.99	468.43	220.43	118.98

We have presented the full repeat sales analysis on the following page.

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Repeat Sales Analysis											48446 Zip Code - FHFA House Price Index Change			
Property ID	Address	Land Area (Acres)	Total Finished Living Area (SF)	Most Recent Sale Date	Most Recent Sale Price	Prior Sale Date	Prior Sale Price	Total Appreciation	Months Elapsed Between Sales	Monthly Appreciation Rate	Index Level During Year of Most Recent Sale	Prior Sale Year Index Level	Total Appreciation	Monthly Appreciation Rate
4	1168 Alice Drive	0.46	1,672	10/9/2019	$176,000	12/8/2017	$144,000	22.22%	22	0.92%	446.17	398.23	12.04%	0.52%
4	1168 Alice Drive	0.46	1,672	12/8/2017	$144,000	10/1/1993	$100,000	44.00%	290	0.13%	398.23	238.05	67.29%	0.18%
9	1126 Don Wayne Drive	0.50	1,900	5/21/2018	$160,000	12/21/2007	$119,000	34.45%	125	0.24%	446.17	418.17	6.70%	0.05%
10	1120 Don Wayne Drive	0.47	1,700	11/8/2019	$194,000	10/15/2014	$173,200	12.01%	61	0.19%	446.17	334.56	33.36%	0.47%
7	1138 Don Wayne Drive	0.47	2,128	9/7/2018	$179,900	8/22/2014	$148,500	21.14%	49	0.40%	446.17	334.56	33.36%	0.60%
7	1138 Don Wayne Drive	0.47	2,128	8/28/2019	$191,000	9/7/2018	$179,900	6.17%	12	0.51%	446.17	446.17	0.00%	0.00%
	Median - Test Area Sales	*0.47*	*1,800*							*0.32%*				*0.33%*
	Median - Before/After	*0.49*	*2,019*							*0.21%*				*0.11%*

Conclusion

When compared to the FHFA home price index for the local zip code, the median monthly appreciation rate of the sales of properties adjoining the Demille Solar Farm that sold before construction of the solar farm and again after construction of the solar farm outperformed the median for the zip code, as depicted in the far-right column in the table above (and highlighted in orange). Additionally, the extracted appreciation rate for the resales of Adjoining Properties 4 and 7, that sold twice after the solar farm was constructed, exhibited higher rates of appreciation than the Home Price Index for the zip code (highlighted in white). As such, *we have concluded that there does not appear to be a consistent detrimental impact on the value of properties adjacent to the DTE Lapeer-Demille Solar Farm.*

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SOLAR FARM 3: GRAND RIDGE SOLAR FARM, LASALLE COUNTY, ILLINOIS

Coordinates: Latitude 41.143421, Longitude -88.758340

PINs: 34-22-100-000, 34-22-101-000

Total Land Size: 158 acres

Date Project Announced: December 31, 2010

Date Project Completed: July 2012

Output: 20 MW AC

This solar farm is located in the southeast quadrant of the intersection of E. 21st and N. 15th Roads, near Streator, in LaSalle County, Illinois. The solar farm was developed by Invenergy and is part of a renewable energy center known as Grand Ridge. The Energy Center includes the 20 MW AC solar facility, a 210 MW wind farm, and a 36 MW advanced-energy storage facility, all in one local vicinity. The solar site is located adjacent to the south and west of Invenergy's wind farm.

The solar facility consists of 20 individual 1-MW solar inverters and over 155,000 photovoltaic solar panels manufactured by General Electric.

The Surrounding Area: The Grand Ridge Solar Farm is situated just outside of the City of Streator, in Otter Creek Township, in LaSalle County, Illinois. The solar farm is located in a primarily rural part of Illinois, with the nearest interstate, Interstate-55, located approximately 14 miles southeast of the site.

The Immediate Area: Within a one-mile radius of the solar farm, surrounding uses mainly consist of agricultural land, with some single-family homes to the west. All of the adjacent land parcels to the solar farm are used for agricultural and/or residential purposes.

The solar site is surrounded by row crops to the north adjoining N. 15th Road. Row crops also adjoin the solar arrays to the east. Scrub shrubbery exists on the western border of the solar site, along E. 21st Road. On the west side of E. 21st Road is the 28-acre private Sandy Ford Sportsmans Club that includes a 12-acre fishing lake. The private Lazy Acres Fishing Club adjoins the solar site to the south and is surrounded by mature trees.

Real Estate Tax Information: Prior to development of the solar farm, in 2011, the owner of this 158-acre site paid real estate taxes of $3,000 annually. In the year following the solar farm development, 2012, real estate taxes increased to approximately $240,000, a 7,791 percent increase in tax revenue for the site.

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PIN	Acres	2011 Taxes Paid	2012 Taxes Paid	Tax Increase	2011 Assessed Value	2012 Assessed Value	Value Increase
LaSalle County, IL							
34-22-100-000	78.99	$ 1,580	$ 120,064	7501%	$ 23,830	$ 1,812,357	7505%
34-22-101-000	78.80	$ 1,457	$ 119,539	8106%	$ 21,975	$ 1,804,433	8111%
TOTAL	**157.79**	**$ 3,036**	**$ 239,602**	**7791%**	**$ 45,805**	**$ 3,616,790**	**7796%**

The map below displays the parcels in the solar farm site (outlined in red). Properties adjoining the solar parcels are numbered for subsequent analysis.



Grand Ridge Solar - Adjoining Properties

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The surrounding area is primarily populated with agricultural uses. Some of these agricultural parcels contain homesteads on the site and others are fully unimproved.

Adjoining Properties 1, 3, 5, 6, 7, 13, and 14 have no sales data, therefore, those properties djoining Properties have been excluded from further analysis.

Recall, the solar farm was announced on December 31, 2010 and began operations in July 2012. Adjoining Properties 8 and 9 were sold in 1997 and 1996, respectively. These sales did not occur within a reasonable time period prior to announcement/completion. Therefore, Adjoining Properties 8 and 9 were excluded from further analysis.

Adjoining Property 4 sold in March 2011 while construction was ongoing. However, we have not considered this property for a paired sales analysis because the impact of being proximate to the solar farm could not be differentiated from the impact of the construction. Therefore, Adjoining Property 4 was excluded from further analysis.

Adjoining Property 2 transferred in September of 2018 with no consideration amount on a Trustee's deed from Gemini Farms LLC to the Bedeker Family Gift Trust. John and Susan Bedeker are owners of the Adjoining Property 1. This is not considered an arm's length transaction, therefore, Adjoining Property 2 was excluded from further analysis.

Adjoining Properties 11 and 12 were initially one parcel of 37.07 acres. Adjoining Property 12 sold in October 2016, which is a reasonable time period after completion of the solar farm. When Adjoining Property 12 was sold, the parcel was split into the two-acre homesite now known as Adjoining Propeprty 12, and the 35.07 acre farm, that was retained by the seller. Therefore, we have excluded Adjoining Property 11 and only considered Adjoining Property 12 (Test Area Sale) for paired sales analysis.

PAIRED SALES ANALYSIS

We have considered only one type of paired sales analysis, we have compared sales of similar properties not proximate to the solar farm (Control Area Sales) to the sales of the adjoining property (Test Area Sale), after the completion of the solar farm project.

Adjoining Property 12 (Test Area Sale) was considered for a paired sales analysis, and we analyzed this property as a single-family home use, a 2,328 square foot home located on a 2.0- acre parcel that sold in October 2016. This parcel is approximately 366 feet from the closest solar panel, and the improvements are approximately 479 feet from the closest solar panel. The table on the following page outlines the other important characteristics of Adjoining Property 12.

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Grand Ridge Solar Farm Test Area Sale - Adjoining Property 12										
Property #	**Address**	**Sale Price**	**Beds**	**Baths**	**Year Built**	**Home Size (SF)**	**Improvements**	**Site Size (AC)**	**Sale Price/SF**	**Sale Date**
Adjoining Property 12	2098 N 15th Rd, Streator, IL	$186,000	3	4.0	1997	2,328	Single Family Home and Garage and Farm Acreage	2.0	$79.90	Oct-16

We have found five Control Area Sales using data from the Northern Illinois Multiple Listing Service (MLS) and verified these sales through county records, conversations with brokers, and the County Assessor's office. We excluded sales that were not arm's length, such as REO sales or those between related parties. We have excluded any home sites under one acre and included only sales with a similar quantity of bedrooms, bathrooms, and living area. The Control Area Sales are comparable in most physical characteristics and bracket Adjoining Property 12 reasonably.



Grand Ridge Solar: Test Area Sale Map

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It is important to note that the Control Area Sales are not adjoining to any solar farm, nor do they have a view of one from the property. Therefore, neither the announcement nor the completion of the solar farm use could have impacted the sales price of these properties. It is informative to note that the average marketing time (from list date to closing date) for Control Area Sales of 171 days is consistent with the marketing time for the Test Area Sale which was on the market for 169 days. This is an indication that the marketability of the Test Area Sale was not negatively influenced by proximity to the solar farm.

We analyzed the five Control Area Sales and adjusted for market conditions using a regression analysis to identity the appropriate monthly market conditions adjustment. The results of the paired sales analysis for the Grand Ridge Solar Farm are presented below.

CohnReznick Paired Sales Anaysis Grand Ridge Solar Farm Adjoining Property 12		
No. of Sales	**Potentially Impacted by Solar Farm**	**Adjusted Median Price Per SF**
Test Area Sale (1)	Yes: Adjoining solar farm	$79.90
Control Area Sales (5)	No: Not adjoining solar farm	$74.35
Difference between Unit Price of Test Area Sale and Adjusted Median Unit Price of Control Area Sales		**7.46%**

The unit sale price of the Test Area Sale was somewhat higher than the median adjusted unit sale price of the Control Area Sales.

We contacted the selling broker of the Test Area Sale home, Tina Sergenti with Coldwell Banker, who said that the proximity of the solar farm had no impact on the marketing time or selling price of the home. The Test Area Sale sold with 169 days on market (5 – 6 months) compared to the Control Area Sales, which sold between 10 471 days on market (0 and 16 months).

Noting no negative price differential, it does not appear that the Grand Ridge Solar Farm impacted the sales price of the Test Area Sale, Adjoining Property 12. This was confirmed by the real estate agent who marketed and sold this home.

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SOLAR FARM 4: WOODLAND SOLAR FARM, ISLE OF WIGHT COUNTY, VIRGINIA

Coordinates: Latitude 36.890000, Longitude -76.611000

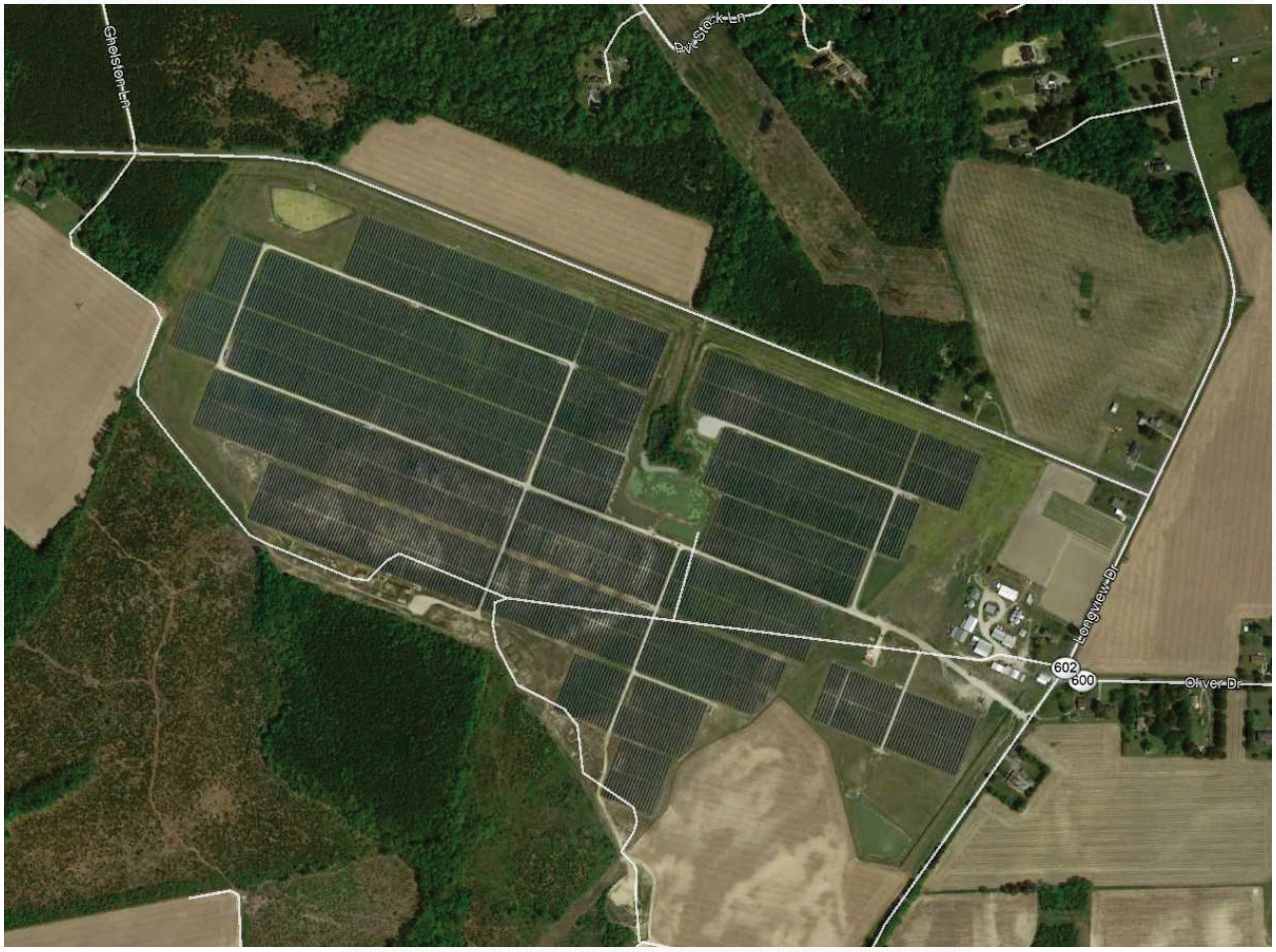
PINs: 41-02-004, 41-02-001, 41-02-001A, 41-02-005

Total Land Size: 211.12 acres

Date Project Announced: August 4, 2015

Date Project Completed: December 2016

Output: 19.0 MW AC



Aerial imagery retrieved from Google Earth

The Woodland Solar Farm is located in unincorporated Isle of Wight County, Virginia, and was developed by Dominion Virginia Power in 2016. This solar farm has a capacity of 19.0 Megawatts (MW) AC of power, which is enough to power 4,700 homes. The solar farm sits on 204 acres, part of Oliver Farms, a 1,000-acre site that was

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chosen for its flat land and proximity to power lines. The land under the solar arrays was previously farmed and used to grow broccoli, collards, peas, strawberries, and butter beans. The solar installation includes 79,648 solar panels and was one of the largest of its kind at the time of construction.

The Surrounding Area: Isle of Wight County is in the southeast part of Virginia and has shoreline along the James River on its eastern border. The county is predominantly rural and has two incorporated towns, Smithfield and Windsor. The Woodland Solar facility is approximately 27 miles northwest of Norfolk, Virginia, across the Elizabeth River and the Nansemond River. The solar site is also approximately 21 miles southwest of Newport News, Virginia. The town of Smithfield is approximately nine miles northeast of the solar facility and the town of Windsor is approximately 12 miles southwest. The solar facility is near the intersection of State Route 600 (Oliver Drive) and State Route 602 (Longview Drive).

The Immediate Area: Land uses surrounding the Woodland Solar facility include forests and agricultural land to the north, west, and south, and residential and farmland to the east.

Landscaping around the solar site consists of the naturally occurring vegetation and forests. It should be noted that the landowner that leases the land to the solar owner has agricultural buildings and other structures along Longview Drive and the nearest solar panels are approximately 220 feet from the property line.

Real Estate Tax Information: In 2015, prior to the property being assessed as a solar farm, the assessed value of the property was approximately $542,200 and ownership paid $4,609 in real estate taxes (see below). In 2016, the assessed value increased to $3,021,600 and the real estate tax increased to $27,844.

PIN	Acres	2015 Taxes Paid	2016 Taxes Paid	Tax Increase	2015 Assessed Value	2016 Assessed Value	Value Increase
Isle of Wight County, VA							
41-02-004	107.32	$ 2,250	$ 15,985	610%	$ 264,700	$ 1,728,100	553%
41-02-001	62.66	$ 1,369	$ 8,601	529%	$ 161,000	$ 939,900	484%
41-02-001A	8.08	$ 230	$ 1,193	420%	$ 27,000	$ 110,700	310%
41-02-005	33.06	$ 761	$ 2,065	171%	$ 89,500	$ 242,900	171%
TOTAL	**211.12**	**$ 4,609**	**$ 27,844**	**504%**	**$ 542,200**	**$ 3,021,600**	**457%**

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PAIRED SALE ANALYSIS:

The map below displays the Adjoining Properties to the solar farm (outlined in red). Properties adjoining the solar farm parcels are numbered for subsequent analysis.



Woodland Solar - Adjoining Properties

In reviewing Adjoining Properties to study in a Paired Sale Analysis, several properties and sales were considered but eliminated from further consideration as discussed below.

We identified three Adjoining Properties that sold since the solar farm started operations in December 2016: Adjoining Property 3, and two parcels included in Adjoining Property 5. The two properties that were considered part of Adjoining Property 5, sold between related parties, and were sales between family members of the land lessor for the solar site. These two sales were excluded from further analysis as they were not arms' length transactions.

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Adjoining Property 3 was considered for a paired sales analysis and we analyzed this property as single-family home use. The improvements on this property are located approximately 600 feet from the nearest solar panel.

Woodland Solar Farm Test Area Sale - Adjoining Property 3									
Adj. Property #	Address	Sale Price	Site Size (AC)	Beds	Baths	Year Built	Home Size GLA (SF)	Sale Date	Price PSF
3	18146 Longview Drive	$175,000	1.00	3	1	1978	1,210	Jun-16	$144.63

We analyzed five Control Area Sales of single-family homes with similar construction and use that were not located in close proximity to the solar farm, that sold within a reasonable time frame from the sale date of the Test Area Sale. The Control Area Sales are one-story homes with three bedrooms and either one or two bathrooms. We excluded sales that were bank-owned, REO sales, and those between related parties.



Woodland Solar – Test Area Sale Map

The Control Area Sales were adjusted for market conditions using a regression analysis to identify the appropriate monthly market conditions adjustment. The result of our analysis for Woodland Solar Farm is presented on the following page.

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CohnReznick Paired Sales Anaysis Woodland Solar Farm Adjoining Property 3		
No. of Sales	**Potentially Impacted by Solar Farm**	**Adjusted Median Price Per SF**
Test Area Sale (1)	Yes: Adjoining solar farm	$144.63
Control Area Sales (5)	No: Not adjoining solar farm	$137.76
Difference between Unit Price of Test Area Sale and Adjusted Median Unit Price of Control Area Sales		**4.99%**

The difference between the unit price of the Test Area Sale and the Adjusted Median Unit Price of the Control Area Sales is considered within the range for a typical market area.

Noting no negative marketing time differential, the Test Area Sale sold in 33 days (1-2 months), while the Control Area Sales sold between 17 and 37 days (0-2 months), with a median time on market of 28 days.

Noting no negative price differential, with the Test Area Sale having a higher unit sale price than the Control Area Sales, it does not appear that the Woodland Solar Farm had any negative impact on adjacent property values.

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SOLAR FARM 5: DOMINION INDY SOLAR III, MARION COUNTY, INDIANA

Coordinates: Latitude 39°39'14.16"N, Longitude 86°15'35.06"W

PIN: 49-13-13-113-001.000-200

Total Land Size: 129 acres

Date Project Announced: August 2012

Date Project Completed: December 2013

Output: 8.6 MW AC (11.9 MW DC)

The Dominion Indy III solar farm was developed by Dominion Renewable Energy and became operable in December 2013. This solar farm has ground-mounted solar panels and has the capacity for 8.6 Megawatts (MW) AC of power. The panels are mounted in a fixed tilt fashion with 12 inverters.

The Surrounding Area: The Dominion Indy III solar farm is located in Decatur Township, in the southwest portion of Marion County, Indiana. The solar farm is approximately 10 miles southeast of the Indianapolis International Airport and approximately eight and a half miles from the center of Indianapolis.

The Immediate Area: The solar installation is on the southern side of West Southport Road. Adjoining parcels to the west, south, and east are agricultural in nature, actively farmed primarily with row crops and large areas of mature trees. There is one single family home on 4.78 acres of land at the northwest corner of the solar site, with frontage on West Southport Road, identified in our analysis as Adjoining Property 9.

To the north, across West Southport Road from the solar site, is the single-family residential subdivision known as Crossfield. Originally developed with over 81 acres of land by the Key Life Insurance Company, the one- and two-story homes in the subdivision were built between approximately 1998 and 2011.

All of the adjacent land parcels to the solar farm are used for agricultural or residential purposes.

The solar farm is surrounded by a chain link fence around all of the solar panels. Additionally, there are some natural shrubs and trees on all sides of the property; this vegetation was in place before the solar farm was developed.

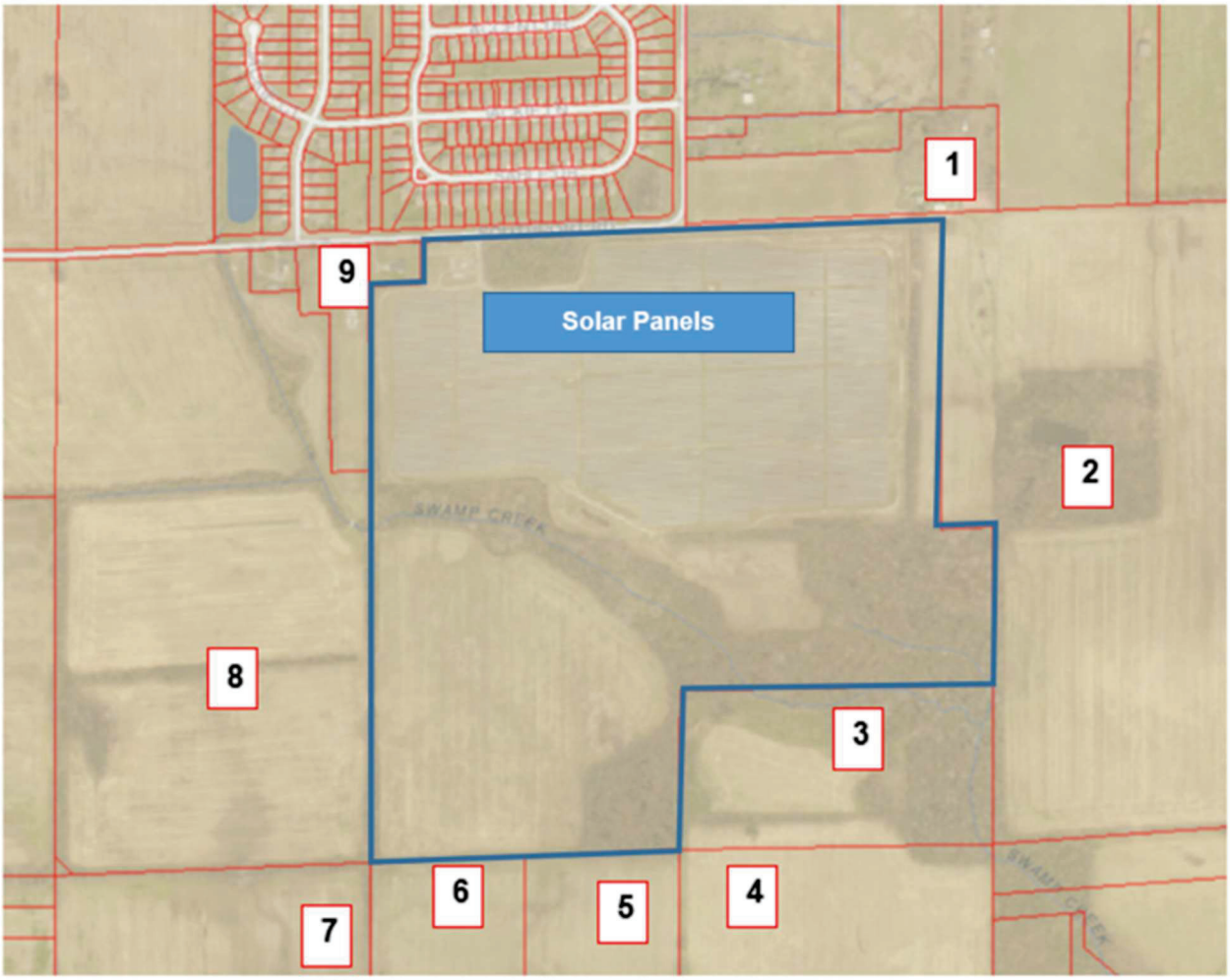
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Real Estate Tax Information: Prior to development of the solar farm, in 2013, the owner of this 129-acre site paid real estate taxes of $1,788 annually. After development of the solar farm development, in 2015, real estate taxes increased to approximately $16,405, an 818 percent increase in tax revenue for the site.

PIN	Acres	2013 Taxes Paid	2015 Taxes Paid	Tax Increase	2013 Assessed Value	2015 Assessed Value	Value Increase
Marion County, IN							
49-13-13-113-001.000-200	129.04	$ 1,788	$ 16,405	818%	$ 89,400	$ 109,900	23%
TOTAL	**129.04**	**$ 1,788**	**$ 16,405**	**818%**	**$ 89,400**	**$ 109,900**	**23%**

The map below, and the maps on the following pages, display the parcels within the solar farm is located (outlined in blue). Properties adjoining this site are numbered for subsequent analysis.



Dominion Indy III - Adjoining Properties

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PAIRED SALES ANALYSIS

We have considered two types of paired sales analysis with regards to the Dominion Indy III solar farm. The first compares sales of Adjoining Properties (Test Area Sales) to the solar farm after the completion of the solar farm site to similar properties not proximate to the solar farm (Control Area Sales). We utilized this type of paired sale analysis for all three groups of Adjoining Properties under study.

The second type of paired sale analysis is known as a Before and After analysis which compares sales of Adjoining Properties that occurred prior to the announcement of the solar farm with the sales of the same Adjoining Properties after the completion of the solar farm development. We were able to use home sale data from the Crossfield subdivision that is located to the north of the solar site, across West Southport Road, for this analysis.

GROUP 1

Adjoining Property 2 is a vacant 86.96-acre agricultural parcel located to the east of the solar site. Adjoining Property 2 sold in October 2017 and was considered for a paired sale analysis, known as a Test Area Sale, in Group 1.

The property line of this unimproved parcel is approximately 166 feet from the closest solar panel. The following table outlines the other important characteristics of Adjoining Property 12.

Test Area Sale Group 1 - Agricultural Land								
Adjoining Property #	Address	Sale Price	Site Size (AC)	NCCPI Index	Wetlands	Floodplain	Sale Price/AC	Sale Date
Adjoining Property 2	5755 W Southport Rd, Indianapolis, IN	$738,584	89.96	63.4	1%	Zone X	$8,210	Oct-17

Soil Productivity and Land Value Trends and the NCCPI Productivity Index

Crop yields have been the basis for establishing a soil productivity index, and are used by county assessors, farmers, and market participants in assessing agricultural land. While crop yields are an integral part in assessing soil qualities, it is not an appropriate metric to rely on because "yields fluctuate from year to year, and absolute yields mean little when comparing different crops. Productivity indices provide a single scale on which soils may be rated according to their suitability for several major crops under specified levels of management such as an average level."[1] The productivity index, therefore, not crop yields, is best suited for applications in land appraisal and land-use planning.

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The United States Department of Agriculture's (USDA) National Resources Conservation Services (NRCS) developed and utilizes the National Commodity Crop Productivity Index (NCCPI) as a national soil interpreter and is used in the National Soil Information System (NASIS), but it is not intended to replace other crop production models developed by individual states.[18] The focus of the model is on identifying the best soils for the growth of commodity crops, as the best soils for the growth of these crops are generally the best soils for the growth of other crops.[19] The NCCPI model describes relative productivity ranking over a period of years and not for a single year where external influences such as extreme weather or change in management practices may have affected production. At the moment, the index only describes non-irrigated crops, and will later be expanded to include irrigated crops, rangeland, and forestland productivity.[20]

Yields are influenced by a variety of different factors including environmental traits and management inputs. Tracked climate and soil qualities have been proven by researchers to directly explain fluctuations in crop yields, especially those qualities that relate to moisture-holding capacity. Some states such as Illinois have developed a soil productivity model that considers these factors to describe "optimal" productivity of farmed land. Except for these factors, "inherent soil quality or inherent soil productivity varies little over time or from place to place for a specific soil (map unit component) identified by the National Cooperative Soil Survey (NCSS)."[21] The NRCS Web Soil Survey website has additional information on how the ratings are determined. The **State of Indiana** does not have its own crop production model and utilizes the NCCPI.

In analyzing agricultural land sales for Control Area Sales with similar characteristics to Adjoining Property 2, we have excluded any parcels with NCCPI soil indices less than 50.0 and greater than 85.0.

We identified and analyzed four Control Area Sales that were comparable in location, size, and use that were not located in close proximity to the solar farm. The Control Area Sales for Adjoining Property 2 are land tracts that were larger than 20 acres and utilized specifically as farmland. We excluded sales that were bank-owned, those between related parties, split transactions, and land with significant improvements.

The Control Area Sales that are included in this analysis sold within a reasonable time frame from the sale date of the Test Area Sale and are similar to the Test Area Sale in physical characteristics.

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[18] Agricultural land rental payments are typically tied to crop production of the leased agricultural land and is one of the primary reasons the NCCPI was developed, especially since the model needed to be consistent across political boundaries.

[19] Per the User Guide for the National Commodity Crop Productivity Index, the NCCPI uses natural relationships of soil, landscape and climate factors to model the response of commodity crops in soil map units. The present use of the land is not considered in the ratings.

[20] AgriData Inc. Docs: http://support.agridatainc.com/NationalCommodityCropProductivityIndex(NCCPI).ashx

[21] USDA NRCS's User Guide National Commodity Crop Productivity Index (NCCPI)

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Dominion Indy III - Group 1: Test Area Sale Map

The Control Area Sales were adjusted for market conditions using a regression and trend analysis to identify the appropriate monthly market condition adjustment. Using the agricultural land sale data published in the *Land Sales Bulletin,*[22] from January 2016 through December 2017, which includes reliable and credible data for analysis, we extracted a monthly rate of change of 0.50 percent.

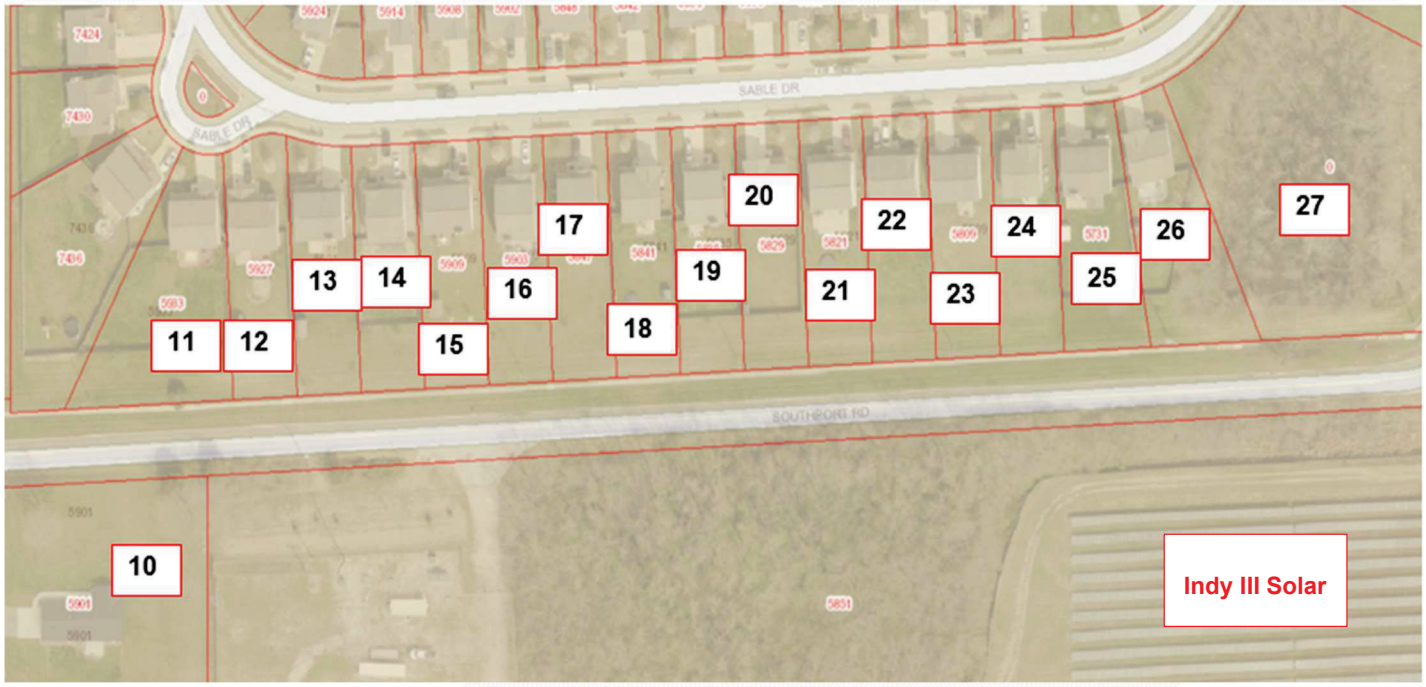
The results of our analysis for Adjoining Property 2, in Group 1 are presented on the following page.

[22] https://www.landsalesbulletin.com/

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CohnReznick Paired Sale Analysis Dominion Indy III Solar Group 1 - Agricultural Land		
No. of Sales	**Potentially Impacted by Solar Farm**	**Adjusted Median Price Per Acre**
Test Area Sale (Adjoining Property 2)	Yes: Solar Farm was completed by the sale date	$8,210
Control Area Sales (4)	No: Not adjoining solar farm	$8,091
Difference between Unit Price of Test Area Sale and Adjusted Median Unit Price of Control Area Sales		**1.47%**

Noting the relatively low price differential, in which the Test Area Sale was higher than the median for the Control Areas Sales, it does not appear that the Dominion Indy III solar farm had any negative impact on the adjoining agricultural property value.



Dominion Indy III Solar - Adjoining Properties

We idenitified a total of nine Adjoining Properties that sold after the develoment of the solar farm as single-family home uses. Adjoining Properties 11, 13, 14, 15, 18, 20, 22, 24 and 26 were analyzed in two paired sales analyses (Group 2 and Group 3). These nine properties were analyzed as single-family homes and they are located in the Crossfield subdivision, across West Southport Road from the solar site, as seen in the map above.

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It should be noted that Adjoining Properties 11 and 24 have sold more than once since the solar farm was constructed, and each sale is included in the analysis. Adjoining Property 11 sold first in December 2015 and later in July 2018, approximately two and a half years later. Adjoining Property 24 sold first in February 2014 and later in April 2019, approximately five years later. Our research indicated that these were arm's-length sales.

The nine Adjoining Properties that were included in our paired sales analysis were divided into two groups, based on the sale dates of the Test Area Sales.

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GROUP 2

For Group 2 (sales in 2014 – 2016), we analyzed four Control Area Sales with similar location, square footages, lot sizes, and ages that sold within a reasonable time frame from the median sale date of the Group 2 Test Area Sales.

Test Area Sales Group 2									
Adj. Property #	Address	Median Sale Price	Median Site Size (AC)	Median Beds	Median Baths	Median Year Built	Median Square Feet	Median Sale Date	Median Price PSF
11, 20, 22, 24	5933 Sable Dr, 5829 Sable Dr, 5813 Sable Dr, 5737 Sable Dr	$129,375	0.23	4	2.0	2008	2,163	Jul-15	$60.61

The Test Area Sales in Group 2 are located between 230 feet and 404 feet from the house to the solar panels. The Control Area Sales for Group 2 are located beyond this area in other areas of the Crossfield Division and in other nearby subdivisions.



Dominion Indy III – Group 2: Test Area Sales

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GROUP 3

For Group 3 (sales occurring in 2017 - 2019), we analyzed a set of seven Control Area Sales with similar locations, square footages, lot sizes, and ages that sold within a reasonable time frame from the median sale date of the Group 3 Test Area Sales.

Dominion Indy III Solar Test Area Sales Group 3									
Adj. Property #	Address	Median Sale Price	Median Site Size (AC)	Median Beds	Median Baths	Median Year Built	Median Square Feet	Median Sale Date	Median Price PSF
11, 13, 14, 15, 18, 24, 26	5933 Sable Dr, 5921 Sable Dr, 5915 Sable Dr, 5909 Sable Dr, 5841 Sable Dr, 5737 Sable Dr, 5731 Sable Dr	$169,900	0.23	3	2.5	2006	2,412	Jul-18	$72.15

The Test Area Sales in Group 3 are located between 227 feet and 419 feet from the house to the solar panels. The Control Area Sales are located beyond this area, in other areas of the Crossfield Division, and in other nearby subdivisions.



Dominion Indy III – Group 3: Test Area Sales

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Control Area Sales in Groups 2 and 3 were adjusted for market conditions using a regression analysis to identify the appropriate monthly market condition adjustment. The results of our study are presented below.

CohnReznick Paired Sale Analysis Dominion Indy III Solar Group 2		
No. of Sales	**Potentially Impacted by Solar Farm**	**Adjusted Median Price Per SF**
Test Area Sales (4)	Adjoining solar farm	$60.61
Control Area Sales (8)	No: Not adjoining solar farm	$57.84
Difference between Unit Price of Test Area Sales and Adjusted Median Unit Price of Control Area Sales		**4.78%**

CohnReznick Paired Sale Analysis Dominion Indy III Solar Group 3		
No. of Sales	**Potentially Impacted by Solar Farm**	**Adjusted Median Price Per SF**
Test Area Sales (7)	Adjoining solar farm	$72.15
Control Area Sales (11)	No: Not adjoining solar farm	$71.69
Difference between Unit Price of Test Area Sales and Adjusted Median Unit Price of Control Area Sales		**0.65%**

The Test Area Sales in Group 2 sold between 18 and 75 days on market (0-3 months), while the Control Area Sales in Group 2 sold between 2 and 649 days on market (0-23 months). The Test Area Sales in Group 3 sold between 3 and 75 days on market (0-3 months), while the Control Area Sales in Group 3 sold between 2 and 89 days on market (0-3 months).

Noting the relatively low price differentials, it does not appear that the Dominion Indy III solar farm had any negative impact on adjoining residential property values.

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BEFORE ANNOUNCEMENT AND AFTER CONSTRUCTION OF THE SOLAR FARM ANALYSIS

Due to the number of sales over time in the Crossfield subdivision, we were able to conduct an analysis on the prices of single-family homes before the solar farm announcement date in comparison to the prices of single-family homes after the construction of the Dominion Indy III solar farm. This analysis shows the appreciation rates of homes in the subdivision over the period before the solar farm was announced to after construction was complete. If there were a difference in the appreciation rates of homes within the Test Area (homes adjoining the solar farm) from the homes within the Control Areas (homes not adjoining the solar farm), we would expect to see it in the results of this analysis. We have provided our conclusions from the analysis below, and the following page displays an explanatory chart.

- The Before the Announcement of the solar farm period is from 2006 to July 2012. The After Construction of the solar farm period is from December 2013 to 2019.
- 25 Test Area Sales were sold from 2006 to 2019 and 46 Control Area Sales sold from 2008 to 2019.
    - The Test Area Sales are homes located adjoining the Dominion Indy III Solar Farm in the Crossfield subdivision.
    - The Control Area Sales are homes located in the remainder of the Crossfield subdivision, not adjoining the solar farm.
- In both the Test Area Sales (ORANGE) and Control Area Sales (BLUE) plotted on the chart on the following page, new construction homes sold through 2011, prior to announcement of the solar farm.
- The dotted lines are polynomial trend lines plotted by Microsoft Excel in order to illustrate and approximate the “average” trend of each set of data.
- After construction of the solar farm, in parallel with the improving economic climate (as depicted by the Red lines representing the Federal Housing Finance Agency’s House Price Index for the East North Central region that includes Indiana), it appears that unit prices for both the Test Area Sales and the Control Area Sales appreciated at a similar rate over the period from 2013 to 2019.
- The economic climate improved in the period from 2013 to 2019, as shown by the Red line representing the Federal Housing Finance Agency’s House Price Index for the East North Central region that includes Indiana. After construction of the solar farm, in parallel with the improving economic climate, it appears that unit prices for both the Test Area Sales and the Control Area Sales appreciated at a similar rate over the period from 2013 to 2019.

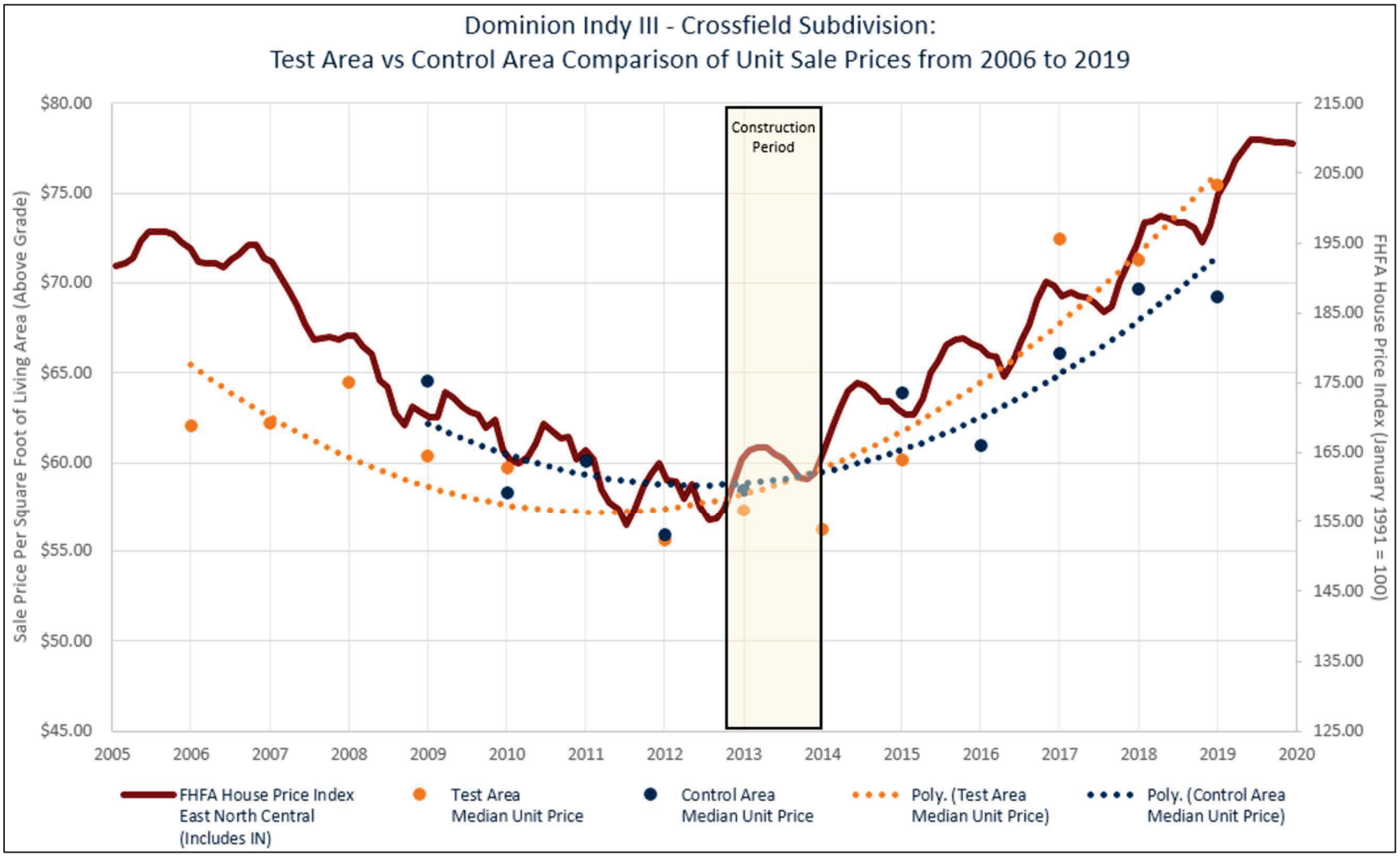
A difference in appreciation rates does not appear to exist between Test Area Sale homes versus the Control Area Sale homes.

Sale prices of single-family homes after the construction of the solar farm exhibit a similar appreciation trend as sales prior to the solar farm announcement. Overall, our findings indicate that there *is not a consistent and measurable difference* in prices that exists in association with homes proximate to the Dominion Indy III solar farm

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ANALYSIS OF BEFORE ANNOUNCEMENT AND AFTER CONSTRUCTION OF THE DOMINION INDY III SOLAR FAR



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SOLAR FARM 6: SUNFISH FARM SOLAR, WAKE COUNTY, NORTH CAROLINA

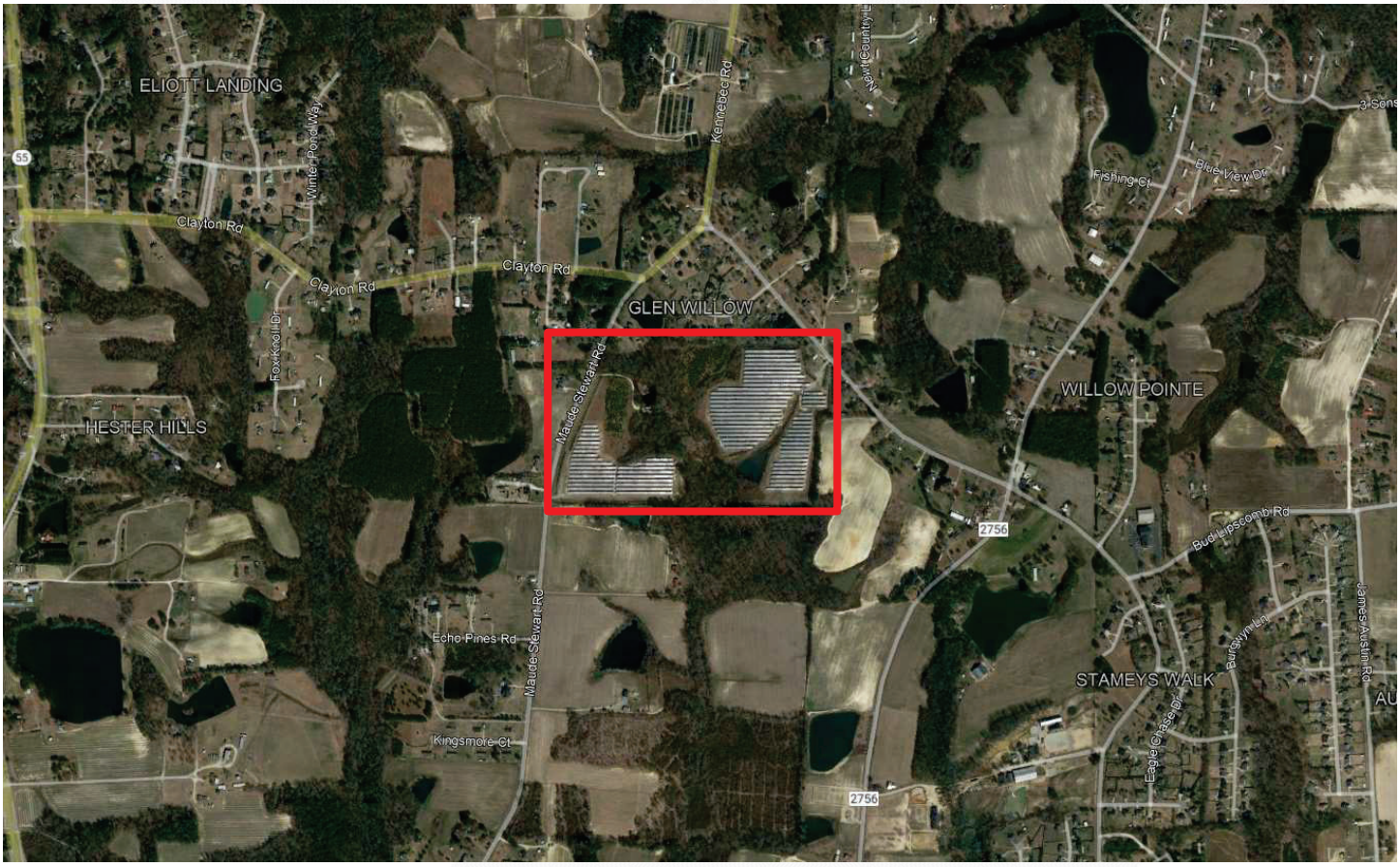
Coordinates: Latitude 35 33.457, Longitude 78 44.190

PIN: 675874971

Total Land Size: Approximately 49.6 acres

Date Project Completed: December 2015

Output: 5 MW AC



This Sunfish Farm solar facility is located in the southern portion of Wake County, North Carolina, approximately 16 miles south of Raleigh. The solar facility was placed into service in December 2015 and has a power generating capacity of 5 MW AC. The solar facility was developed by Cypress Creek Renewables, which has built several community-scale solar farms in North Carolina.

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The Surrounding Area: The Sunfish Farm solar facility is surrounding by single family homes, some of which are in subdivisions, as well as agricultural and forest land. The local area is accessible from Raleigh via Fayetteville Road (US Hwy 401) and Interstate 40. The Sunfish Farm solar farm is located southwest of the town of Fuquay-Varina, which has experienced considerable population growth over the past 10 years due to the area's proximity to Research Triangle Park (Raleigh, Durham, Chapel Hill).

The Immediate Area: The solar farm is buffered from residences and road frontages by trees and is surrounded by fencing. The solar farm is clearly visible from the roadways. Immediate land uses surrounding the solar farm include residential homes to the north, some residential homes (some that also contain commercial uses) to the west, agricultural land to the south, and agricultural land and residential homes to the east.

There is an 11.25-acre carve-out of land in the original, larger farmland parcel that was split from the parent parcel in 2014, as pictured below. Both the carved out parcel and the solar farm parcel are owned by an individual who leases the land for the solar farm use.

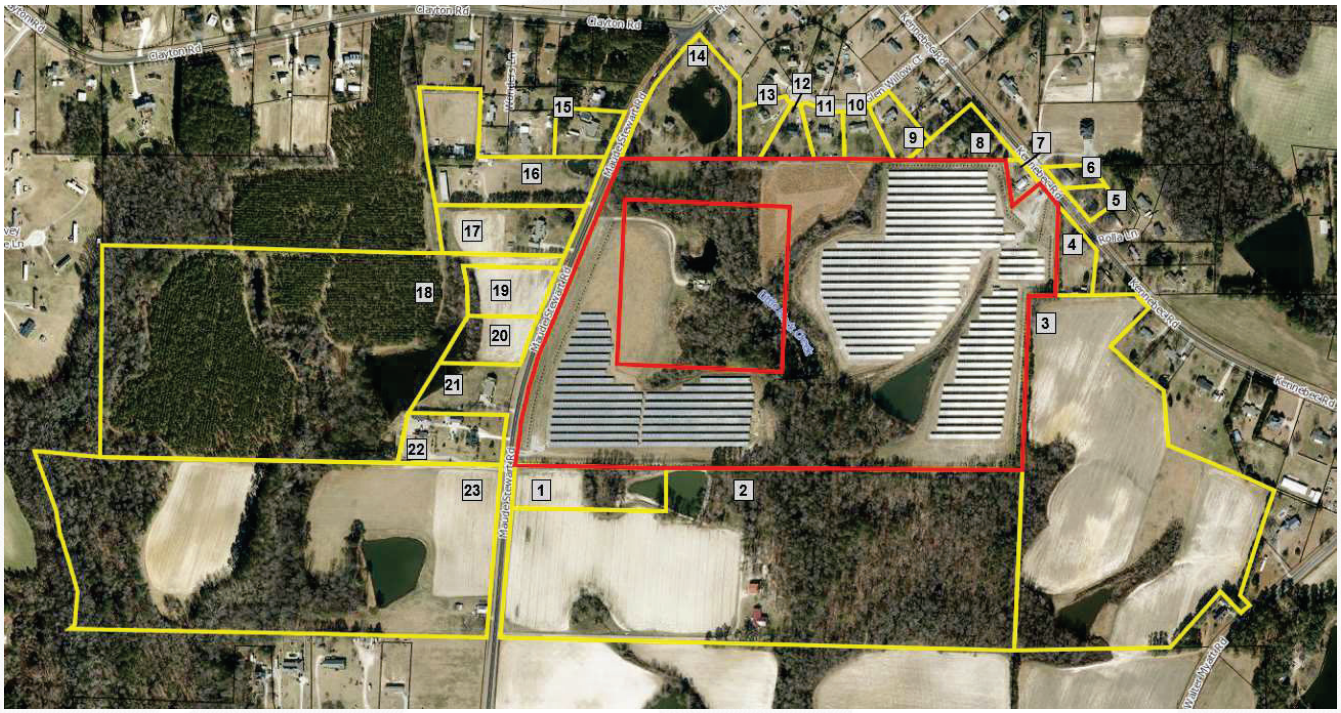


Real Estate Tax Information: Solar farms in North Carolina are assessed as personal property, separate from the land assessment. After the solar farm was placed into service, there was an increase of 180 percent in total assessed value, and 203 percent increase in total taxes paid.

PIN	Acres	2013 Taxes Paid (Per Acre)	2016 Taxes Paid (Per Acre)	Tax Increase	2013 Assessed Value (Per Acre)	2016 Assessed Value (Per Acre)	Value Increase
Wake County, NC							
675874971 (Post 2015 Split)	49.60	$ 119.52	$ 105.33		$ 18,589	$ 15,123	
Personal Property Tax		$ -	$ 256.81		$ -	$ 36,871	
TOTAL	**49.60**	**$ 119.52**	**$ 362.14**	**203%**	**$ 18,588.83**	**$ 51,994.82**	**180%**

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The map below displays the properties adjoining the solar arrays and are numbered for subsequent analysis (outlined in yellow).



Sunfish Farm Solar - Adjoining Properties

PAIRED SALES ANALYSIS

We have considered only one type of paired sales analysis, comparing sales of properties not proximate to the solar farm (Control Area Sales) to the sales of adjoining properties (Test Area Sales) after the completion of the solar farm project. We were able to identify two Adjoining Properties to the Sunfish Farm solar facility that sold after the solar installation was placed into service (Adjoining Properties 10 and 15). These sales were analyzed in separate Test Area Sale groups based on home type (conventional single-family home and manufactured single-family home) and sale dates.

We collected Control Area Sale data from the Wake County Real Estate database which summarizes data directly from the Real Estate Assessor website for the county. We have also reviewed other public records and verified marketing information through online sources such as Zillow.com, Redfin.com, Realtor.com and Estately.com. We have verified these sales through county records, conversations with brokers, and the County Assessor's Office. We excluded sales that were not arm's length, such as REO sales or bank-owned properties, or those between related parties.

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GROUP 1

Adjoining Property 10 (Test Area Sale 1) was considered for a paired sales analysis, and we analyzed this property as a single-family home use. The property is a single-story 1,470 square foot home located on a 0.79-acre lot that sold in September 2017. This property line is approximately 50 feet from the closest solar panel, and the improvements are approximately 200 feet from the closest solar panel. The following table outlines the other important characteristics of Adjoining Property 10.

SUNFISH FARM SOLAR TEST AREA SALE GROUP 1										
Property #	**Address**	**Sale Price**	**Site Size (AC)**	**Beds**	**Baths**	**Year Built**	**Home Size (SF)**	**Improvements**	**Sale Price/SF**	**Sale Date**
Test Sale 1 Adjoining Property 10	7513 Glen Willow Court	$188,000	0.79	3	2	1989	1,470	One-Story, No Basement	$127.89	Sep-17

We have identified 14 single-family home sales in the Control Area Sale group that are located within Wake County, either in Middle Creek Township or Panther Branch Township. They were built generally from 1989 to 1999 and are each similar in square footage and layout, as well as quality of construction, to the Test Area Sale and they sold within a reasonable time frame from the sale date of the Test Area Sale.



Sunfish Farm Solar - Group 1: Test Area Sale Map

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It is informative to note that the marketing time (from list date to closing date) for Control Area Sales ranged from 30 to 127 days on market, and the marketing time for Adjoining Property 10 was 98 days, which is within the range of the Control Area Sales. This is an indication that the marketability of the Test Area Sale was not negatively influenced by proximity to the solar farm.

We adjusted the Control Area Sales for market conditions using the compounded monthly growth rate exhibited in the FHFA House Price Index, for the period from December 2015 to the end of December 2018 (36 months).

When adjusting sales prices for market conditions (time between date of Test Area Sale and Control Area Sales date) throughout this analysis we have used regression analysis to identify the appropriate monthly market conditions adjustment. We utilized the Federal Housing Finance Agency House Price Index (FHFA HPI) for the 27592 zip code to determine the average monthly rate of appreciation. The FHFA HPI is a broad measure of the movement of single-family house prices. The FHFA HPI is a weighted, repeat-sales index, meaning that it measures average price changes in repeat sales or re-financings on the same properties. The FHFA HPI serves as a timely, accurate indicator of house price trends at various geographic levels.[23]

The results of the paired sales analysis for Adjoining Property 10 are presented below.

CohnReznick Paired Sales Analysis Sunfish Farm Solar GROUP 1 - Adjoining Property 10		
No. of Sales	**Potentially Impacted by Solar Farm**	**Adjusted Median Price Per SF**
Test Area Sale (1)	Yes: Adjoining solar farm	$127.89
Control Area Sales (14)	No: Not adjoining solar farm	$124.86
Difference between Unit Price of Test Area Sale and Adjusted Median Unit Price of Control Area Sales		**2.43%**

The difference between the unit price of the Test Area Sale and the Adjusted Median Unit Price of the Control Area Sales is considered within the range for a typical market area.

Noting no negative price differential, it does not appear that the Sunfish Farm solar installation impacted the sale price of the Test Area Sale, Adjoining Property 10.

[23] https://www.fhfa.gov/DataTools/Downloads/Pages/House-Price-Index.aspx

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GROUP 2

Adjoining Property 15 (Test Area Sale) was considered for a paired sales analysis, and we analyzed this property as a manufactuerd single-family home use, with 1,860 square feet of improvements, on a parcel of 1.24-acres, that sold in October 2019. The property line for this property is approximately 665 feet from the closest solar panel, and the improvements are approximately 760 feet from the closest solar panel. The following table outlines the other important characteristics of Adjoining Property 15.

SUNFISH FARM SOLAR TEST AREA SALE GROUP 2										
Property #	**Address**	**Sale Price**	**Site Size (AC)**	**Beds**	**Baths**	**Year Built**	**Home Size (SF)**	**Improvements**	**Sale Price/SF**	**Sale Date**
Test Sale 1 Adjoining Property 15	7608 Maude Stewart Road	$125,000	1.24	2	2	1990	1,860	One-Story, Manufactured, No Basement	$67.20	Oct-19

In Group 2, we have studied only homes on lots between 0.50 and 1.60 acres and homes that are greater than 1,750 square feet, built between 1990 and 2003, so as to be comparable to the Test Area Sale home. The Control Area Sales sold within a reasonable time frame from the sale date of the Test Area Sale and are similar to the Test Area Sale in physical characteristics, that is they are one-story manufactured homes with no basements, that are located in Wake County, either in Middle Creek Township or Panther Branch Township.



Sunfish Farm Solar - Group 2: Test Area Sale Map

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We analyzed the eight Control Area Sales and adjusted the Control Area Sales for market conditions using the compounded monthly growth rate exhibited in the FHFA House Price Index, for the period from December 2018 to December 2020 (24 months).

The results of the paired sales analysis for Adjoining Property 15 are presented below.

CohnReznick Paired Sales Analysis Sunfish Farm Solar GROUP 2 - Adjoining Property 15		
No. of Sales	**Potentially Impacted by Solar Farm**	**Adjusted Median Price Per SF**
Test Area Sale (1)	Yes: Adjoining solar farm	$67.20
Control Area Sales (8)	No: Not adjoining solar farm	$66.23
Difference between Unit Price of Test Area Sale and Adjusted Median Unit Price of Control Area Sales		**1.47%**

The unit sale price of the Test Area Sale was slightly higher than the median adjusted unit sale price of the Control Area Sales and is considered within the range for a typical market area.

Noting no negative price differential, it does not appear that the Sunfish Farm solar installation impacted the sale price of the Test Area Sale, Adjoining Property 15.

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SOLAR FARM 7: CALL FARMS 3 SOLAR, BATAVIA, GENESSEE COUNTY, NEW YORK

Coordinates: Latitude 43.02305, Longitude -78.1812

PIN: 1824004-1-26.111/A

Total Land Size: ± 81.6 Acres

Date Project Announced: May 2017

Date Project Completed: July 2018

Output: 2 MW AC



This solar facility was put into operation in July 2018 and has a power output capacity of 2 MW AC, enough to power 300 homes. The solar fam is currently owned by AES Distributed Energy. The project was initially being developed by Forefront, and was known as Spring Sun South, until AES acquired it in August 2017 just prior to construction. The facility was built by Expy Energy and features two inverters, fixed tilt ground racking and over 8,700 solar panels.

The Surrounding Area: The Call Farms 3 solar farm is located in the town of Batavia, that surrounds the outskirts of the City of Batavia, in Genesee County, New York. Roughly equidistant from Buffalo to the west and Rochester to the east, the solar farm is centrally located in the county, and the county is in the northwestern tip of the state of New York.

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The Immediate Area: The solar farm is located along State Street Road, near the interchange of the New York State Thruway (I-90) and Oak Orchard Road. The solar farm is immediately surrounded by agricultural land to the north, west, and south. To the northeast of the solar farm are two commercial properties, Battery Systems of Batavia and an Ashley Home Furniture distribution center. To the south there is a landscape company with a parcel that houses equipment storage and parking. To the east there a few residential properties on the east side of State Street Road, across the road from the solar parcel.

Real Estate Tax Information: After development of the solar farm, a sub-parcel number was created for the solar farm and a parent parcel number retained that was taxable at the agricultural land rate. By 2019 the solar parcel started being assessed and taxed separately in addition to the parent land parcel. The addition of the solar farm increased the taxes collected on the land by 18 percent.

PIN	Acres	2017 Taxes Paid	2019 Taxes Paid	Tax Increase	2017 Assessed Value	2019 Assessed Value	Value Increase
Genesee, NY							
1824004-1-26.111 (Parent)		$ 11,646	$ 11,540		$ 327,900	$ 327,300	
1824004-1-26.111/A (Solar Parcel)	81.60		$ 2,106			$ 900,000	
TOTAL	**81.60**	**$ 11,540**	**$ 13,647**	**18%**	**$ 327,300**	**$ 1,227,300**	**275%**

The map below displays the parcels containing the solar farm and adjoining properties (outlined in yellow). Properties adjoining this parcel are numbered for subsequent analysis (boxed in red).



Call Farms 3 Solar Farm - Adjoining Properties

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One adjoining residential property, Adjoining Property 4, (300 feet from the house to the nearest solar panel) was sold on April 5, 2018, which was after the solar farm was built and just before the solar farm became operational. We spoke to the selling broker, John Gerace of Gerace Realty, who was under the impression that the solar farm was operational prior to closing because the construction appeared complete prior to the closing date. We note this to illustrate that the market reacted as if the solar farm were operational at the time of sale. Gerace said that interested buyers, including the eventual buyer, expressed relief that the home would no longer face agricultural land with unknown development potential, and that there was no glare from the panels.

In addition to being an active broker in the community, Mr. Gerace previously sat on the zoning board, and he frequently attends town hall meetings. He said that typically a portion of the community expresses concerns about potential solar farms, but he never noticed a decrease in value or marketability for solar farm proximity.

PAIRED SALES ANALYSIS

Adjoining Property 4 was considered for a paired sales analysis, and we analyzed this property as a single family home use. The following table outlines the other important characteristics of Adjoining Property 4.

Call Farms 3 Solar Test Area Sale									
Adj. Property #	Address	Sale Price	Site Size (AC)	Beds	Baths	Year Built	Square Feet	Sale Price per SF	Sale Date
4	8053 State St Rd, Batavia	$155,000	1.00	5	2.0	1967	2,636	$58.80	Apr-18

We analyzed five Control Area Sales with similar construction and characteristics that sold within a reasonable time frame relative to the sale date of Adjoining Property 4. We adjusted the Control Area Sales for market conditions using a regression analysis to identify the appropriate monthly market conditions adjustment.

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Call Farms 3 Solar Farm – Test Area Sale Map

The result of our analysis for the Call Farms 3 solar farm is presented below.

CohnReznick Paired Sale Analysis Call Farms 3 Solar		
No. of Sales	**Potentially Impacted by Solar Farm**	**Adjusted Median Price Per SF**
Test Area Sale (1)	Adjoining solar farm	$58.80
Control Area Sales (5)	No: Not adjoining solar farm	$58.62
Difference between Unit Price of Test Area Sale and Adjusted Median Unit Price of Control Area Sales		**0.31%**

Noting no negative price differential, with the Test Area Sale having a higher unit sale price than the Control Area Sales, it does not appear that the Call Farms 3 Solar Farm had any negative impact on adjacent property values.

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SOLAR FARM 8: IMPA FRANKTON SOLAR FARM, FRANKTON, INDIANA

Location: Frankton, Madison County, Indiana

Coordinates: Latitude 40.125701; Longitude -85.4626.88

PIN: 48-08-06-500-012.001-020

Total Land Size: 13 acres

Date Project Announced: November 2013

Date Project Completed: June 2014

Output: 1.0 MW AC (1.426 MW DC)

IMPA Frankton Solar Farm is located on the west side of South Lafayette Street, in the Town of Frankton. The solar farm was built in 2014 in joint effort by Inovateus Solar and Indiana Municipal Power Agency (IMPA). This solar farm has the capacity for 1 MW AC and its expected annual output is 1,426 MWh (megawatt hours). The solar farm is separated off from the adjacent properties by a 6 foot fence that surrounds the entirety of the solar panels. From our inspection of the site, we noted that the driveway to access the panels slopes downward and allows some views of the site.

The Surrounding Area: The IMPA Frankton solar farm is located in Lafayette Township, in the central portion of Madison County, Indiana. The solar farm is approximately 50 miles northeast of the center of Indianapolis and 65 miles northeast of the Indianapolis International Airport.

The Immediate Area: The solar installation is relatively centrally located in an undeveloped pocket of the town of Frankton, on the western side of South Lafayette Street. Adjoining parcels to the west include park land featuring baseball fields. Land further to the west is agricultural in nature, actively farmed primarily with row crops. Adjoining parcels to the north are residential with large estate homes. Adjoining the solar farm to the southeast is a single-family home identified in our analysis as Adjoining Property 7, and a baseball field. More farmland is directly south of the solar site. The solar site is adjoining a number of homes located east of the panels, along Lafayette Street. Mature trees at the rear of residential properties act as vegetative buffers.

Across Lafayette Street, to the east, are single-family residential homes forming the southeast quadrant of homes in Frankton.

All of the adjacent land parcels to the solar farm are used for agricultural, residential, or recreational purposes.

The solar farm is surrounded by a chain link fence that contains all the solar panels. Additionally, vegetative buffers along sides facing residential properties were planted as part of the solar farm development.

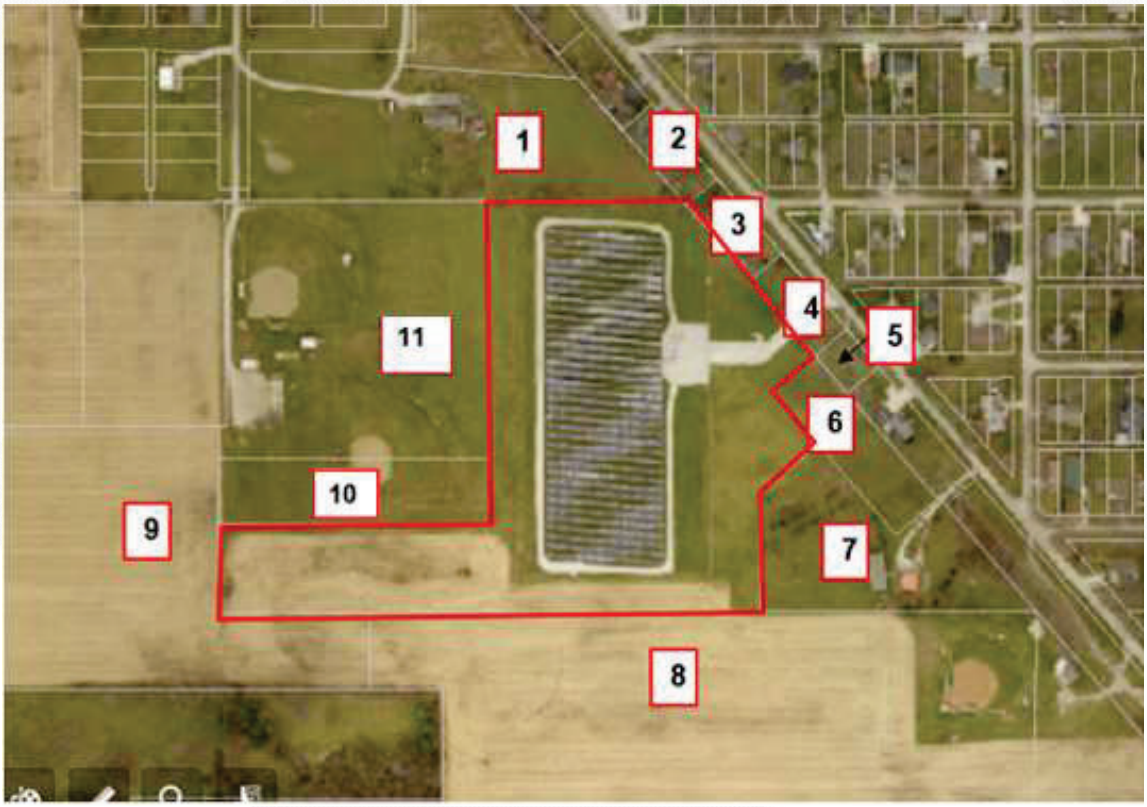
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Real Estate Tax Information: Prior to development of the solar farm in 2014, the original owner held one parcel of 15.667 acres with a home, pole barn and a utility shed, and no personal property was assessed on this parcel. In 2014 the parcel was split into two parcels and 13 acres was sold to IMPA for development of the solar farm. The owner of the parent parcel of 15.667 acres paid real estate taxes of $1,799 annually, prior to the split. After development of the solar farm, real estate taxes for both parcels, plus personal property tax revenue generated from the solar parcel, caused an increase $8,275, or a 360 percent increase in tax revenue for the entire site.

PIN	Acres	2013 Taxes Paid	2017 Taxes Paid	Tax Increase	2013 Assessed Value	2017 Assessed Value	Value Increase
Madison County, IN							
48-08-06-500-012.000-020 (parent)	15.667 (2013)	$ 1,799	$ 1,402		$ 138,700	$ 127,000	
Personal Property		$ -	$ -		$ -	$ -	
48-08-06-500-012.001-020 (2014 solar parcel split)	13.00 (2017)	$ -	$ 4,063		$ -	$ 137,400	
Personal Property		$ -	$ 2,810		$ -	$ 440,380	
TOTAL	**0.00**	**$ 1,799**	**$ 8,275**	**360%**	**$ 138,700**	**$ 704,780**	**408%**

The map below displays the solar farm parcel (outlined in red). Properties adjoining this parcel are numbered for subsequent analysis.



IMPA Frankton Solar Farm - Adjoining Properties

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PAIRED SALES ANALYSIS

We have performed a paired sales analysis with regards to the IMPA Frankton solar farm. The analysis compares sales of Adjoining Properties to the solar farm after the completion of the solar farm site (Test Area Sales) to similar properties not proximate to the solar farm (Control Area Sales). We utilized this type of paired sale analysis for both groups of Adjoining Properties under study.

GROUP 1

In Group 1, we identified and analyzed six Control Area Sales that were comparable to the Test Area Sale in location, size, and use that were not located in close proximity to the solar farm. We excluded sales that were bank-owned, or otherwise non arms'-length transactions. Adjoining Property 2 was manufactured single-family home use.

IMPA Frankton Solar Farm Test Area Sales Group 1									
Adj. Property #	Address	Sale Price	Site Size (AC)	Beds	Baths	Year Built	Home Size (SF)	Sale Date	Price PSF
2	607 S. Lafayette St Frankton, IN	$41,900	0.37	2	2	1991	1,466	Jun-15	$28.58

We identified six Control Area Sales that are included in this analysis that sold within a reasonable time frame from the sale date of the Test Area Sale (Adjoining Property 2) and are similar to the Test Area Sale in physical characteristics.

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IMPA Frankton Solar Farm – Group 1: Test Area Sale Map

Control Area Sales in Group 1 were adjusted for market conditions using a regression analysis to identify the appropriate monthly market condition adjustment. The results of our study are presented below.

CohnReznick Paired Sale Analysis IMPA Frankton Solar Farm Group 1		
No. of Sales	**Potentially Impacted by Solar Farm**	**Adjusted Median Price per SF**
Test Area Sale (1)	Adjoining Solar Farm	$28.58
Control Area Sales (6)	No: Not adjoining solar farm	$28.42
Difference between Unit Price of Test Area Sales and Adjusted Median Unit Price of Control Area Sales		**0.56%**

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GROUP 2

In Group 2, we identified and analyzed five Control Area Sales that were comparable to the Test Area Sale (Adjoining Property 7) in location, size, and use that were not located in close proximity to the solar farm. We excluded sales that were bank-owned, or otherwise non arms'-length transactions. Adjoining Property 7 was analyzed as a single-family home use.

IMPA Frankton Solar Farm Test Area Sales Group 2									
Adj. Property #	Address	Sale Price	Site Size (AC)	Beds	Baths	Year Built	Home Size (SF)	Sale Date	Price PSF
7	713 S. Lafeyette St Frankton, IN	$131,000	3.04	4	2	2003	2,500	Oct-16	$52.40

We identified five Control Area Sales that are included in this analysis that sold within a reasonable time frame from the sale date of the Test Area Sale and are similar to the Test Area Sale in physical characteristics.



IMPA Frankton Solar Farm – Group 2: Test Area Sale Map

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Control Area Sales in Group 2 were adjusted for market conditions using a regression analysis to identify the appropriate monthly market condition adjustment. The results of our study are presented below.

CohnReznick Paired Sale Analysis IMPA Frankton Solar Farm Group 2		
No. of Sales	**Potentially Impacted by Solar Farm**	**Adjusted Median Price per SF**
Test Area Sale (1)	Adjoining Solar Farm	$52.40
Control Area Sales (5)	No: Not adjoining solar farm	$51.47
Difference between Unit Price of Test Area Sales and Adjusted Median Unit Price of Control Area Sales		**1.81%**

Noting the relatively small price differential, in which the Test Area Sales were higher than the median for the Control Areas Sales, in both Groups 1 and 2, it does not appear that the IMPA Frankton solar farm had any negative impact on adjoining property values.

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SOLAR FARM 9: JEFFERSON COUNTY COMMUNITY SOLAR GARDEN, JEFFERSON COUNTY, COLORADO

Coordinates: Latitude 39.859564, Longitude -105.1497

PIN: 29-194-01-037

Total Land Size: 13.63 acres

Date Project Announced: November 2013

Date Project Completed: May 2016

Output: 1.2 MW AC

The Jefferson County Community Solar Garden is adjacent to the Whisper Creek residential subdivision, just outside the City of Arvada, and was developed by SunShare Management. This solar farm has the capacity for 1.2 Megawatts (AC) of power, which is enough to power 300 homes. After two months of operation, the solar farm was 100 percent subscribed and its three largest customers are the cities of Arvada and Northglenn, as well as the Green Mountain Water and Sanitation District.

The Surrounding Area: The Whisper Creek subdivision is located between the Welton Reservoir to the west and Standley Lake to the east. To the northwest of the subdivision lies the Colorado Hills Open Space and the Rocky Flats national Wildlife Refuge. The subdivision is primarily in the City of Arvada city limits, but the municipal boundary splits the street the Test Area Sales are located on, West 89th Loop, some are in Arvada and some are in unincorporated Jefferson County. Arvada is a northwestern suburb of the City of Denver and is accessible via Interstate-25 and Interstate-70 and Interstate-76.

The Immediate Area: The immediate area has uses that consist of vacant land to the north and east, a horse and alpaca farm to the south, known as Evening Star Farms, and single-family homes and a municipal police station and vacant land to the west.

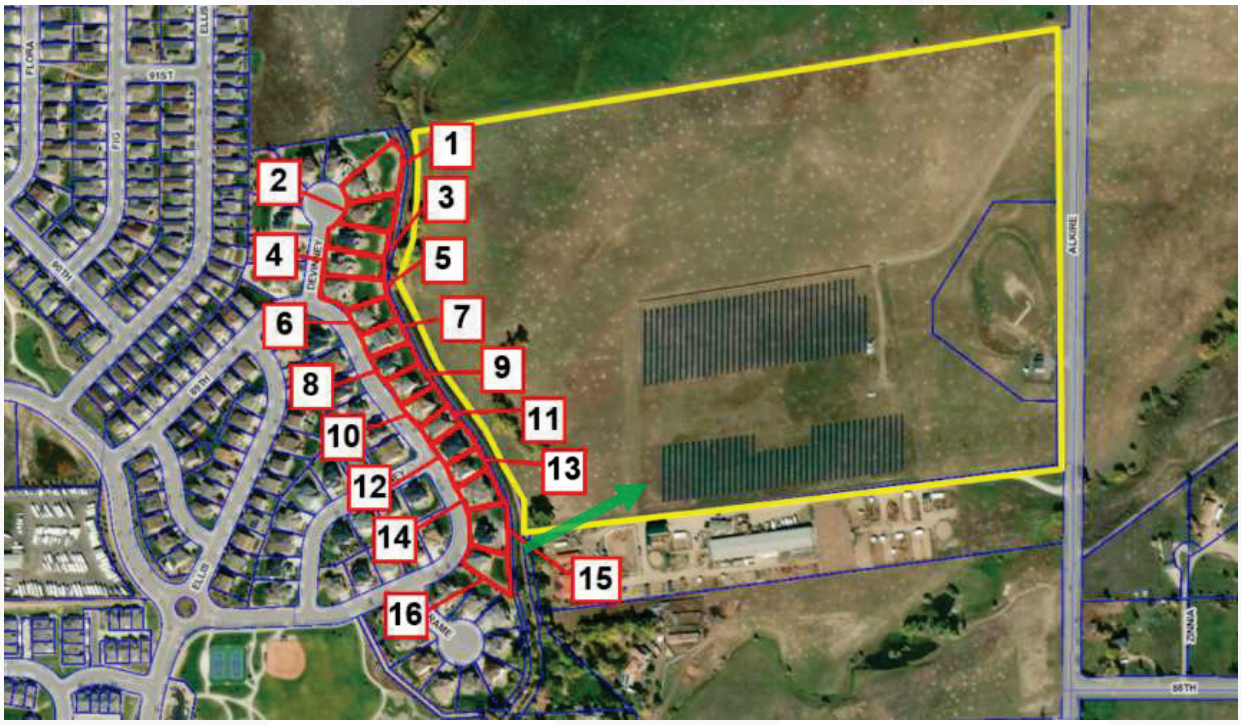
Real Estate Tax Information: In 2017, real estate taxes totaled $79.10 for the entire parcel for the year, which is slightly less than taxes billed in 2016 and 2015.

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PAIRED SALES ANALYSIS

We found three Adjoining Properties that qualified for a paired sales analysis. The map below displays the solar farm parcel (outlined in yellow) and the Adjoining Properties (outlined in red) are numbered for subsequent analysis



Jefferson County Community Solar Garden - Adjoining Properties
(Q2 2016 imagery date)
(Green Arrow – Direction of Photos on Following Page)

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View from 89th Loop towards Solar Farm at rear of home



View from the rear of a Test Area Sale, towards Solar Farm

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Adjoining Properties 9, 10, and 13 (Test Area Sales 1, 2, and 3, respectively), were considered for a paired sales analysis. The Test Area Sales are two-story, single-family residential homes with four bedrooms and three and a half bathrooms, between 3,000 and 4,000 square feet of gross living area, on less than 0.30 acre of land, and each sold in 2016 as new construction homes.

Jefferson County Community Solar Garden Test Area Sales									
Adj. Property #	Address	Median Sale Price	Median Site Size (AC)	Median Beds	Median Baths	Median Year Built	Median Square Feet	Median Sale Date	Median Price PSF
9, 10, 13	13929 W 89TH LOOP, 13919 W 89TH LOOP, 13889 W 89TH LOOP	$635,500	0.23	4	3.5	2016	3,848	Jun-16	$165.15

The Test Area Sales are located between 595 feet and 720 feet from the house to the solar panels. We analyzed six Control Area Sales of single-family homes that are included in this analysis that sold within a reasonable time frame from the median sale date of the Test Area Sales and are similar to the Test Area Sales in physical characteristics. The Control Area Sales are removed from the solar panels in other areas of the Whisper Creek subdivision.



Jefferson County Community Solar Garden – Test Area Sales Map

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All Control Area Sales were adjusted for market conditions using regression analysis to identify the appropriate monthly market conditions adjustment.

The results of our analyses for the Jefferson County Community Solar Garden are presented below.

CohnReznick Paired Sale Analysis Jefferson County Community Solar Garden		
No. of Sales	**Potentially Impacted by Solar Farm**	**Adjusted Median Price Per SF**
Test Area Sales (3)	Adjoining solar farm	$165.15
Control Area Sales (6)	No: Not Adjoining solar farm	$164.36
Difference between Unit Price of Test Area Sales and Adjusted Median Unit Price of Control Area Sales		**0.48%**

Noting no negative price differential, it does not appear that the Jefferson County Community Solar Garden had any negative impact on adjacent property values.

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SOLAR FARM 10: VALPARAISO SOLAR, VALPARAISO, PORTER COUNTY, INDIANA

Coordinates: Latitude 41.301180, Longitude –87.094055

PINs: 64-09-07-152-001.000-019 and 64-09-07-152-002.000-019

Total Land Size: 27.9 Acres

Date Project Announced: March 2012

Date Project Completed: December 20, 2012

Output: 1 MW AC (1.3 MW DC)

The Valparaiso solar farm was developed by Sustainable Power Group, LLC and became operational in December 2012. The solar facility has ground mounted capacity for 1.0 Megawatts (MW) AC of power. The panels are mounted in a fixed tilt fashion and there are two inverters in this solar farm.

The Surrounding Area: The Valparaiso solar farm is located in Union Township, in the northwest portion of Porter County, Indiana. Porter County is located in the very northwest corner of the state of Indiana. The solar farm is approximately 10 miles northwest of the Porter County Regional Airport and approximately six and a half miles northwest of the center of the city of Valparaiso.

The Immediate Area: This solar farm is located on the southern side of Indiana Route 130 (Railroad Avenue) in Valparaiso, Porter County, Indiana and is located approximately 35 miles southwest of downtown Chicago.

Adjoining parcels to the solar farm to the east and south are residential homes and to the west and north are agricultural in nature.

The solar farm is lined by a chain link fence that surrounds all of the solar panels. Additionally, there are bushes and trees to the north and west of the solar panels; this vegetation has been in place since before development of the solar farm. Other small trees were planted and spaced out around the perimeter of the solar farm after development. From our inspection, the solar panels cannot be seen from Indiana State Route 130 from the north, nor on N 475 W Road to the east as this is a raised roadway. The adjacent properties to the east of the solar panels have full view of the panels from the backyards of the homes.

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Real Estate Tax Information: Prior to development of the solar farm, in 2011, the original parent parcel contained a home, a homesite, excess land, and agricultural land. In 2012, Valparaiso Solar, LLC bought the entire property to develop the solar farm on. Subsequently when Valparaiso Solar, LLC sold the project to PLH, LLC, they split the parcels so that the home and homesite were one parcel of 3.25 acres and the remaining 24.65 acres were the solar panel site. After development of the solar farm development, in 2015, total real estate taxes for both parcels had increased to approximately $2,587, a 25 percent increase in tax revenue for the site.

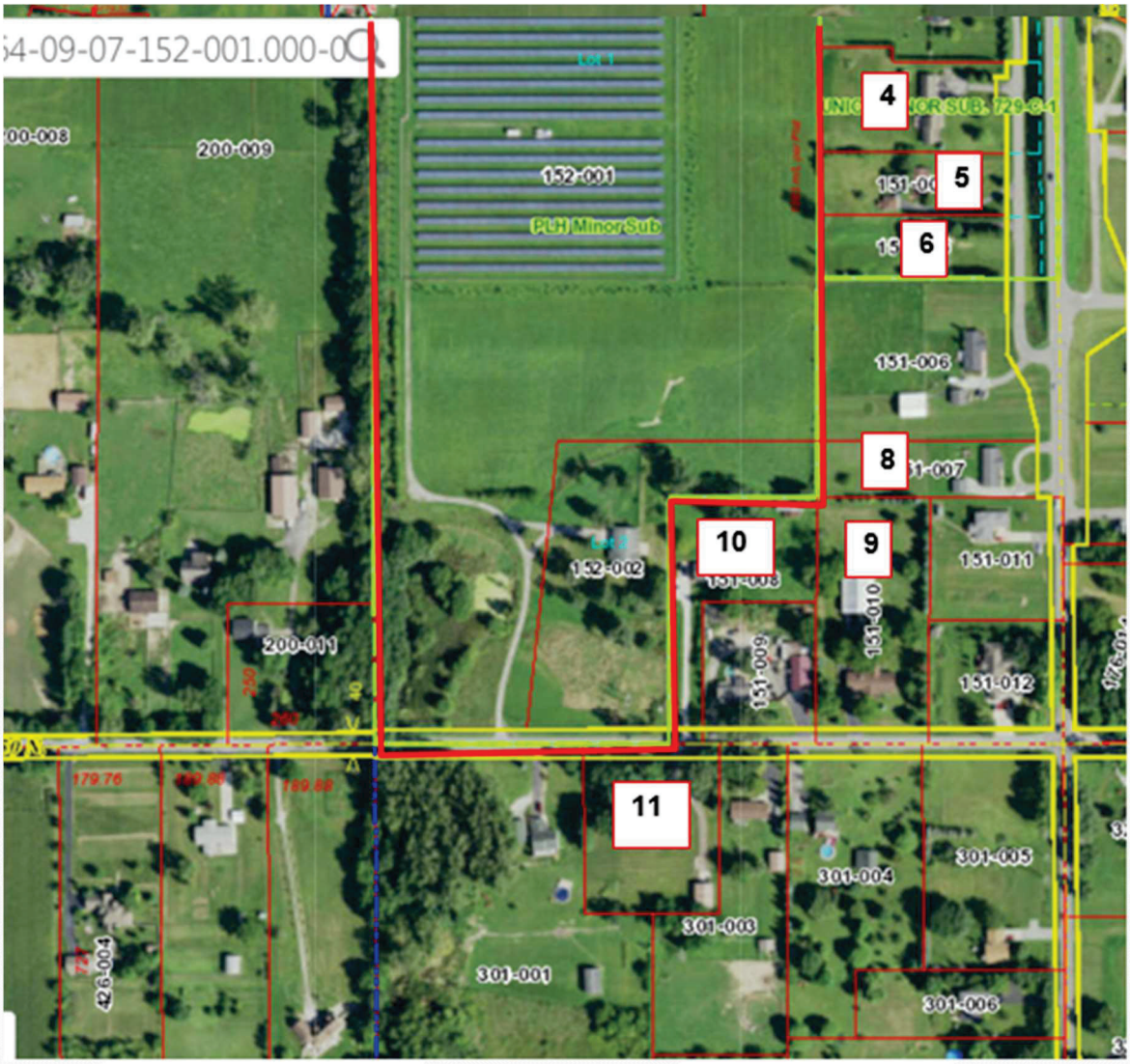
PIN	Acres	2011 Taxes Paid	2015 Taxes Paid	Tax Increase	2011 Assessed Value	2015 Assessed Value	Value Increase
Porter County, IN							
64-09-07-151-001.000-019 (parent parcel)		$ 2,072			$ 203,800		
64-09-07-152-001.000-019 (split parcel)	24.65		$ 2,587			$ 156,800	
64-09-07-152-002.000-019 (split parcel)	3.25		$ 1,741			$ 187,900	
TOTAL	**27.90**	**$ 2,072**	**$ 2,587**	**25%**	**$ 203,800**	**$ 344,700**	**69%**

The maps below and on the following page display the solar farm parcels (outlined in red). Properties adjoining this parcel are numbered for subsequent analysis.



Valparaiso Solar Farm - Adjoining Properties

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Valparaiso Solar Farm - Adjoining Properties

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PAIRED SALES ANALYSIS

Adjoining Properties 10 and 14 (Test Area Sales) were each considered for a paired sales analysis. Both were analyzed as single-family home uses.

GROUP 1

For Adjoining Property 10 (Group 1), the residential home is approximately 514 feet from the closest solar panel. The following table outlines the other important characteristics of Adjoining Property 10.

Valparaiso Solar Test Area Sale Group 1									
Adj. Property #	Address	Sale Price	Site Size (AC)	Beds	Baths	Year Built	Square Feet	Price PSF	Sale Date
10	489 W 450 N, Valparaiso, IN	$105,000	1.45	3	2	1993	1,274	$ 82.42	Jul-15

We analyzed five Control Area Sales that sold within a reasonable time frame from the sale date of Adjoining Property 10. All Control Area Sales were adjusted for market conditions using regression analysis to identify the appropriate monthly market conditions adjustment.

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Valparaiso Solar - Group 1: Test Area Sale Map

The result of our analyses for Group 1 is presented below.

CohnReznick Paired Sale Analysis Valparaiso Solar Group 1		
No. of Sales	**Potentially Impacted by Solar Farm**	**Adjusted Median Price Per SF**
Test Area Sales (1)	Adjoining solar farm	$82.42
Control Area Sales (5)	No: Not adjoining solar farm	$79.95
Difference between Unit Price of Test Area Sale and Adjusted Median Unit Price of Control Area Sales		**3.09%**

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TECHNIQUE 3: MARKET COMMENTARY

Additionally, we have contacted market participants such as appraisers, brokers, and developers familiar with property values around solar farms. Commentary from our conversations with these market participants is recorded below.

In Otter Creek Township, in LaSalle County, Illinois, we spoke with Viki Crouch, the Township Assessor, who she said that *there has been no impact on property values due to their proximity to the* ***Grand Ridge Solar Farm***.

We spoke with Ken Crowley, Rockford Township Assessor in Winnebago County, Illinois, who stated that he has seen *no impact on property values in his township as an effect of proximity to the* ***Rockford Solar Farm***.

We spoke with James Weisiger, the Champaign Township Assessor in Champaign County, where the **University of Illinois Solar Farm** is located, and he noted that no one has petitioned to have their property assessments lowered and *there appears to have been no impact on property values as a result of proximity to the solar farm*.

We spoke with Ken Surface, a Senior Vice President of Nexus Group. Nexus Group is a large valuation group in Indiana and has been hired by 20 counties in Indiana regarding property assessments. Mr. Surface is familiar with the solar farm sites in Harrison County (Lanesville Solar Farm) and Monroe County (Ellettsville Solar Farm) and stated he has noticed *no impact on property values from proximity to these sites*.

We interviewed Missy Tetrick, a Commercial Valuation Analyst for the Marion County Indiana Assessor. She mentioned the Indy Solar III sites and stated that she saw *no impact on land or property prices from proximity to this solar farm*.

We spoke with Dorene Greiwe, Decatur County Indiana Assessor, and she stated that solar farms have only been in the county a couple of years, but she has seen *no impact on land or property prices due to proximity to this solar farm*.

Connie Gardner, First Deputy Assessor for Madison County Indiana, stated that there are three solar farms in her county, and she has seen *no impact on land or property prices due to proximity to these solar farms*.

We spoke with Tara Shaver, Director of Administration for Marion County, Indiana Assessor/Certified Assessor, and she stated that she has seen *no impact on land or property prices due to proximity to solar farms*.

Candace Rindahl of ReMax Results, a real estate broker with 16 years of experience in the North Branch, Minnesota area, said that she has been in most of the homes surrounding the North Star Solar Farm and personally sold two of them. She reported that the neighboring homes sold at market rates comparable to other homes in the area not influenced by the solar farm, and they sold within 45 days of offering, at the end of 2017, *which was in line with the market.*

Dan Squires, Chisago County Tax Assessor (Minnesota), confirmed that the Chisago County Assessor's Office completed their own study on property values adjacent to and in close vicinity to the solar farm from January

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2016 to October 2017. From the study, the assessor determined the residential homes adjacent to the North Star Solar Farm (Minnesota) *were in-line with the market and were appreciating at the same rate as the market.*[24]

Renee Davis, Tax Administrator for Bladen County, North Carolina, stated that she *has not seen any effect on property values due to proximity to a solar farm.*

We spoke with Jim Brown, an appraiser for Scotland County, North Carolina, who stated that he *has seen no effect on property values due to proximity to a solar farm.*

We spoke with Gary Rose, a tax assessor for Duplin County, North Carolina, who stated that *he has seen no effect on property values in regards to proximity to a solar farm.*

Kathy Renn, a property Valuation Manager for Vance County, North Carolina, stated that she has *not noticed any effect on property values due to proximity to a solar farm.*

Larry Newton, a Tax Assessor for Anson County, North Carolina, stated that there are six solar farms in the county ranging from 20 to 40 acres and he *has not seen any evidence that solar farms have had any effect on property values due to proximity to a solar farm.*

We spoke with Patrice Stewart, a Tax Administrator for Pasquotank County, North Carolina, and she has seen *no effect on land or residential property values due to proximity to the solar farms in Pasquotank County.*

We spoke with the selling broker of the Adjoining Property for Elm City Solar, in North Carolina, Selby Brewer, who said the solar farm *did not impact the buyer's motivation.*

We spoke with Amy Carr, Commissioner of Revenue in Southampton County, Virginia, who stated that most of the solar farms are in rural areas, but she *has not seen any effect or made any adjustments on property values.* They have evaluated the solar farmland considering a more intense use, which increased the assessed value.

The Interim Assessor for the town of Whitestown in Oneida County, New York, Frank Donato, stated that he *has seen no impact on property values of properties nearby solar farms.*

Steve Lehr at the Department of Assessment for Tompkins County, New York, mentioned that the appraisal staff *has made no adjustments regarding assessed values of properties surrounding solar farms. Marketing times for properties have also stayed consistent.* Lehr noted that a few of the solar farms in Thompkins County are on land owned by colleges and universities and a few are in rural areas.

At this point in time, Al Fiorille, Senior Valuation Specialist in the Tompkins County Assessment department in New York, reported that he *cannot measure any negativity from the solar farms and arrays that have been installed within the county.*

[24] Chisago County Press: County Board Real Estate Update Shows No "Solar Effects" (11/03/2017)

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In the Assessor's office in the town of Seneca, Ontario County, New York, Shana Jo Hamilton stated that she *has seen no impact on property values of properties adjacent to solar farms*.

Michael Zazzara, Assessor of the City of Rochester in Monroe County, New York commented that the City has a couple of solar farms, and they *have seen no impact on nearby property values and have received no complaints from property owners.*

While there are one or two homes nearby to existing solar farms in the town of Lisbon in St. Lawrence County, New York, Assessor Stephen Teele *has not seen any impact on property values in his town.* The solar farms in the area are in rural or agricultural areas in and around Lisbon.

The Assessor for the Village of Whitehall in Washington County, New York, Bruce Caza, noted that there are solar farms located in both rural and residential areas in the village and *he has seen no impact on adjacent properties, including any concerns related to glare form solar panels.*

Laurie Lambertson, the Town Assessor for Bethlehem, in Albany County, New York noted that the solar farms in her area are tucked away in rural or industrial areas. *Lambertson has seen no impact on property values in properties adjacent to solar farms.*

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SOLAR FARM FACTORS ON HARMONY OF USE

Zoning changes and conditional use permits often require that the proposed use is compatible with surrounding uses.

The following section analyzes specific physical characteristics of solar farms and is based on research and CohnReznick's personal solar farm site visits and indicate that solar farms are generally harmonious with surrounding property and compliant with most zoning standards.

Appearance: Most solar panels have a similar appearance to a greenhouse or single-story residence can range from 8 to 20 feet but are usually not more than 15 feet high. As previously mentioned, developers generally surround a solar farm with a fence and often leave existing perimeter foliage, which minimizes the visibility of the solar farm. The physical characteristics of solar farms are compatible with adjoining agricultural and residential uses.

Sound: Solar panels in general are effectively silent and sound levels are minimal, like ambient sound. There are limited sound-emitting pieces of equipment on-site, which only produce a quiet hum (e.g., inverters). However, these sources are not typically heard outside the solar farm perimeter fence.

Odor: Solar panels do not produce any byproduct or odor.

Greenhouse Gas (GHG) Emissions: Much of the GHG produced in the United States is linked to the combustion of fossil fuels, such as coal, natural gas, and petroleum, for energy use. Generating renewable energy from operating solar panels for energy use does not have significant GHG emissions, promoting cleaner air and reducing carbon dioxide (CO_2) emissions to fight climate change.

Traffic: The solar farm requires minimal daily onsite monitoring by operational employees and thus minimal operational traffic.

Hazardous Material: Modern solar panel arrays are constructed to U.S. government standards. Testing shows that modern solar modules are both safe to dispose of in landfills and are also safe in worst case conditions of abandonment or damage in a disaster.[25] Reuse or recycling of materials would be prioritized over disposal. Recycling is an area of significant focus in the solar industry, and programs for both batteries and solar panels are advancing every year. While the exact method of recycling may not be known yet as it is dependent on specific design and manufacturer protocol, the equipment is designed with recyclability of its components in mind, and it is likely that solar panel and battery energy storage recycling and reuse programs will only improve in 25 years' time.

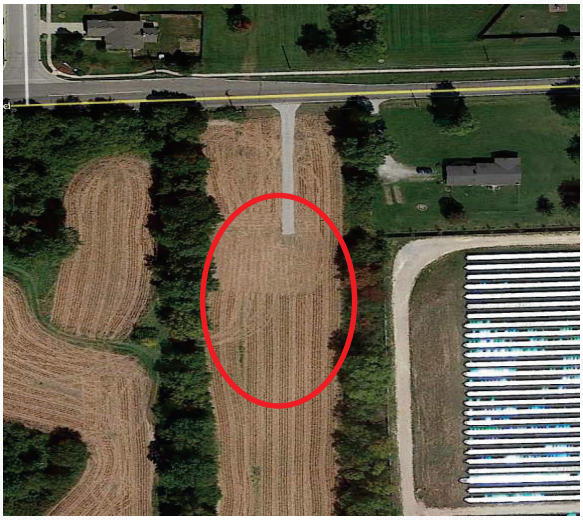
Examples of homes built adjoining to solar farms are presented on the following pages.

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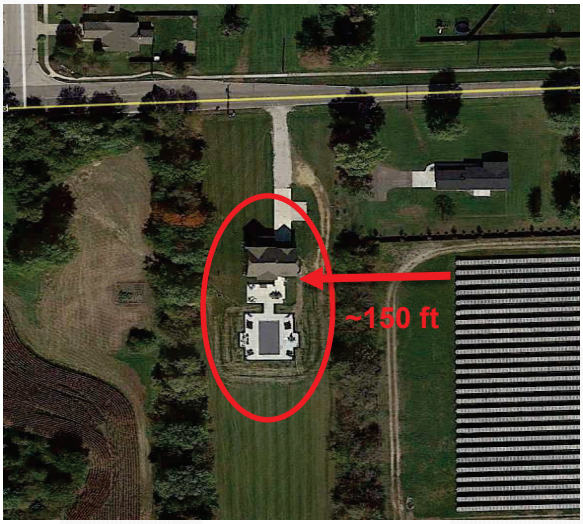
[25] Virginia Solar Initiative - Weldon Cooper Center for Public Service – University of Virginia (https://solar.coopercenter.org/taxonomy/term/5311)

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For the Dominion Indy III solar farm, the adjacent land to the west was acquired and subsequently developed with a large estate home – after the solar panels had been in operation for years.



Dominion Indy III Solar Farm
September 2014



Dominion Indy III Solar Farm
October 2016



Estate home adjacent to Dominion Indy III Solar Farm

In ground pool and attached garage (home cost estimated at $450,000 - October 2015)

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Innovative Solar 42 (2017)
Cumberland County, NC



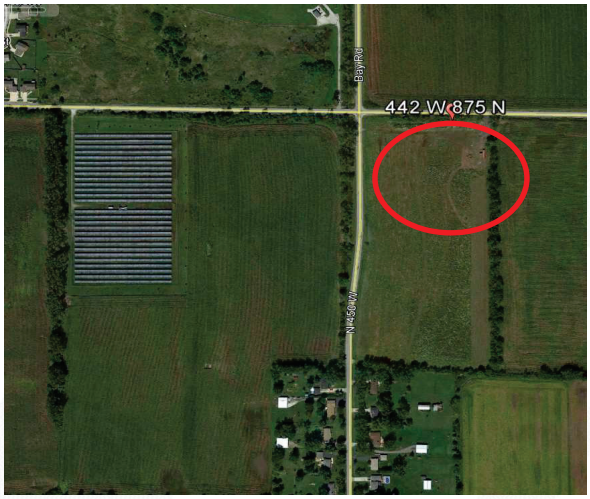
Innovative Solar 42 (2019)
Cumberland County, NC

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Developer Built Home
Sold 6/18/19 for $265,900 ($110.75/sf)
Cumberland County, NC (adjacent to Innovative 42 solar farm)

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Portage Solar Farm, IN
October 2015



Portage Solar Farm, IN
October 2016



4,255 square foot estate home under construction, adjacent to Portage Solar Farm located in Indiana

On-site pond and attached garage (cost estimated at $465,000) April 2018

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The Brighton PV Solar farm became operational in December 2012. Located in Adams County, north of Denver, CO, this solar farm has a capacity of 1.8 MW AC and is located on a triangular parcel of land east of an area of existing custom-built estate homes. A photo of one home (15880 Jackson Street) located directly north of the circled area below, is presented to the right.



In December 2012, the 2.55-acre lot circled in red below (15840 Jackson Street) was purchased for future development of a single-family home. This home was built in 2017, and per the county assessor, the two-story home is 3,725 square feet above ground with 4 bedrooms and 3.5 bathrooms. According to the building permit issued in August 2016, the construction cost was budgeted at $410,000.



Brighton PV Solar, Adams County, CO
June 2016



Brighton PV Solar, Adams County, CO
June 2017

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SUMMARY OF ADJOINING USES

The table below summarizes each Existing Solar Farm's adjoining uses.

Composition of Surrounding Uses (% of Surrounding Acreage)							
Solar Farm #	Solar Farm	Acreage % of Surrounding Agricultural Uses	Acreage % of Surrounding Residential Uses	Acreage % of Surrounding Industrial Uses	Acreage % of Surrounding Office Uses	Acreage % of Surrounding Other Uses	Avg. Distance from Panels to Improvements (Feet)
1	DTE Lapeer Solar	60.00%	35.00%	0.00%	0.00%	5.00%	260
2	Grand Ridge Solar	97.60%	1.40%	0.00%	0.00%	1.00%	553
3	Woodland Solar	25.00%	5.00%	0.00%	0.00%	60.00%	615
4	Dominion Indy Solar III	97.70%	2.30%	0.00%	0.00%	0.00%	474
5	Sunfish Farm Solar	87.70%	18.30%	0.00%	0.00%	0.00%	380
6	Call Farms 3 Solar	44.40%	5.50%	3.30%	0.00%	9.40%	328
7	Portage Solar	65.50%	34.50%	0.00%	0.00%	0.00%	991
8	IMPA Frankton Solar	76.30%	5.70%	0.00%	0.00%	18.00%	236
9	Jefferson Community Solar Garden	73.00%	10.00%	0.00%	0.00%	16.67%	790
10	Valparaiso Solar	81.60%	18.40%	0.00%	0.00%	0.00%	659

Overall, the vast majority of the surrounding acreage for each comparable solar farm is made up of agricultural land, some of which have homesteads. There are also smaller single-family home sites that adjoin the solar farms analyzed in this report. Generally, these solar farms are sound comparables to Cypress Creek Renewables' proposed solar project in terms of adjoining uses, location, and size.

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SUMMARY AND FINAL CONCLUSIONS

The purpose of this property value impact report is to determine whether the presence of a solar farm has caused a measurable and consistent impact on adjacent property values. Under the identified methodology and scope of work, CohnReznick reviewed published methodology for measuring impact on property values as well as published reports that analyzed the impact of solar farms on property values. These studies found little to no measurable and consistent difference between Test Area Sales and Control Area Sales attributed to the solar farms.

A summary of the chosen CohnReznick impact studies prepared is presented below.

CohnReznick Solar Analysis Conclusions

Solar Farm #	Solar Farm	Number of Test Area Sales	Number of Control Area Sales	Median Adjoining Property (Test Area Sales) Sales Price per Unit	Control Area Sales Median Price per Unit	Difference (%)	Avg. Feet from Panel to Lot	Avg. Feet from Panel to House	Impact Found?
Single-Family Residential									
1	Portage Solar Group 2	1	7	$84.35	$84.27	+0.09%	1,070	1,233	No Impact
2	DTE Lapeer Solar Group 1	3	6	$105.26	$99.64	+5.64%	205	285	No Impact
	DTE Lapeer Solar Group 2	1	5	$114.12	$113.01	+0.98%	225	315	No Impact
	DTE Lapeer Solar Group 3	1	4	$94.84	$96.32	-1.54%	160	290	No Impact
3	Grand Ridge Solar	1	5	$79.90	$74.35	+7.46%	366	479	No Impact
4	Woodland Solar	1	5	$144.63	$137.76	+4.99%	420	615	No Impact
5	Dominion Indy Solar III Group 2	4	8	$59.10	$57.84	+2.18%	240	350	No Impact
	Dominion Indy Solar III Group 3	7	11	$72.15	$71.69	+0.64%	165	300	No Impact
6	Sunfish Farm Solar Group 1	1	14	$127.89	$124.86	+2.43%	50	200	No Impact
	Sunfish Farm Solar Group 2	1	10	$67.20	$66.23	+1.47%	665	760	No Impact
7	Call Farms 3 Solar	1	5	$58.80	$58.62	+0.31%	200	297	No Impact
8	IMPA Frankton Solar Group 1	1	6	$28.58	$28.42	+0.56%	120	153	No Impact
	IMPA Frankton Solar Group 2	1	5	$52.40	$51.47	+1.81%	163	415	No Impact
9	Jefferson Community Solar Garden	3	6	$165.15	$164.36	+0.48%	609	658	No Impact
10	Valparaiso Solar Group 1	1	5	$82.42	$79.95	+3.09%	323	516	No Impact
Median Variance in Sale Prices for Test to Control Areas						**+1.47%**			
28 Adjoining Test Sales studied and compared to 102 Control Sales									
Land (Agricultural/Single Family Lots)									
1	Portage Solar Group 1	1	9	$8,000	$7,674	+4.25%	845	-	No Impact
5	Indy Solar III Group 1	1	4	$8,210	$8,091	+1.47%	280	-	No Impact
Median Variance in Sale Prices for Test to Control Areas						**+1.47%**			
2 Adjoining Test Sales studied and compared to 13 Control Sales									

As summarized above, we evaluated 30 property sales adjoining existing solar facilities (Test Area Sales) and 115 Control Area Sales. In addition, we studied a total of 37 Test Area Sales and 46 Control Area Sales in two Before and After analyses. In total, we have studied over 1,430 sale transactions across the United States.

The solar farms analyzed reflected sales of property adjoining an existing solar farm (Test Area Sales) in which the unit sale prices were effectively the same or higher than the comparable Control Area Sales that were not near a solar farm. The conclusions support that there is no negative impact for improved residential homes adjacent to solar, nor agricultural acreage. This was confirmed with market participants interviews, which provided additional insight as to how the market evaluates farmland and single-family homes with views of the solar farm.

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It can be concluded that since the Adjoining Property Sales (Test Area Sales) were not adversely affected by their proximity to the solar farm, that properties surrounding other proposed solar farms operating in compliance with all regulatory standards will similarly not be adversely affected, in either the short or long term periods.

Based upon the examination, research, and analyses of the existing solar farm uses, the surrounding areas, and an extensive market database, we have concluded that ***no consistent negative impact has occurred to adjacent property values that could be attributed to proximity to the adjacent solar farm***, with regard to unit sale prices or other influential market indicators. Additionally, in our workfile we have retained analyses of additional existing solar farms, each with their own set of matched control sales, which had consistent results, indicating no consistent and measurable impact on adjacent property values. This conclusion has been confirmed by numerous county assessors who have also investigated this use's potential impact on property values.

If you have any questions or comments, please contact the undersigned. Thank you for the opportunity to be of service.

Respectfully submitted,

CohnReznick LLP



Andrew R. Lines, MAI
Principal
Certified General Real Estate Appraiser
Illinois License No. 553.001841
Expires 9/30/2023
Indiana License No. CG41500037
Expires 6/30/2022



Patricia L. McGarr, MAI, CRE, FRICS
National Director - Valuation Advisory Services
Certified General Real Estate Appraiser
Illinois License No. #553.000621
Expires 9/30/2023
Indiana License No. #CG49600131
Expires 6/30/2022
Michigan License No. 1201072979
Expires 7/31/2022



Erin C. Bowen, MAI
Senior Manager
Certified General Real Estate Appraiser
Arizona License No. 32052
Expires 12/31/2022

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CERTIFICATION

We certify that, to the best of our knowledge and belief:

1. The statements of fact and data reported are true and correct.
2. The reported analyses, findings, and conclusions in this consulting report are limited only by the reported assumptions and limiting conditions, and are our personal, impartial, and unbiased professional analyses, findings, and conclusions.
3. We have no present or prospective interest in the property that is the subject of this report and no personal interest with respect to the parties involved.
4. We have performed no services, as an appraiser or in any other capacity, regarding the property that is the subject of this report within the three-year period immediately preceding acceptance of this assignment.
5. We have no bias with respect to the property that is the subject of this report or the parties involved with this assignment.
6. Our engagement in this assignment was not contingent upon developing or reporting predetermined results.
7. Our compensation for completing this assignment is not contingent upon the development or reporting of a predetermined value or direction in value that favors the cause of the client, the amount of the value finding, the attainment of a stipulated result, or the occurrence of a subsequent event directly related to the intended use of this report.
8. Our analyses, findings, and conclusions were developed, and this report has been prepared, in conformity with the requirements of the Code of Professional Ethics and Standards of Professional Appraisal Practice of the Appraisal Institute, which includes the Uniform Standards of Professional Appraisal Practice (USPAP).
9. The use of this report is subject to the requirements of the Appraisal Institute relating to review by its duly authorized representatives.
10. Patricia L. McGarr, MAI, CRE, FRICS, Andrew R. Lines, MAI, and Erin C. Bowen, MAI have viewed the exterior of all comparable data referenced in this report in person, via photographs, or aerial imagery.
11. We have not relied on unsupported conclusions relating to characteristics such as race, color, religion, national origin, gender, marital status, familial status, age, and receipt of public assistance income, handicap, or an unsupported conclusion that homogeneity of such characteristics is necessary to maximize value.
12. Joseph P. B. Ficenec provided significant appraisal consulting assistance to the persons signing this certification, including data verification, research, and administrative work all under the appropriate supervision.
13. We have experience in reviewing properties similar to the subject and are in compliance with the Competency Rule of USPAP.
14. As of the date of this report, Patricia L. McGarr, MAI, CRE, FRICS, Andrew R. Lines, MAI, and Erin C. Bowen, MAI have completed the continuing education program for Designated Members of the Appraisal Institute.

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If you have any questions or comments, please contact the undersigned. Thank you for the opportunity to be of service.

Respectfully submitted,

CohnReznick LLP



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ASSUMPTIONS AND LIMITING CONDITIONS

The fact witness services will be subject to the following assumptions and limiting conditions:

1. No responsibility is assumed for the legal description provided or for matter pertaining to legal or title considerations. Title to the property is assumed to be good and marketable unless otherwise stated. The legal description used in this report is assumed to be correct.
2. The property is evaluated free and clear of any or all liens or encumbrances unless otherwise stated.
3. Responsible ownership and competent management are assumed.
4. Information furnished by others is believed to be true, correct and reliable, but no warranty is given for its accuracy.
5. All engineering studies are assumed to be correct. The plot plans and illustrative material in this report are included only to help the reader visualize the property.
6. It is assumed that there are no hidden or unapparent conditions of the property, subsoil, or structures that render it more or less valuable. No responsibility is assumed for such conditions or for obtaining the engineering studies that may be required to discover them.
7. It is assumed that the property is in full compliance with all applicable federal, state, and local and environmental regulations and laws unless the lack of compliance is stated, described, and considered in the evaluation report.
8. It is assumed that the property conforms to all applicable zoning and use regulations and restrictions unless nonconformity has been identified, described and considered in the evaluation report.
9. It is assumed that all required licenses, certificates of occupancy, consents, and other legislative or administrative authority from any local, state, or national government or private entity or organization have been or can be obtained or renewed for any use on which the value estimate contained in this report is based.
10. It is assumed that the use of the land and improvements is confined within the boundaries or property lines of the property described and that there is no encroachment or trespass unless noted in this report.
11. The date of value to which the findings are expressed in this report apply is set forth in the letter of transmittal. The appraisers assume no responsibility for economic or physical factors occurring at some later date which may affect the opinions herein stated.
12. Unless otherwise stated in this report, the existence of hazardous materials, which may or may not be present on the property, was not observed by the appraisers. The appraisers have no knowledge of the existence of such substances on or in the property. The appraisers, however, are not qualified to detect such substances. The presence of substances such as asbestos, urea-formaldehyde foam insulation, radon gas, lead or lead-based products, toxic waste contaminants, and other potentially hazardous materials may affect the value of the property. The value estimate is predicated on the

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assumption that there is no such material on or in the property that would cause a loss in value. No responsibility is assumed for such conditions or for any expertise or engineering knowledge required to discover them. The client is urged to retain an expert in this field, if desired.

13. The forecasts, projections, or operating estimates included in this report were utilized to assist in the evaluation process and are based on reasonable estimates of market conditions, anticipated supply and demand, and the state of the economy. Therefore, the projections are subject to changes in future conditions that cannot be accurately predicated by the appraisers and which could affect the future income or value projections.

14. Fundamental to the appraisal analysis is the assumption that no change in zoning is either proposed or imminent, unless otherwise stipulated. Should a change in zoning status occur from the property's present classification, the appraisers reserve the right to alter or amend the value accordingly.

15. It is assumed that the property does not contain within its confined any unmarked burial grounds which would prevent or hamper the development process.

16. The Americans with Disabilities Act (ADA) became effective on January 26, 1992. We have not made a specific compliance survey and analysis of the property to determine if it is in conformance with the various detailed requirements of the ADA. It is possible that a compliance survey of the property, together with a detailed analysis of the requirements of the ADA, could reveal that the property is not in compliance with one or more of the requirements of the Act. If so, this fact could have a negative effect on the value of the property. Unless otherwise noted in this report, we have not been provided with a compliance survey of the property. Any information regarding compliance surveys or estimates of costs to conform to the requirements of the ADA are provided for information purposes. No responsibility is assumed for the accuracy or completeness of the compliance survey cited in this report, or for the eventual cost to comply with the requirements of the ADA.

17. Any value estimates provided in this report apply to the entire property, and any proration or division of the total into fractional interests will invalidate the value estimate, unless such proration or division of interests has been set forth in this report.

18. Any proposed improvements are assumed to have been completed unless otherwise stipulated; any construction is assumed to conform with the building plans referenced in this report.

19. Unless otherwise noted in the body of this report, this evaluation assumes that the subject does not fall within the areas where mandatory flood insurance is effective.

20. Unless otherwise noted in the body of this report, we have not completed nor are we contracted to have completed an investigation to identify and/or quantify the presence of non-tidal wetland conditions on the subject property.

21. This report should not be used as a basis to determine the structural adequacy/inadequacy of the property described herein, but for evaluation purposes only.

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22. It is assumed that the subject structure meets the applicable building codes for its respective jurisdiction. We assume no responsibility/liability for the inclusion/exclusion of any structural component item which may have an impact on value. It is further assumed that the subject property will meet code requirements as they relate to proper soil compaction, grading, and drainage.

23. The appraisers are not engineers, and any references to physical property characteristics in terms of quality, condition, cost, suitability, soil conditions, flood risk, obsolescence, etc., are strictly related to their economic impact on the property. No liability is assumed for any engineering-related issues.

The evaluation services will be subject to the following limiting conditions:

1. The findings reported herein are only applicable to the properties studied in conjunction with the Purpose of the Evaluation and the Function of the Evaluation as herein set forth; the evaluation is not to be used for any other purposes or functions.

2. Any allocation of the total value estimated in this report between the land and the improvements applies only to the stated program of utilization. The separate values allocated to the land and buildings must not be used in conjunction with any other appraisal and are not valid if so used.

3. No opinion is expressed as to the value of subsurface oil, gas or mineral rights, if any, and we have assumed that the property is not subject to surface entry for the exploration or removal of such materials, unless otherwise noted in the evaluation.

4. This report has been prepared by CohnReznick under the terms and conditions outlined by the enclosed engagement letter. Therefore, the contents of this report and the use of this report are governed by the client confidentiality rules of the Appraisal Institute. Specifically, this report is not for use by a third party and CohnReznick is not responsible or liable, legally or otherwise, to other parties using this report unless agreed to in writing, in advance, by both CohnReznick and/or the client or third party.

5. Disclosure of the contents of this evaluation report is governed by the by-laws and Regulations of the Appraisal Institute has been prepared to conform with the reporting standards of any concerned government agencies.

6. The forecasts, projections, and/or operating estimates contained herein are based on current market conditions, anticipated short-term supply and demand factors, and a continued stable economy. These forecasts are, therefore, subject to changes with future conditions. This evaluation is based on the condition of local and national economies, purchasing power of money, and financing rates prevailing at the effective date of value.

7. This evaluation shall be considered only in its entirety, and no part of this evaluation shall be utilized separately or out of context. Any separation of the signature pages from the balance of the evaluation report invalidates the conclusions established herein.

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8. **Possession of this report, or a copy thereof, does not carry with it the right of publication, nor may it be used for any purposes by anyone other than the client without the prior written consent of the appraisers, and in any event, only with property qualification.**

9. The appraisers, by reason of this study, are not required to give further consultation or testimony or to be in attendance in court with reference to the property in question unless arrangements have been previously made.

10. Neither all nor any part of the contents of this report shall be conveyed to any person or entity, other than the appraiser's client, through advertising, solicitation materials, public relations, news, sales or other media, without the written consent and approval of the authors, particularly as to evaluation conclusions, the identity of the appraisers or CohnReznick, LLC, or any reference to the Appraisal Institute, or the MAI designation. Further, the appraisers and CohnReznick, LLC assume no obligation, liability, or accountability to any third party. If this report is placed in the hands of anyone but the client, client shall make such party aware of all the assumptions and limiting conditions of the assignment.

11. This evaluation is not intended to be used, and may not be used, on behalf of or in connection with a real estate syndicate or syndicates. A real estate syndicate means a general or limited partnership, joint venture, unincorporated association or similar organization formed for the purpose of, and engaged in, an investment or gain from an interest in real property, including, but not limited to a sale or exchange, trade or development of such real property, on behalf of others, or which is required to be registered with the United States Securities and Exchange commissions or any state regulatory agency which regulates investments made as a public offering. It is agreed that any user of this evaluation who uses it contrary to the prohibitions in this section indemnifies the appraisers and the appraisers' firm and holds them harmless from all claims, including attorney fees, arising from said use.

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ADDENDUM A:
APPRAISER QUALIFICATIONS

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Patricia L. McGarr, MAI, CRE, FRICS, CRA

Principal and CohnReznick Group – Valuation Advisory National Director

200 S. Wacker Drive, Suite 2600
Chicago, IL 60606
312-508-5802
patricia.mcgarr@cohnreznick.com

Patricia L. McGarr, MAI, CRE, FRICS, CRA, is a principal and National Director of CohnReznick Advisory Group's Valuation Advisory Services practice. Pat's experience includes market value appraisals of varied property types for acquisition, condemnation, mortgage, estate, ad valorem tax, litigation, zoning, and other purposes. Pat has been involved in the real estate business since 1980. From June 1980 to January 1984, she was involved with the sales and brokerage of residential and commercial properties. Her responsibilities during this time included the formation, management, and training of sales staff in addition to her sales, marketing, and analytical functions. Of special note was her development of a commercial division for a major Chicago-area brokerage firm.

Since January 1984, Pat has been exclusively involved in the valuation of real estate. Her experience includes the valuation of a wide variety of property types including residential (SF/MF/LIHTC), commercial, industrial, and special purpose properties including such diverse subjects as quarries, marinas, riverboat gaming sites, shopping centers, manufacturing plants, and office buildings. She is also experienced in the valuation of leasehold and leased fee interests. Pat has performed appraisal assignments throughout the country, including the Chicago Metropolitan area as well as New York, New Jersey, California, Nevada, Florida, Utah, Texas, Wisconsin, Indiana, Michigan, and Ohio. Pat has gained substantial experience in the study and analysis of the establishment and expansion of sanitary landfills in various metropolitan areas including the preparation of real estate impact studies to address criteria required by Senate Bill 172. She has also developed an accepted format for allocating value of a landfill operation between real property, landfill improvements, and franchise (permits) value.

Over the past several years, Pat has developed a valuation group that specializes in the establishment of new utility corridors for electric power transmission and pipelines. This includes determining acquisition budgets, easement acquisitions, corridor valuations, and litigation support. Pat has considerable experience in performing valuation impact studies on potential detrimental conditions and has studied properties adjoining solar farms, wind farms, landfills, waste transfer stations, stone quarries, cellular towers, schools, electrical power transmission lines, "Big Box" retail facilities, levies, properties with restrictive covenants, landmark districts, environmental contamination, airports, material defects in construction, stigma, and loss of view amenity for residential high rises. Most recently, the firm has studied property values adjacent to Solar Farms to address criteria required for special use permits across the Midwest.

Pat has qualified as an expert valuation witness in numerous local, state, and federal courts.

Pat has participated in specialized real estate appraisal education and has completed more than 50 courses and seminars offered by the Appraisal Institute totaling more than 600 classroom hours, including real estate transaction courses as a prerequisite to obtaining a State of Illinois Real Estate Salesman License.

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Pat has earned the professional designations of Counselors of Real Estate (CRE), Member of the Appraisal Institute (MAI), Fellow of Royal Institution of Chartered Surveyors (FRICS) and Certified Review Appraiser (CRA). She has also been a certified general real estate appraiser in 21 states (see below).

Education

- North Park University: Bachelor of Science, General Studies

Professional Affiliations

- National Association of Realtors
- CREW Commercial Real Estate Executive Women
- IRWA International Right Of Way Association

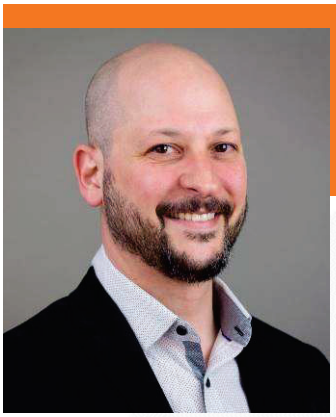
Licenses and Accreditations

- Member of the Appraisal Institute (MAI)
- Counselors of Real Estate, designated CRE
- Fellow of Royal Institution of Chartered Surveyors (FRICS)
- Certified Review Appraiser (CRA)
- Alabama State Certified General Real Estate Appraiser
- California State Certified General Real Estate Appraiser
- Connecticut State Certified General Real Estate Appraiser
- Colorado State Certified General Real Estate Appraiser
- District of Columbia Certified General Real Estate Appraiser
- Illinois State Certified General Real Estate Appraiser
- Indiana State Certified General Real Estate Appraiser
- Louisiana State Certified General Real Estate Appraiser
- Maryland State Certified General Real Estate Appraiser
- Massachusetts Certified General Real Estate Appraiser
- Michigan State Certified General Real Estate Appraiser
- North Carolina State Certified General Real Estate Appraiser
- New Jersey State Certified General Real Estate Appraiser
- Nevada State Certified General Real Estate Appraiser
- New York State Certified General Real Estate Appraiser
- Pennsylvania State Certified General Real Estate Appraiser
- South Carolina State Certified General Real Estate Appraiser
- Tennessee State Certified General Real Estate Appraiser
- Texas State Certified General Real Estate Appraiser
- Virginia State Certified General Real Estate Appraiser
- Wisconsin State Certified General Real Estate Appraiser

Appointments

- Appointed by two Governors of Illinois to the State Real Estate Appraisal Board (2017 & 2021)
- Chairperson of the State of Illinois Real Estate Appraisal Board (2021)

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Andrew R. Lines, MAI

Principal, CohnReznick Advisory

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Chicago, IL 60606
312-508-5892
andrew.lines@cohnreznick.com

Andrew R. Lines is a principal in CohnReznick's Valuation Advisory Services group where he specializes in Real Estate, Affordable Housing, Cannabis and Renewable Energy. Andrew leads a group of appraisers across the country performing valuations on a wide variety of real estate property types including residential, commercial, industrial, hospitality and special purpose properties: landfills, waste transfer stations, marinas, hospitals, universities, self-storage facilities, racetracks, CCRCs, and railroad corridors. Affordable Housing experience includes Market Studies, Rent Compatibility Studies and Feasibility Analysis for LIHTC and mixed-income developments. Cannabis assignments have covered cultivation, processing and dispensaries in over 10 states, including due diligence for mergers and acquisitions of multi-state operational and early stage companies. Renewable Energy assignments have included preparation of impact studies and testimony at local zoning hearings in eight states.

Andrew is experienced in the valuation of leasehold, leased fee, and partial interests and performs appraisals for all purposes including financial reporting, litigation, and gift/estate planning. Andrew is a State Certified General Real Estate Appraiser in the states of Illinois, Indiana, Maryland, Georgia, Florida, Ohio, New York, New Jersey, Arizona, Kentucky, and the District of Columbia.

Before joining CohnReznick, Andrew was with Integra Realty Resources, starting as analyst support in 2002 and leaving the firm as a director in late 2011 (including two years with the Phoenix branch). His real estate experience also includes one year as administrator for the residential multifamily REIT Equity Residential Properties Trust (ERP), in the transactions department, where he performed due diligence associated with the sale and acquisition of REIT properties and manufactured home communities.

Education

- Syracuse University: Bachelor of Fine Arts
- MAI Designation (Member of the Appraisal Institute)

Professional Affiliations

- Chicago Chapter of the Appraisal Institute
    - Alternate Regional Representative (2016 – 2018)
    - MAI Candidate Advisor (2014 – Present)
- International Real Estate Management (IREM)
- National Council of Real Estate Investment Fiduciaries (NCREIF)

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Community Involvement

- Syracuse University Regional Council – Active Member
- Syracuse University Alumni Association of Chicago, Past Board member
- Chicago Friends School – Treasurer & Board Member

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Erin Bowen, MAI

Senior Manager, Valuation Advisory Services

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erin.bowen@cohnreznick.com

Erin Bowen, MAI is a Senior Manager with CohnReznick in Valuation Advisory Services. Ms. Bowen is based in Phoenix, Arizona, with presence covering the west coast. Ms. Bowen's work in Commercial Real Estate valuation spans over 11 years.

Ms. Bowen specializes in lodging, cannabis, seniors housing, large scale retail and multifamily conversion properties. Lodging work includes all hotel property types and brand segments including limited, full service and resort properties; additionally, Ms. Bowen has appraised numerous hotel to multifamily conversion properties including market rate and affordable housing. Cannabis work includes dispensaries, cultivation facilities including specialized indoor facilities and greenhouse properties, processing and manufacturing facilities. Seniors housing assignments include assisted living, skilled nursing facilities and rehabilitation centers. Retail work spans power centers, lifestyle centers, outlet centers and malls. She has appraised numerous additional properties including multifamily, office, medical office, industrial, churches, and vacant land.

Ms. Bowen has expertise in appraising properties at all stages of development, including existing as is, proposed, under construction, renovations and conversion to alternate use. Valuations have been completed nationwide for a variety of assignments including mortgage financing, litigation, tax appeal, estate gifts, asset management, as well as valuation for financial reporting including purchase price allocations (ASC 805). Impact Study Reports have also been generated for zoning hearings related to the development of solar facilities, wind powered facilities

Education

- University of California, San Diego: Bachelor of Arts in Psychology and Theater; College Honors

Professional Affiliations

- Appraisal Institute, Designated Member

Licenses

- Certified General Real Estate Appraiser licensed in New Mexico, Arizona, California, and Nevada

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Memorandum

To: Plan Council
From: Jason Engberg, Senior Planner
Date: March 19, 2023
Subject: **PZC 2023-03 Bristol Ridge Solar Farm 106**
(Rezone, Special Use, Variance, Annexation Agreement Amendment)

I have reviewed the applications for rezoning classification, special use authorization, variance approval, and an amendment to an annexation agreement received on February 10, 2023 by Turning Point Energy, LLC. The following supplemental materials were included within the original applications:

1) Project Narrative, as prepared by Turning Point Energy, LLC
2) Annexation Amendment Application, as prepared Turning Point Energy, LLC
3) Rezoning Application, as prepared by Turning Point Energy, LLC
4) Variance Application, as prepared by Turning Point Energy, LLC
5) Special Use Permit Application, as prepared by Turning Point Energy, LLC
6) Zoning Site Plan, as prepared by Kimley Horn & Associates, Inc.
7) Decommissioning Plan, as prepared by Turning Point Energy, LLC
8) Wetland Delineation, as prepared by Kimley Horn & Associates, Inc.
9) Environmental Constraints Memorandum, as prepared by Kimley Horn & Associates, Inc.
10) Title Insurance, as prepared by Borrego Solar Systems, Inc.
11) Decommissioning Estimate, as prepared by New Leaf Energy
12) Illinois Department of Natural Resources EcoCAT Termination Report, as prepared by IDNR
13) Illinois Historic Preservation Agency Report, as prepared by Kimley Horn & Associates, Inc.
14) NRI Application & Report, as prepared by Kendall County Soil & Water Conservation District
15) Manufacturer's Specifications
16) Operations and Maintenance Plan, as prepared by Turning Point Energy, LLC
17) Transportation and Access Plan, as prepared by Kimley Horn & Associates, LLC
18) Interconnection Agreement
19) Glare Study and FAA Notice Criteria Filing, as prepared by Turning Point Energy, LLC
20) Containment and Water Studies
21) Viewshed, as prepared by Turning Point Energy, LLC
22) FEMA Firm Map
23) Property Impact Study, as prepared by Cohn Reznick

The petitioner is seeking to construct a solar farm on the 42-acre parcel generally located east of Cannonball Trail and south of Galena Road within the Bristol Ridge Planned Unit Development. The petitioner is requesting to rezone the parcel from the R-2 Single-Family and R-3 Townhome to A-1 Agricultural District zoning, special use permit approval for a solar farm, and variance approval to decrease the minimum distance between the ground and the solar panels from ten (10) feet to a minimum height of two (2) feet.

Based upon my review of the application documents and plans, I have compiled the following comments (staff comments to the petitioner are underlined):

Zoning
The subject property is currently zoned R-2 Single-Family and R-3 Townhome PUD per Ordinance 2006-126. The following are the current immediate surrounding zoning and land uses:

	Zoning	Land Use
North	B-3 General Business District (Bristol Bay) B-4 Commercial Recreation District (Kendall County)	Religious Institution Farmland
South	R-2 Single-Family Traditional Residence District (Bristol Ridge) R-3 Multi-Family Attached Residence District (Bristol Ridge)	Farmland
East	A-1 Agricultural District (Kendall County)	Farmland
West	R-2 One Family Residential District (Kendall County) R-2 Single-Family Traditional Residence District (Bristol Ridge) R-3 Multi-Family Attached Residence District (Bristol Ridge)	Residential Use Farmland

The proposed use is defined in the Yorkville Zoning Ordinance as a Solar Farm which is a special use within the A-1 Agricultural District. This requires the use to abide by the A-1 Agricultural District regulations as well as the Alternative Energy System regulations in the City's Zoning Ordinance.

Location on Site
Table 10.07.01 of Chapter 7 in the City's Zoning Ordinance provides dimensions and bulk regulations for the A-1 Agricultural District. The following yard setbacks are required for this district and the proposed setbacks are shown on the submitted materials:

	Minimum Requirement	Proposed Setback
Front	100 feet	>100 feet
Side (North)	50 feet	>50 feet
Side (South)	50 feet	~ 28 feet
Rear	None	50 feet

The location of the solar panels meets the front, north side, and rear yard setbacks for the A-1 District. Staff is requesting that the petitioner indicate the exact measurement on the exhibit which states how far the nearest panel is to the property line.

The solar panels encroach into the required side yard on the southern border but Section 10-19-7-C of the Yorkville Zoning Ordinance (zoning ordinance) states that freestanding solar energy systems may not be located within the required front yard or corner side yard but may be located within the required rear and side yards. Section 10-19-7-B of the zoning ordinance states that all parts of any freestanding solar energy system shall be set back 8 feet from interior side and rear property lines. Therefore, the proposed 28-foot setbacks from the side property lines meets the minimum requirement of the zoning ordinance.

Height
Section 10-19-7-F states the maximum height will be stipulated as a special use condition. The petitioner has stated the maximum height of the panels will be 15 feet. Staff does not have an issue with this height and will recommend it as a condition of the special use as stated in the zoning ordinance.

Fencing
The petitioner is proposing to construct an 8-foot "agricultural style" fence around the entire solar field which will be accessible through gates with Knox Boxes for emergency access. Section 10-7-2 does not

state any regulations regarding fencing within the A-1 Agricultural District. Therefore, the proposed fencing does meet the minimum requirements. Staff is requesting that the petitioner provide an exhibit illustrating the fence alone including a description of the materials. In previous solar farm applications, committee members were interested in the type of fencing being installed and it may prove beneficial in this instance as well.

Landscape Plan

Section 8-12-1-C of the Municipal Code states that all other developments other than single-family detached and duplex residential development must meet the parkway, perimeter, parking lot, lot, stormwater storage basin, and median landscaping requirements. For this development, the following are relevant as certain portions of the development are adjacent to residential uses:

B. Perimeter landscaping:

1. Nonresidential adjacent to residential: Where a nonresidential property is adjacent to residential property, a thirty foot (30') wide buffer yard shall be provided. The buffer yard shall consist of a berm or architectural masonry wall, at least three feet (3') in height as measured from the property line. The buffer yard shall also consist of two (2) shade trees, five (5) evergreen trees and three (3) ornamental trees per one hundred (100) linear feet of buffer yard.

D. Lot landscaping:

Lot landscaping shall be required for all developments in accordance with the following:

2. Nonresidential: Two (2) shade trees and fifteen (15) shrubs shall be provided for every twenty thousand (20,000) square feet of lot area.

The petitioner has identified areas that face Cannonball Trail and the religious institution to the north and are providing a vegetative buffer. Additionally, the petitioner has identified areas that face the residential use to the southwest and have provided an enhanced vegetative buffer.

The vegetative buffer along the western and sections of the northern boundary of the parcel are providing eight (8) evergreen trees/shrubs and seven (7) large deciduous shrubs every one hundred (100) linear feet. These buffers are not required as they are not adjacent to a residential use but do add to the required amount of lot landscaping. These buffers have been provided for potential views from the nearby religious instution and Cannonball Trail. The enhanced vegetative buffer is faces the residential land us to the southwest and is providing ten (10) evergreen trees/shrubs, six (6) large deciduous shrubs, and three (3) ornamental trees every one hundred (100) linear feet.

The landscape plan does not quantify how many of each species will be located on site. Staff will require this total on the exhibit to calculate if the petitioner is meeting the standards set it the landscape ordinance outlined above. The mix of landscaping and the types of plantings will be reviewed and approved by the City's landscaping consultant and will be added as a condition to the special use. The petitioner must meet the criteria of the landscape ordinance prior to special use authorization.

Glare

Section 10-19-7-E states solar panels shall be placed such that concentrated solar radiation or glare shall not be directed onto nearby properties or roadways. The petitioner has submitted a glare study and analysis which concludes that there was no potential for glint or glare identified by the analysis. Additionally, the panels will be buffered by landscaping in areas that could be seen by adjacent property owners or roadways. The petitioner has also provided a viewshed from angles around the solar farm which illustrate how far away the panels will be from the public right-of-way.

Signage

Section 19-4-F states that "No commercial signage or attention getting device is permitted on any alternative energy system. One (1) sign shall be permitted to indicate the emergency contact information

of the property owner or operator. Said sign shall not exceed two (2) square feet in size." The submitted narrative states a warning sign shall be provided at the facility entrance and along the perimeter fence including the facilities 911 address and a 24-hour emergency contact number. The petitioner does not need to provide an exhibit of the sign if it is under 2 square feet in size.

Utility Service Provider
Section 10-19-4-G states that evidence that the electric utility service provider that serves the proposed site has been notified of the owner's intent to install an interconnected customer owned electricity generator. ComEd has been notified of this project and an interconnection plan has been submitted to them and has been provided by the petitioner.

Clearance
Section 10-19-7-D states the minimum clearance between the lowest point of the system and the surface on which the system is mounted is ten feet (10'). The petitioner is requesting a variance to this regulation to reduce the clearance to two (2) feet. The petitioner has provided the reasoning behind this request as the maintenance on the panels at the 10-foot height would be cumbersome, the visibility of the panels would increase as they would be significantly taller, and the wind loads generated at a greater height could damage the cells. Staff supports the variance request as the regulation has been an issue with previous requests for ground mounted solar panels and is not an industry standard.

Access
The site plan indicates there will be a 20-foot-wide access drive off of Cannonball Trail to the east to enter the property. Section 10-16-3-C, Table 10.16.02 states the minimum driveway width for a nonresidential use is 12 feet for the amount of trips per day this site will generate once complete. Part D-5 of this Section also states that the driveway surface shall be improved with a pavement meeting State of Illinois standard A-3 or equivalent. The petitioner should indicate on the plans the type of pavement being used for the access drive.

Decommission
Section 10-19-9-A-3 states prior to permit issuance, the owner shall sign an acknowledgement that said owner will be responsible for any and all enforcement costs and remediation costs resulting from any violations of that chapter. The costs include, but are not limited to, removal of system, property restoration upon removal of the system, city legal expenses and hearing costs associated with violations of that chapter. The petitioner has verified they are aware of these standards and have included decommissioning plan with their submittal.

Annexation Agreement Amendment
The petitioner is requesting to amend the existing Annexation Agreement for Bristol Ridge (Ordinance 2006-126) to permit this land use instead of the planned residential development. Per the petitioner's request, staff will add language within the amendment ordinance which states the rezoning, special use, and variance authorization along with the land use change will only take effect once a building permit is issued for the solar farm and not at recordation of the ordinance. If the petitioner is seeking any additional language in the agreement other than what has already been stated, please advise staff for discussion.

Special Use Standards
Section 10-19-4-C and 10-4-9-F state specific standards for special use which all recommendation bodies will review. The petitioner has provided answers to each of the criteria in the application as well as providing an additional attachment to these standards.

Memorandum

To: Economic Development Committee
From: Jason Engberg, Senior Planner
CC: Bart Olson, City Administrator
Krysti Barksdale-Noble, Community Development Director
Date: March 29, 2023
Subject: **PZC 2023-03 Bristol Ridge Solar Farm 106**
(Rezone, Special Use, Variance, Annexation Agreement Amendment)

SUMMARY:

The applicant, Turning Point Energy, LLC, is requesting rezoning approval, special use authorization, variance approval and an amendment to an annexation agreement to construct a solar farm on the 42-acre parcel generally located east of Cannonball Trail and south of Galena Road within the Bristol Ridge Planned Unit Development. The petitioner is requesting to rezone the parcel from the R-2 Single-Family and R-3 Townhome PUD (Bristol Ridge) to the A-1 Agricultural District zoning, special use permit approval for a solar farm land use, and variance approval to decrease the minimum distance between the ground and the solar panels from ten (10) feet to a minimum height of two (2) feet. Finally, the petitioner is seeking to amend the existing annexation agreement for the Bristol Ridge Development to replace the current adopted land use plan with their solar farm. This amendment will also be required to rezone the property to the A-1 Agricultural District.

LOCATION & BACKGROUND:

The 42-acre property is located in the northeastern part of Yorkville just north of unincorporated Bristol along Cannonball Trail. The property is the northern portion of the existing Bristol Ridge Development which was established in 2006 for residential detached and attached housing units. The current land use of the property is agricultural farmland.



Bristol Ridge Solar Farm 106 Location

United City of Yorkville, Illinois
March 29, 2023

ZONING:

The subject property is currently zoned for R-2 Single-Family dwellings and R-3 Townhome dwellings as part of a Planned Unit Development per Ordinance 2006-126. The petitioner is seeking to rezone the property to the A-1 Agricultural District. The following are the current immediate surrounding zoning and land uses:

	Zoning	Land Use
North	B-3 General Business District (Bristol Bay) B-4 Commercial Recreation District (Kendall County)	Religious Institution Farmland
South	R-2 Single-Family Traditional Residence District (Bristol Ridge) R-3 Multi-Family Attached Residence District (Bristol Ridge)	Farmland
East	A-1 Agricultural District (Kendall County)	Farmland
West	R-2 One Family Residential District (Kendall County) R-2 Single-Family Traditional Residence District (Bristol Ridge) R-3 Multi-Family Attached Residence District (Bristol Ridge)	Residential Use Farmland

The proposed use is defined in the Yorkville Zoning Ordinance as a Solar Farm which is a special use within the A-1 Agricultural District. This requires the use to abide by the A-1 Agricultural District regulations as well as the Alternative Energy System regulations in the City's Zoning Ordinance.

ALTERNATIVE ENERGY SYSTEMS REGULATIONS:

Section 10-19: Alternative Energy Systems establishes regulations which were used in the review of this request. The proposed solar farm will be required to meet the setback standards for the A-1 Agricultural District as well as the provisions under the Freestanding Solar Energy Systems regulations.

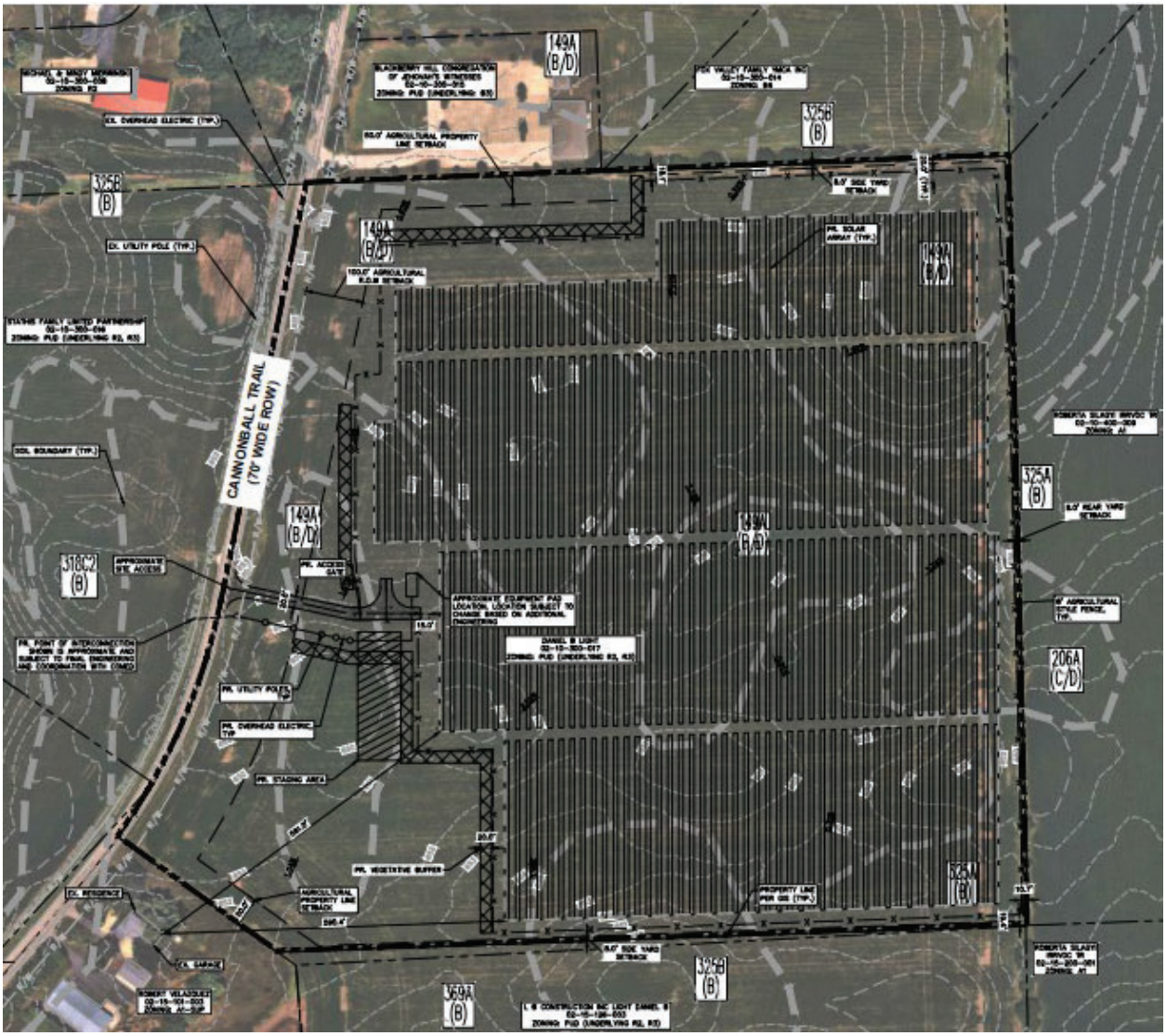
Setbacks

Table 10.07.01 of Chapter 7 in the City's Zoning Ordinance provides dimensions and bulk regulations for the A-1 Agricultural District. Section 10-19-7-C of the Zoning Ordinance states that freestanding solar energy systems shall not be located within the required front yard or corner side yard. Additionally, Section 10-19-7-B of the Zoning Ordinance states that all parts of any freestanding solar energy system shall be set back 8 feet from interior side and rear property lines.

The following table illustrates the minimum required yard setbacks for solar systems based upon the A-1 Agricultural District regulations and the Freestanding Solar Energy System requirements and the proposed setbacks per the submitted site plan (attached):

	Minimum Requirement	Proposed Setback
Front	100 feet	>100 feet
Side (North)	8 feet	>50 feet
Side (South)	8 feet	28 feet
Rear	None	41 feet

The location of the solar panels meets the front and rear yard setbacks for the A-1 District and the location of the solar panels meets the required setbacks in the side yards per the Freestanding Solar Energy System requirements. Staff is requiring the petitioner to illustrate the exact setback in the front and side yard prior to any public hearing.



Height

The petitioner has submitted a narrative stating that the height of the entire panel on the stand will not exceed fifteen (15) feet in height. Section 10-19-7-F states the maximum height will be stipulated as a special use condition. Staff is not opposed to this overall height as the location of the panels and their distance from all existing land uses should not cause a nuisance to any neighboring property. The viewsheds provided by the petitioner illustrate this point. The overall height will be set as a condition of the special use as stated in the zoning ordinance.

Clearance

Section 10-19-7-D states the minimum clearance between the lowest point of the system and the surface on which the system is mounted is ten feet (10'). The petitioner is requesting a variance to this regulation to reduce the clearance to two (2) feet. The petitioner has provided the reasoning behind this request as the maintenance on the panels at the 10-foot height would be cumbersome, the visibility of the panels would increase as they would be significantly taller, and the wind loads generated at a greater height could damage the cells. Staff supports the variance request as the regulation has been an issue with previous requests for ground mounted solar panels and is not an industry standard. This regulation is being removed in the Unified Development Ordinance which is currently being drafted by the City.

Fencing
The petitioner is proposing to construct an eight (8) foot "agricultural style" fence around the entire solar field which will be accessible through gates with Knox Boxes for emergency access. Section 10-7-2 does not state any regulations regarding fencing within the A-1 Agricultural District. Therefore, the proposed fencing does meet the minimum requirements. Staff has requested that the petitioner provide an exhibit illustrating the fence alone including a description of the materials prior to any public hearing. Staff also suggested either making the fence chain link or adding a beam to the top of the proposed fence to increase its sturdiness and overall security. All fencing materials, locations, and styles will be included as a condition of special use approval.

Glare
Section 10-19-7-E states solar panels shall be placed such that concentrated solar radiation or glare shall not be directed onto nearby properties or roadways. The petitioner has submitted a glare study and analysis which concludes that there was no potential for glint or glare identified by the analysis. Additionally, the panels will be buffered by landscaping in areas that could be seen by adjacent property owners or roadways. The petitioner has also provided a viewshed from angles around the solar farm which illustrate how far away the panels will be from the public right-of-way.

Signage
Section 19-4-F states that "No commercial signage or attention getting device is permitted on any alternative energy system. One (1) sign shall be permitted to indicate the emergency contact information of the property owner or operator. Said sign shall not exceed two (2) square feet in size." The submitted narrative states a warning sign shall be provided at the facility entrance and along the perimeter fence including the facilities 911 address and a 24-hour emergency contact number. The petitioner is aware of the size requirement and will comply with the regulation.

Utility Service Provider
Section 10-19-4-G states that evidence that the electric utility service provider that serves the proposed site has been notified of the owner's intent to install an interconnected customer owned electricity generator. ComEd has been notified of this project and an interconnection plan has been submitted to them and has been provided by the petitioner.

Decommission
Section 10-19-9-A-3 states prior to permit issuance, the owner shall sign an acknowledgement that said owner will be responsible for any and all enforcement costs and remediation costs resulting from any violations of that chapter. The costs include, but are not limited to, removal of system, property restoration upon removal of the system, city legal expenses and hearing costs associated with violations of that chapter. The petitioner has verified they are aware of these standards and have included decommissioning plan with their submittal. Additionally, the petitioner has been made aware that they will have to establish an access easement over the entire property in case City staff must remove the solar farm.

Landscape Plan
Section 8-12-1-C of the Municipal Code states that all other developments other than single-family detached and duplex residential development must meet the parkway, perimeter, parking lot, lot, stormwater storage basin, and median landscaping requirements. For this development, the following are relevant as certain portions of the development are adjacent to residential uses:

B. Perimeter landscaping:
    1. Nonresidential adjacent to residential: Where a nonresidential property is adjacent to residential property, a thirty foot (30') wide buffer yard shall be provided. The buffer yard shall consist of a berm or architectural masonry wall, at least three feet (3') in height as measured from the property line. The buffer yard shall also consist of two (2)

shade trees, five (5) evergreen trees and three (3) ornamental trees per one hundred (100) linear feet of buffer yard.

D. Lot landscaping:
Lot landscaping shall be required for all developments in accordance with the following:

2. Nonresidential: Two (2) shade trees and fifteen (15) shrubs shall be provided for every twenty thousand (20,000) square feet of lot area.

The petitioner has identified areas that face Cannonball Trail and the religious institution to the north and are providing a vegetative buffer. Additionally, the petitioner has identified areas that face the residential use to the southwest and have provided an enhanced vegetative buffer.

The vegetative buffer along the western and sections of the northern boundary of the parcel are providing eight (8) evergreen trees/shrubs and seven (7) large deciduous shrubs every one hundred (100) linear feet. These buffers are not required as they are not adjacent to a residential use but do add to the required amount of lot landscaping. These buffers have been provided for potential views from the nearby religious institution and Cannonball Trail. The enhanced vegetative buffer is faces the residential land us to the southwest and is providing ten (10) evergreen trees/shrubs, six (6) large deciduous shrubs, and three (3) ornamental trees every one hundred (100) linear feet.

The landscape plan does not quantify how many of each species will be located on site. Staff will require this total on the exhibit to calculate if the petitioner is meeting the standards set it the landscape ordinance outlined above. This mix of landscaping and the types of plantings is being reviewed by the City's landscaping consultant and will need to be approved prior to any public hearing. The final landscape plan will be made a condition of the special use approval.

Special Use Standards
Section 10-19-4-C and 10-4-9-F state specific standards for special use which all recommendation bodies will review. The petitioner has provided answers to each of the criteria in the application as well as providing an additional attachment to these standards which are included in the packet for your review and will be entered into the public record as part of the public hearing process.

ENGINEERING COMMENTS:

Please refer to the attached comments prepared by Engineering Enterprises Inc. (EEI) dated March 13, 2023. The work items listed in the review letter will need to be addressed and will become conditions for special use approval. The petitioner's engineer, Kimley-Horn, has provided a response letter to these requests and is attached.

ANNEXATION AGREEMENT AMENDMENT:

The petitioner is requesting to amend the existing Annexation Agreement for Bristol Ridge (Ordinance 2006-126) to permit this land use instead of the planned residential development. The petitioner is also proposing to add language which states the rezoning, special use, and variance authorization along with the land use change will only take effect once a building permit is issued for the solar farm and not at recordation of the ordinance. Additionally, the petitioner has received permission from all property owners within the Bristol Ridge Development to amend the annexation agreement for the solar farm use.

COMPREHENSIVE PLAN:

The subject property's future land use is classified as "Estate Conservation/Residential" which is intended to provide flexibility for residential design in areas of Yorkville that can accommodate low-density detached single-family housing but also include sensitive environmental and scenic features that should be retained and enhanced. The most typical form of development within this land use will be detached single family homes on large lots.

In 2016 this future land use designation was also use as a "holding" designation for future development. The 10-year horizon of the plan saw these areas outside of the core not developing within that timeframe. Any development in these areas should be reviewed on a case-by-case basis since it was not anticipated to develop within the plan's lifespan. The utilization of this property for a solar farm is a suitable land use at this time. The current annexation amendment for a residential neighborhood will expire in 2026 and the lack of development and utilities in this area means it is unlikely to be developed into a more intense use. Additionally, the solar farm is temporary in nature as it currently is being proposed for a 20-year lease.

STAFF COMMENTS & RECOMMENDATIONS:

Staff is generally supportive of the rezoning, special use request, variance, and annexation agreement amendment. Should the City Council vote to approve this request, staff recommends the following conditions to the special use:

1. The maximum height of the solar panels for this land use will be fifteen (15) feet.

2. A landscape plan which meets the standards set forth in Section 8-12 of the Yorkville Municipal Code and is approved by the City's landscape consultant.

3. The petitioner provides a security guarantee in a form acceptable to the City to cover such costs including, but not limited to the removal, property restoration, and city legal expenses and a blanket easement be provided over the property to allow the City or its contractor to enter and remove the abandoned system in compliance with the City Code.

4. Adherence to all comments prepared by EEI, city engineering consultant, in a letter dated March 13, 2023.

This request is tentatively scheduled for a public hearing for the rezoning, special use, and variance at the May 10, 2023 Planning and Zoning Commission meeting and the public hearing for the annexation agreement amendment at the May 23, 2023 City Council meeting. Staff and the petitioner are seeking comments from the Economic Development Committee about the proposed solar farm prior to the public hearing.

ATTACHMENTS:

1) Project Narrative, as prepared by Turning Point Energy, LLC
2) Zoning Site Plan, as prepared by Kimley Horn & Associates, Inc.
3) Development Applications
4) Decommissioning Plan, as prepared by Turning Point Energy, LLC
5) Wetland Delineation, as prepared by Kimley Horn & Associates, Inc.
6) Environmental Constraints Memorandum, as prepared by Kimley Horn & Associates, Inc.
7) Title Insurance, as prepared by Borrego Solar Systems, Inc.
8) Decommissioning Estimate, as prepared by New Leaf Energy
9) Illinois Department of Natural Resources EcoCAT Termination Report, as prepared by IDNR
10) Illinois Historic Preservation Agency Report, as prepared by Kimley Horn & Associates, Inc.
11) NRI Application & Report, as prepared by Kendall County Soil & Water Conservation District
12) Manufacturer's Specifications
13) Operations and Maintenance Plan, as prepared by Turning Point Energy, LLC
14) Transportation and Access Plan, as prepared by Kimley Horn & Associates, LLC
15) Interconnection Agreement
16) Glare Study and FAA Notice Criteria Filing, as prepared by Turning Point Energy, LLC
17) Containment and Water Studies
18) Viewshed, as prepared by Turning Point Energy, LLC
19) FEMA Firm Map

20) Property Impact Study, as prepared by Cohn Reznick
21) Plan Council Memorandum – March 17, 2023
22) EEI Comments – March 13, 2023

March 13, 2023

Ms. Krysti Barksdale-Noble
Community Development Director
United City of Yorkville
800 Game Farm Road
Yorkville, IL 60560

Re: Bristol Ridge Solar Farm 106
Annexation, Rezoning, Variance, & Special Use Request – 1st Submittal
United City of Yorkville

Dear Krysti:

We have reviewed the following items for the above referenced project:

- Project Narrative
- Annexation Application
- Rezoning Application
- Variance Application
- Special Use Permit Application
- Zoning Site Plan
- Wetland Delineation Report
- Other Supporting Documentation

Our review of these plans and reports are to generally determine their compliance with local ordinances and whether the improvements will conform to existing local systems and equipment. This review and our comments do not relieve the designer from his duties to conform to all required codes, regulations, and acceptable standards of engineering practice. Engineering Enterprises, Inc.'s review is not intended as an in-depth quality assurance review, we cannot and do not assume responsibility for design errors or omissions in the plans. As such, we offer the following comments:

General

1. The following permits may be required during final engineering and should be provided to the City when obtained. The City and EEI should be copied on all correspondence with the agencies.
    - IEPA NPDES General Construction Permit is required. The Notice of Intent must be filed with IEPA 30 days prior to start of construction.

- Stormwater permit application in accordance with the Yorkville Storm Water Management Ordinance (Kendall Countywide Ordinance)

2. Since the project is a non-residential development on more than 3 acres it must meet the stormwater detention requirements per the Stormwater Ordinance.

3. Any impacts to the wetlands should be designed in accordance with the United City of Yorkville's Wetland Protection Regulations.

4. The following will need to be submitted with Final Engineering Plans:

   - Truck turning exhibits for delivery and emergency vehicles
   - Photometric plan
   - Decommissioning cost estimate
   - Permit from Kendall County for connection to Cannonball Trail

5. The development department should comment on the fence materials.

6. The development department should comment on the gravel driveway.

If you have any questions or require additional information, please contact our office.

Respectfully Submitted,

ENGINEERING ENTERPRISES, INC.

Bradley P. Sanderson, P.E.
Chief Operating Officer / President

BPS/tnp/pgw2

pc: Mr. Bart Olson, City Administrator (via email)
Ms. Erin Willrett, Assistant City Administrator (via email)
Mr. Jason Engberg, Senior Planner (via email)
Mr. Eric Dhuse, Director of Public Works (via email)
Mr. Pete Ratos, Building Department (via email)
Ms. Dee Weinert, Admin Assistant (via email)
Ms. Jori Behland, City Clerk (via email)
Mr. Scott Osborn, TPE(via email)
TNP, PGW2, EEI (Via e-mail)

April 4, 2023

Ms. Krysti Barksdale-Noble
Community Development Director
United City of Yorkville
800 Game Farm Road
Yorkville, IL 60560

Re: ***Bristol Ridge Solar Farm 106***
Annexation, Rezoning, Variance, & Special Use Request – 2nd Submittal
United City of Yorkville

Dear Krysti:

We have reviewed the following items for the above referenced project:

- Preliminary Landscape Plan (2 Sheets) dated August 1, 2022, prepared by Kimley-Horn and Associates

Our review of these plans and reports are to generally determine their compliance with local ordinances and whether the improvements will conform to existing local systems and equipment. This review and our comments do not relieve the designer from his duties to conform to all required codes, regulations, and acceptable standards of engineering practice. Engineering Enterprises, Inc.'s review is not intended as an in-depth quality assurance review, we cannot and do not assume responsibility for design errors or omissions in the plans. As such, we offer the following comments:

The comments in the attached review letter from the City's landscaping consultant must be addressed and a revised landscaping plan submitted.

If you have any questions or require additional information, please contact our office.

Respectfully Submitted,

ENGINEERING ENTERPRISES, INC.

Bradley P. Sanderson, P.E.
Chief Operating Officer / President

BPS/tnp/pgw2

pc: Mr. Bart Olson, City Administrator (via email)
Ms. Erin Willrett, Assistant City Administrator (via email)
Mr. Jason Engberg, Senior Planner (via email)
Mr. Eric Dhuse, Director of Public Works (via email)
Mr. Pete Ratos, Building Department (via email)
Ms. Dee Weinert, Admin Assistant (via email)
Ms. Jori Behland, City Clerk (via email)
Mr. Scott Osborn, TPE(via email)
TNP, PGW2, EEI (Via e-mail)

\\Milkyway\EEI_Storage\Docs\Public\Yorkville\2023\YO2310-DR Bristol Ridge Solar 106\Development\Final Engineering and Plat\Docs\Review and Response Letters\IcoyReview02_Landscape.doc

Hey and Associates, Inc.

Engineering, Ecology and Landscape Architecture

Milwaukee, Wisconsin | *8755 W. Higgins Road, Suite 853*
Chicago, Illinois 60631
Phone (773) 693-9200
Fax (773) 693-9200 | *Volo, Illinois*

April 3, 2023

Pamela Whitfield, PE, CFM
Senior Project Engineer II
Engineering Enterprises, Inc.
52 Wheeler Road
Sugar Grove, IL 60554

Project No.: 21-0275 P

Re: Landscape Plan Review
Bristol Ridge Solar Site #1 – TPE IL KE105, LLC
Bristol Ridge Solar Site #2 – TPE IL KE106, LLC
City of Yorkville, IL

Dear Pamela:

We have completed our first landscape plan review of the proposed Bristol Ridge Solar Site #1, TPE IL KE105, and Bristol Ridge Solar Site #2, TPE IL KE106, both located on Cannonball Trail, in Yorkville.

Landscape Plan – NOT RECOMMENDED FOR APPROVAL

For reasons described below, these landscape plans are not recommended for approval at this time. A response letter from the petitioner which addresses all review comments should be provided with their next submittal.

Review Comments

Comments must be addressed before landscape plan approval can be recommended. If there are any changes to the proposed project, additional comments may be provided. Please note that the requirements of each section are in addition to the requirements of all other sections of the ordinance (i.e., trees and other plant materials cannot be "double counted" to meet multiple requirements).

Parkway Landscaping

Bristol Ridge Solar Site #1

Parkway tree requirements are not met. A minimum of one (1) tree per fifty (50) linear feet of frontage is required. Therefore, six (6) parkway trees are required along Cannonball Trail, but none are proposed. The proposed solar array appears far enough away from the road that shading does not seem to be a concern.

Bristol Ridge Solar Site #2

Parkway tree requirements are not met. A minimum of one (1) tree per fifty (50) linear feet of frontage is required. Therefore, twenty-three (23) parkway trees are required along Cannonball Trail, but none are proposed. The proposed solar array appears far enough away from the road that shading does not seem to be a concern.

Perimeter Landscaping

Bristol Ridge Solar Site #1

The southwest corner of the development site abuts property zoned R3. A thirty foot (30') wide buffer yard consisting of a berm or architectural masonry wall ay least three feet (3') in height and two (2) shade trees, five (5) evergreen trees, and three (3) ornamental trees per one hundred linear feet (100') of buffer yard is required. The plans call for a "Landscape Buffer" along a portion of this area. The plans include a detail labeled "Vegetative Buffer" that is assumed to be for this area but that is unclear due to the different labels. The Vegetative Buffer detail does not include specific plant layout or quantities, so compliance with requirements cannot be confirmed at this time. It is also noted that the parcel boundary in the subject area shown on the Zoning Site Plan is different than the boundary shown on the Landscape Plan. All plans must be coordinated.

Bristol Ridge Solar Site #2

This site does not abut residential property; therefore, these requirements are not applicable.

Parking Lot Landscaping

No parking lots were found on the plans; therefore, these requirements are not applicable.

Lot Landscaping

Bristol Ridge Solar Site #1

Requirements not met. Two (2) shade trees and fifteen (15) shrubs shall be provided for every twenty thousand (20,000) square feet of lot area. The zoning site plan indicates that this lot is +/- 54 acres; therefore two hundred and thirty-five (235) shade trees and one thousand seven hundred and sixty-four (1,674) shrubs are required in addition to plantings required by other sections. Compliance with these requirements may be in conflict with the proposed use of the site as a solar array.

Bristol Ridge Solar Site #2

Requirements not met. Two (2) shade trees and fifteen (15) shrubs shall be provided for every twenty thousand (20,000) square feet of lot area. The zoning site plan indicates that this lot is +/- 41.8 acres; therefore, one hundred and eighty-two (182) shade trees and one thousand three hundred and sixty-five (1,365) shrubs are required in addition to plantings required by other sections. Compliance with these requirements may be in conflict with the proposed use of the site as a solar array.

Stormwater Storage Basin Landscaping

No stormwater storage basin was found on the plans; therefore, these requirements are not applicable.

Tree Preservation

Tree preservation standards apply to all development parcels greater than five (5) acres in area; therefore, these requirements are applicable. Based upon a review of Google Earth imagery, there appears to be existing trees along the periphery of both sites. It is unclear whether any of these trees are within the development site or are on adjacent property. The petitioner should show existing trees on the plans and clarify whether any trees are to be removed as part of this project.

General Standards

The botanic and common name, size, and quantity of all proposed plant materials must be provided on the plans. Refer to the ordinance for minimum plant sizes at the time of installation.

A mixture of trees is required so that a maximum of thirty-three percent (33%) of the total amount of required trees are not of the same genus.

A detailed native landscape monitoring and management plan with schedules and milestone performance criteria is strongly recommended to ensure the proposed native array area pollinator seed mix, open area pollinator seed mix, and wet meadow pollinator seed mix areas become successfully established, are not overrun by weeds, and are properly maintained in the future. The general notes on the plans concerning the maintenance of these areas are vague and are often inadequate at ensuring that native landscapes are properly established and maintained.

SUMMARY

This review was based upon the following documents, pursuant to requirements of the City's Landscape Ordinance.

Bristol Ridge Solar Site #1

- Landscape Plans, two (2) sheets numbered L1.0 and L2.0, prepared by Kimley Horn, dated 08/01/2022
- Zoning Site Plan, one (1) sheet numbered EX-1, prepared by Kimley Horn, dated 08/01/2022

Bristol Ridge Solar Site #2

- Landscape Plans, one (1) sheet numbered L1.0, prepared by Kimley Horn, dated 08/01/2022
- Zoning Site Plan, one (1) sheet numbered EX-1, prepared by Kimley Horn, dated 08/01/2022

Let us know if there are any questions or comments.

Sincerely,

Tim Pollowy, PLA, ASLA
Senior Landscape Architect

March 21, 2023

Engineering Enterprises, Inc.
52 Wheeler Road
Sugar Grove, IL 60554
(630) 466-6700
Attn: Bradley P. Sanderson, P.E.

RE: TEP IL KE106, LLC Special Use Permit
City of Yorkville, Kendall County

Dear Bradley,

We are in response of your review comments dated March 13, 2023, for the proposed TPE IL KE106, LLC solar farm, located in the city of Yorkville, Kendall County. Below is a summary of the actions taken in response to these comments.

General Comments

1. The following permits may be required during final engineering and should be provided to the city when obtained. The City and EEI should be copied on all correspondence with the agencies.
    - IEPA NPDES General Construction Permit is required. The Notice of Intent must be filed with the IEPA 30 days prior to start of construction.
    - Stormwater permit application in accordance with the Yorkville Storm Water Management Ordinance (Kendall Countywide Ordinance)

    Response: Comment acknowledged. Coordination to occur with IEPA NPDES and Yorkville Storm Water Management prior to application for Final Site Plan Review

2. Since the project is a non-residential development on more than 3 acres it must meet the stormwater detention requirements per the Stormwater ordinance.

    Response: The submitted application is seeking approval for a Special Use Permit at this time. Additional detailed information will be included once the project submits for Final Site Plan Review and will be reviewed at a later date.

3. Any impacts to the wetlands should be designed in accordance with the United City of Yorkville's Wetland Protection Regulations.

    Response: Comment acknowledged. The submitted application is seeking approval for a Special Use Permit at this time. Additional detailed information will be included once the project submits for Final Site Plan Review and will be reviewed at a later date.

4. The following will need to be submitted with Final Engineering Plans:
   a. Truck turning exhibits for delivery and emergency vehicles
   b. Photometric plan
   c. Decommissioning cost estimate
   d. Permit from Kendall County for connection to Cannonball Trail

   Response: The submitted application is seeking approval for a Special Land Use Permit at this time. Additional detailed information will be included once the project submits for Final Site Plan Review and will be reviewed at a later date.

5. The Development department should comment on the fence materials.

   Response: Comment acknowledged. Coordination to occur with the development department prior to application for Final Site Plan Review

6. The development department should comment on the gravel driveway.

   Response: Comment acknowledged. Coordination to occur with the development department prior to application for Final Site Plan Review

We trust these responses adequately address your comments. If you have any questions or require any additional information, please contact me at 630-216-8098.

Sincerely,

Emily Kahanic
Kimley-Horn
Phone: 630-216-8098
Email: emily.kahanic@kimley-horn.com

CHICAGO TRIBUNE
media group

Sold To:
United City of Yorkville - CU00410749
800 Game Farm Rd
Yorkville,IL 60560-1133

Bill To:
United City of Yorkville - CU00410749
800 Game Farm Rd
Yorkville,IL 60560-1133

Certificate of Publication:

Order Number: 7417479
Purchase Order: 7417479 Public Hearing Notices

State of Illinois - Kendall

Chicago Tribune Media Group does hereby certify that it is the publisher of the The Beacon-News. The The Beacon-News is a secular newspaper, has been continuously published Daily for more than fifty (50) weeks prior to the first publication of the attached notice, is published in the City of Aurora, Township of Aurora, State of Illinois, is of general circulation throughout that county and surrounding area, and is a newspaper as defined by 715 IL CS 5/5.

This is to certify that a notice, a true copy of which is attached, was published 1 time(s) in the The Beacon-News, namely one time per week or on 1 successive weeks. The first publication of the notice was made in the newspaper, dated and published on 4/21/2023, and the last publication of the notice was made in the newspaper dated and published on 4/21/2023.

This notice was also placed on a statewide public notice website as required by 715 ILCS 5/2. 1.

PUBLICATION DATES: **Apr 21, 2023.**

The Beacon-News
In witness, an authorized agent of The Chicago Tribune Media Group has signed this certificate executed in Chicago, Illinois on this

22nd Day of April, 2023, by

Chicago Tribune Media Group

Jeremy Gates

Chicago Tribune - chicagotribune.com
160 N Stetson Avenue, Chicago, IL 60601
(312) 222-2222 - Fax: (312) 222-4014

CHICAGO TRIBUNE
media group

PUBLIC NOTICE
NOTICE OF PUBLIC HEARING
BEFORE
UNITED CITY OF YORKVILLE
PLANNING AND ZONING
COMMISSION
PZC 2023-03

NOTICE IS HEREBY GIVEN THAT Turning Point Energy, LLC d/b/a TPE IL KE106, LLC, petitioner, on behalf of Daniel B. Light, owner, has filed applications with the United City of Yorkville, Kendall County, Illinois, requesting rezoning classification, special use authorization, and variance approval for an approximately 42-acre parcel. The real property is generally located east of Cannonball Trail and south of Galena Road. The petitioner is requesting the following: (1) to rezone the parcel from the R-2 and R-3 PUD to A-1 Agricultural District zoning; (2) special use permit approval pursuant to Section 10-6-O of the Yorkville City Code for a solar farm; and (3) a variance to Section 10-19-7-D of the Yorkville City Code to decrease the minimum distance between the ground and the solar panels from ten (10) feet to a minimum height of two (2) feet.

The legal description is as follows:

THAT PART OF THE FOLLOWING DESCRIBED PARCELS LYING EASTERLY OF THE CENTERLINE OF CANNONBALL TRAIL:

THE SOUTH ½ OF THE SOUTHWEST ¼ OF SECTION 10, TOWNSHIP 37 NORTH, RANGE 7 EAST OF THE THIRD PRINCIPAL MERIDIAN; ALSO THE SOUTH ½ OF THE SOUTHEAST ¼ OF SECTION 10, TOWNSHIP 37 NORTH, RANGE 7 EAST OF THE THIRD PRINCIPAL MERIDIAN LYING WESTERLY OF THE WEST LINE OF LANDS CONVEYED BE NELSON C. RIDER TO JERRY W. RIDER BY WARRANTY DEED DATED OCTOBER 15, 1911 AND RECORDED IN BOOK 66 AS PAGE 255 AND DEPICTED IN PLAT BOOK 1 AT PAGE 62; ALL IN KENDALL COUNTY, ILLINOIS.

PIN: 02-10-300-017

A copy of the application is available for review during normal City business hours at the office of the Community Development Director.

NOTICE IS HEREWITH GIVEN THAT the Planning and Zoning Commission for the United City of Yorkville will conduct a Public Hearing on said applications on **Wednesday, May 10, 2023 at 7 p.m.** at the United City of Yorkville, City Hall, located at 651 Prairie Pointe Drive, Yorkville, Illinois 60560.

The public hearing may be continued from time to time to dates certain without further notice being published.

Chicago Tribune - chicagotribune.com
160 N Stetson Avenue, Chicago, IL 60601
(312) 222-2222 - Fax: (312) 222-4014

CHICAGO TRIBUNE
media group

All interested parties are invited to attend the public hearing and will be given an opportunity to be heard. Any written comments should be addressed to the United City of Yorkville Community Development Department, City Hall, 651 Prairie Pointe Drive, Yorkville, Illinois, 60560 and will be accepted up to the date of the public hearing. By order of the Corporate Authorities of the United City of Yorkville, Kendall County, Illinois.

JORI BEHLAND
City Clerk
April 21, 2023 - 7417479

Chicago Tribune - chicagotribune.com
160 N Stetson Avenue, Chicago, IL 60601
(312) 222-2222 - Fax: (312) 222-4014

Memorandum

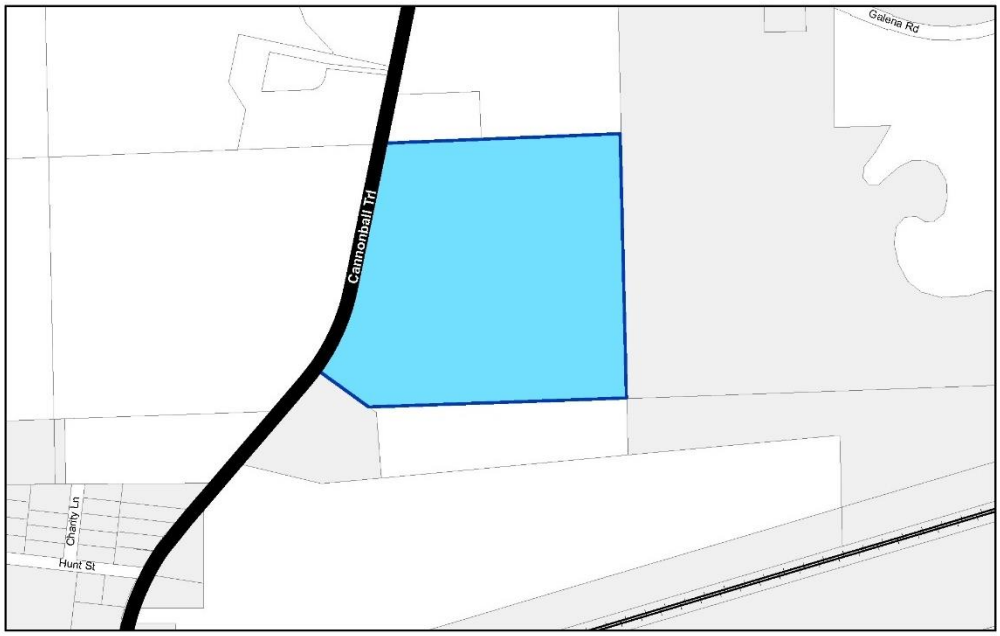
To: Planning and Zoning Commission
From: Jason Engberg, Senior Planner
CC: Bart Olson, City Administrator
Krysti Barksdale-Noble, Community Development Director
Date: May 3, 2023
Subject: **PZC 2023-03 Bristol Ridge Solar Farm 106**
(Rezone, Special Use, Variance)

SUMMARY:

The applicant, Turning Point Energy, LLC, is requesting rezoning approval, special use authorization, and variance approval to construct a solar farm on the 42-acre parcel generally located east of Cannonball Trail and south of Galena Road within the Bristol Ridge Planned Unit Development. The petitioner is requesting to rezone the parcel from the R-2 Single-Family and R-3 Townhome PUD (Bristol Ridge) to the A-1 Agricultural District zoning, special use permit approval for a solar farm land use, and variance approval to decrease the minimum distance between the ground and the solar panels from ten (10) feet to a minimum height of two (2) feet. To rezone the property and change the land use on this parcel, the petitioner is seeking to amend the existing annexation agreement for the Bristol Ridge Development to replace the current adopted land use plan with their solar farm. This request will be heard at a separate public hearing in front of the Yorkville City Council and the rezoning will be contingent on the approval of that amendment.

LOCATION & BACKGROUND:

The 42-acre property is located in the northeastern part of Yorkville just north of unincorporated Bristol along Cannonball Trail. The property is the northern portion of the existing Bristol Ridge Development which was established in 2006 for residential detached and attached housing units. The current land use of the property is agricultural farmland.



Bristol Ridge Solar Farm 106 Location

United City of Yorkville, Illinois
March 29, 2023

ZONING:

The subject property is currently zoned for R-2 Single-Family dwellings and R-3 Townhome dwellings as part of a Planned Unit Development per Ordinance 2006-126. The petitioner is seeking to rezone the property to the A-1 Agricultural District. The following are the current immediate surrounding zoning and land uses:

	Zoning	Land Use
North	B-3 General Business District (Bristol Bay) B-4 Commercial Recreation District (Kendall County)	Religious Institution Farmland
South	R-2 Single-Family Traditional Residence District (Bristol Ridge) R-3 Multi-Family Attached Residence District (Bristol Ridge)	Farmland
East	A-1 Agricultural District (Kendall County)	Farmland
West	R-2 One Family Residential District (Kendall County) R-2 Single-Family Traditional Residence District (Bristol Ridge) R-3 Multi-Family Attached Residence District (Bristol Ridge)	Residential Use Farmland

The proposed use is defined in the Yorkville Zoning Ordinance as a Solar Farm which is a special use within the A-1 Agricultural District. This requires the use to abide by the A-1 Agricultural District regulations as well as the Alternative Energy System regulations in the City's Zoning Ordinance.

ALTERNATIVE ENERGY SYSTEMS REGULATIONS:

Section 10-19: Alternative Energy Systems establishes regulations for this type of use and the proposed solar farm will be required to meet the setback standards for the A-1 Agricultural District as well as the provisions under the Freestanding Solar Energy Systems regulations.

Setbacks

Table 10.07.01 of Chapter 7 in the City's Zoning Ordinance provides dimensions and bulk regulations for the A-1 Agricultural District. Section 10-19-7-C of the Zoning Ordinance states that freestanding solar energy systems shall not be located within the required front yard or corner side yard. Additionally, Section 10-19-7-B of the Zoning Ordinance states that all parts of any freestanding solar energy system shall be set back 8 feet from interior side and rear property lines.

The following table illustrates the minimum required yard setbacks for solar systems based upon the A-1 Agricultural District regulations and the Freestanding Solar Energy System requirements and the proposed setbacks per the submitted site plan (attached):

	Minimum Requirement	Proposed Setback
Front	100 feet	>100 feet
Side (North)	8 feet	>50 feet
Side (South)	8 feet	28 feet
Rear	None	41 feet

The location of the solar panels meets the front and rear yard setbacks for the A-1 District and the location of the solar panels meets the required setbacks in the side yards per the Freestanding Solar Energy System requirements. Staff is requiring the petitioner to illustrate the exact setback in the front and side yard prior to any public hearing.



Height

The petitioner has submitted a narrative stating that the height of the entire panel on the stand will not exceed fifteen (15) feet in height. Section 10-19-7-F states the maximum height will be stipulated as a special use condition. Staff is not opposed to this overall height as the location of the panels and their distance from all existing land uses should not cause a nuisance to any neighboring property. The viewsheds provided by the petitioner illustrate this point. <u>The maximum height of fifteen (15) feet will be set as a condition of the special use approval as stated in the zoning ordinance.</u>

Clearance

Section 10-19-7-D states the minimum clearance between the lowest point of the system and the surface on which the system is mounted is ten feet (10'). The petitioner is requesting a variance to this regulation to reduce the clearance to two (2) feet. The petitioner has provided the reasoning behind this request as the maintenance on the panels at the 10-foot height would be cumbersome, the visibility of the panels would increase as they would be significantly taller, and the wind loads generated at a greater height could damage the cells. Staff supports the variance request as the regulation has been an issue with previous requests for ground mounted solar panels and is not an industry standard. This regulation is being removed in the Unified Development Ordinance which is currently being drafted by the City.

Fencing
The petitioner is proposing to construct an eight (8) foot "agricultural style" fence around the entire solar field which will be accessible through gates with Knox Boxes for emergency access. Section 10-7-2 does not state any regulations regarding fencing within the A-1 Agricultural District. Therefore, the proposed fencing does meet the minimum requirements. While it meets the standards of the A-1 District, staff is recommending that the petitioner provide an eight (8) foot chain link fence with opaque slats as opposed to the agricultural fence. This will provide more security for the solar farm and the slats will provide better screening to all surrounding land uses. Therefore, the installation of an eight (8) foot tall chain link fence with opaque slats surrounding the entire solar farm will be set as a condition of the special use approval.

Glare
Section 10-19-7-E states solar panels shall be placed such that concentrated solar radiation or glare shall not be directed onto nearby properties or roadways. The petitioner has submitted a glare study and analysis which concludes that there was no potential for glint or glare identified by the analysis. Additionally, the panels will be buffered by landscaping in areas that could be seen by adjacent property owners or roadways. The petitioner has also provided a viewshed from angles around the solar farm which illustrate how far away the panels will be from the public right-of-way.

Signage
Section 19-4-F states that "No commercial signage or attention getting device is permitted on any alternative energy system. One (1) sign shall be permitted to indicate the emergency contact information of the property owner or operator. Said sign shall not exceed two (2) square feet in size." The submitted narrative states a warning sign shall be provided at the facility entrance and along the perimeter fence including the facilities 911 address and a 24-hour emergency contact number. The petitioner is aware of the size requirement and will comply with the regulation.

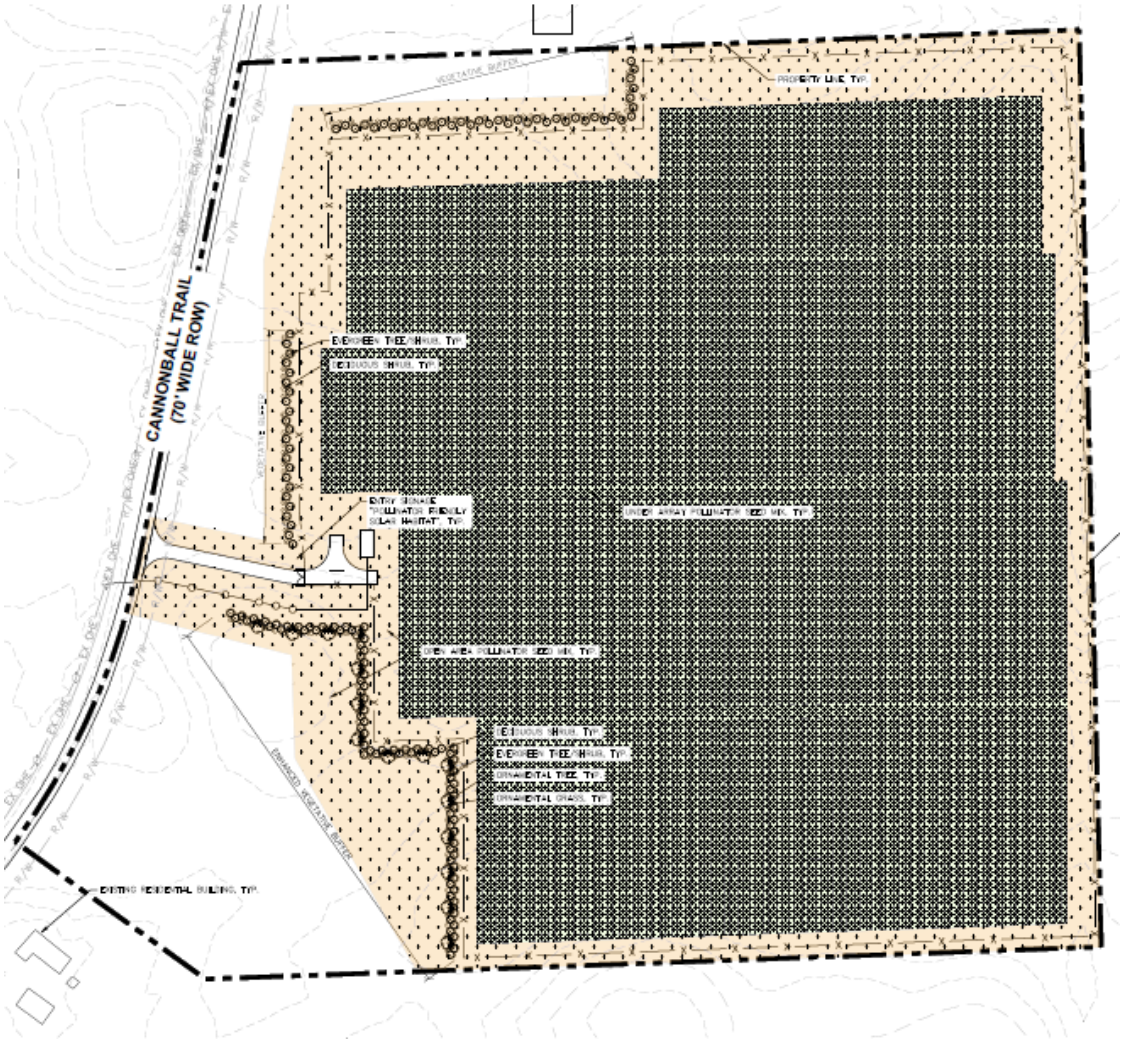
Utility Service Provider
Section 10-19-4-G states that evidence that the electric utility service provider that serves the proposed site has been notified of the owner's intent to install an interconnected customer owned electricity generator. ComEd has been notified of this project and an interconnection plan has been submitted to them and has been provided by the petitioner.

Decommission
Section 10-19-9-A-3 states prior to permit issuance, the owner shall sign an acknowledgement that said owner will be responsible for any and all enforcement costs and remediation costs resulting from any violations of that chapter. The costs include, but are not limited to, removal of system, property restoration upon removal of the system, city legal expenses and hearing costs associated with violations of that chapter. Additionally, Section 10-19-4-E states all alternative energy systems inactive or inoperable for a period of 12 continuous months shall be deemed abandoned and the owner is required to repair or remove the system from the property at the owner's expense within 90 days of notice from the City.

To ensure compliance, the petitioner has provided a decommission plan and construction estimate of $266,782.62 in total for the removal of the solar farm and restoration and reseeding of the property. This estimate is derived from the RS Means Heavy Site estimating manual using 2022 dollars.

Staff recommends a security guarantee of 120% of the petitioner's estimate for a total of $320,139.14 with an inflation rate of 3% in a form acceptable to the City Engineer as a condition of the special use approval.

In addition to the security guarantee, staff also recommends a blanket easement over the property to allow the City or its contractor to enter and remove the abandoned system in compliance with the City Code, as a condition of the special use approval.



Landscape Plan

The petitioner has taken into account the potential impacts the development may have on neighboring properties. Therefore, the petitioner has identified areas that face or are adjacent to the commercial and residential uses, to the west and northwest respectively, and they are providing a vegetative buffer and enhance vegetative buffer to help alleviate any negative visual impacts.

The petitioner has identified areas that face Cannonball Trail and the religious institution to the north and are providing a vegetative buffer. Additionally, the petitioner has identified areas that face the residential use to the southwest and have provided an enhanced vegetative buffer.

The vegetative buffer along the western and sections of the northern boundary of the parcel are providing eight (8) evergreen trees/shrubs and seven (7) large deciduous shrubs every one-hundred (100) linear feet. These buffers are not required as they are not adjacent to a residential use but do add to the required amount of lot landscaping. These buffers have been provided for potential views from the nearby religious institution and Cannonball Trail. The enhanced vegetative buffer is facing the residential land use to the southwest and is providing ten (10) evergreen trees/shrubs, six (6) large deciduous shrubs, and three (3) ornamental trees every one-hundred (100) linear feet.

The petitioner is working with the City's landscaping consultant on finalizing the landscaping plans to ensure it meets the City's standards. At the May 2, 2023 Economic Development Committee, it was recommended that the 300-foot gap at the northwest corner of the property should be landscaped with the vegetative buffer. The petitioner agreed to extend the vegetative buffer along this portion of land as it faces Cannonball Trail. A final landscape plan, including the additional landscaping buffer in the northwest

corner of the site which currently shows a 300-foot gap in continuous buffering to be approved by the City Engineer and landscaping consultant will be required as a condition of the special use approval.

Additionally, the Economic Development Committee recommended that a 2-year maintenance period for the establishment of the ground cover which will be conducted by the City Engineer should be required as a condition of special use approval. Therefore, staff is adding this as a condition to the special use approval upon the committee's recommendation.

ENGINEERING COMMENTS:

Comments prepared by Engineering Enterprises Inc. (EEI) dated March 13, 2023 were provided to the petitioner. The petitioner's project engineer, Kimley-Horn provided a response to these comments on March 21, 2023. The work items listed in the review letter will need to be addressed and will become conditions for special use approval.

COMPREHENSIVE PLAN:

The subject property's future land use is classified as "Estate Conservation/Residential" which is intended to provide flexibility for residential design in areas of Yorkville that can accommodate low-density detached single-family housing but also include sensitive environmental and scenic features that should be retained and enhanced. The most typical form of development within this land use will be detached single family homes on large lots.

In 2016 this future land use designation was also use as a "holding" designation for future development. The 10-year horizon of the plan saw these areas outside of the core not developing within that timeframe. Any development in these areas should be reviewed on a case-by-case basis since it was not anticipated to develop within the plan's lifespan. The utilization of this property for a solar farm is a suitable land use at this time. The current annexation amendment for a residential neighborhood will expire in 2026 and the lack of development and utilities in this area means it is unlikely to be developed into a more intense use. Additionally, the solar farm is temporary in nature as it currently is being proposed for a 20-year lease.

SPECIAL USE STANDARDS:

Section 10-4-9F of the City's Zoning Ordinance establishes standards for special use requests. No special use shall be recommended by the Planning and Zoning Commission unless said commission shall find that:

1. The establishment, maintenance or operation of the special use will not be unreasonably detrimental to or endanger the public health, safety, morals, comfort or general welfare.
2. The special use will not be injurious to the use and enjoyment of other property in the immediate vicinity for the purpose already permitted, nor substantially diminish and impair property values within the neighborhood in which it is to be located.
3. The establishment of the special use will not impede the normal and orderly development and improvement of surrounding property for uses permitted in the district.
4. Adequate utilities, access roads, drainage or other necessary facilities have been or are being provided.
5. Adequate measures have been or will be taken to provide ingress or egress so designed as to minimize traffic congestion in the public streets.
6. The proposed special use is not contrary to the objectives of the official comprehensive plan of the City as amended.

Additionally, Section 10-19-4C of the City's Zoning Ordinance establishes standards for special use requests regarding alternative energy systems. No special use shall be recommended by the Planning and Zoning Commission unless said commission shall find that:

1. The city council shall determine that the application has met all of the general requirements of this chapter.

2. The proposed energy system shall further the intent of this chapter and provide renewable energy to the property on which it is proposed.

3. The proposed alternative energy system is located in such a manner as to minimize intrusions on adjacent residential uses through siting on the lot, selection of appropriate equipment, and other applicable means.

4. The establishment for the proposed alternative energy system will not prevent the normal and orderly use, development, or improvement of the adjacent property for uses permitted in the district.

The applicant has provided written responses to these special use standards as part of their application and requests inclusion of those responses into the public record during the public hearing at the Planning and Zoning Commission meeting.

REZONING STANDARDS:

Section 10-4-10-B of the City's Zoning Ordinance establishes criteria for findings of fact related to rezoning (map amendment) requests. When the purpose and affect is to change the zoning of a property and amend the City's Zoning Map, the Planning and Zoning Commission shall consider each of the following facts before rendering a decision on the request:

1. The existing uses and zoning of nearby property.

2. The extent to which the property values are diminished by the particular zoning restrictions.

3. The extent to which the destruction of the property values of plaintiff promotes the health, safety, morals or general welfare of the public.

4. The relative gain to the public as compared to the hardship imposed upon the individual property owner.

5. The suitability of the subject property for the zoned purpose.

6. The length of time the property has been vacant as zoned considered in the context of land development in the area in the vicinity of the subject property.

7. The community need for the proposed use.

8. The care to which the community has undertaken to plan its land use development.

The petitioner has provided written responses to these findings as part of their application and requests inclusion of those responses into the public record at the Planning and Zoning Commission meeting.

VARAITION STANDARDS:

Section 10-4-7 identifies six (6) standards that need to be met when approving a zoning variation. The petitioner has provided their responses to these standards within their attached application:

a. Because of the particular physical surroundings, shape or topographical conditions of the specific property involved, a particular hardship to the owner would result, as distinguished from a mere inconvenience, if the strict letter of the regulations were carried out.

b. The conditions upon which the petition for a variation is based are unique to the property for which the variation is sought and are not applicable, generally, to other property within the same zoning classification.

c. The alleged difficulty or hardship is caused by this title and has not been created by any person presently having an interest in the property.

d. The granting of the variation will not be detrimental to the public welfare or injurious to other property or improvements in the neighborhood in which the property is located.

e. The proposed variation will not impair an adequate supply of light and air to adjacent property, or substantially increase the congestion in the public streets, or increase the danger to the public safety, or substantially diminish or impair property values within the neighborhood.

f. The proposed variation is consistent with the official comprehensive plan and other development standards and policies of the City.

The petitioner has provided written responses to these variance standards as part of their application and requests inclusion of those responses into the public record during the public hearing at the Planning and Zoning Commission meeting.

STAFF COMMENTS & RECOMMENDATIONS:

Staff is generally supportive of the rezoning, special use request, and variance requests. Should the City Council vote to approve this request, staff recommends the following conditions to the special use:

1. The maximum height of the solar panels for this land use will be fifteen (15) feet.

2. The installation of an eight (8) foot tall chain link fence with opaque slats surrounding the entire solar farm is required.

3. A final landscape plan, that includes additional landscaping buffer in the northwest corner of the site which currently shows a 300-foot gap in continuous buffering, shall be submitted as part of the final engineering submittal and be approved by the City Engineer and landscaping consultant.

4. A 2-year maintenance period for the establishment of the ground cover which will be inspected by the City Engineer is required.

5. A Knox box with keys provided to the City's building department and Bristol Kendall Fire District (BKFD).

6. A security guarantee in the amount of $320,139.14 with a 3% annual inflation rate and in a form acceptable to the City Engineer.

7. A blanket easement over the property to allow the City or its contractor to enter and remove the abandoned system in compliance with the City Code.

8. Adherence to all comments prepared by EEI, city engineering consultant, in a letter dated March 13, 2023.

PROPOSED MOTIONS:

SPECIAL USE

In consideration of testimony presented during a Public Hearing on May 10, 2023 and discussion of the findings of fact, the Planning and Zoning Commission recommends approval to the City Council a request for Special Use authorization to construct a freestanding solar energy system, or solar farm, contingent upon approval of annexation agreement amendment for the Bristol Ridge Development by the City Council, for a property generally located south of Galena Road and east of Cannonball Trail, subject to staff recommendations in a memo dated May 3, 2023 and further subject to… {insert any additional conditions of the Planning and Zoning Commission}…

REZONING

In consideration of testimony presented during a Public Hearing on May 10, 2023 and discussion of the findings of fact, the Planning and Zoning Commission recommends approval to the City Council a request for rezoning from R-2 Single-Family and R-3 Townhome PUD (Bristol Ridge) to A-1 Agricultural District for the purpose of constructing a freestanding solar energy system, or solar farm, contingent upon approval of annexation agreement amendment for the Bristol Ridge Development by the City Council, for a property generally located south of Galena Road and east of Cannonball Trail, subject to {insert any additional conditions of the Planning and Zoning Commission}…

VARIANCE

In consideration of testimony presented during a Public Hearing on May 10, 2023 and discussion of the findings of fact, the Planning and Zoning Commission recommends approval to the City Council a request for variance from Section 10-19-7-D of the Yorkville Municipal Code to reduce the minimum clearance between the lowest point of a freestanding solar panel and the surface on which the system is mounted from ten feet to two feet, contingent upon approval of annexation agreement amendment for the Bristol Ridge Development by the City Council, for a property generally located south of Galena Road and east of Cannonball Trail, subject to {insert any additional conditions of the Planning and Zoning Commission}…

ATTACHMENTS:

1) Project Narrative, as prepared by Turning Point Energy, LLC
2) Zoning Site Plan, as prepared by Kimley Horn & Associates, Inc.
3) Development Applications
4) Decommissioning Plan, as prepared by Turning Point Energy, LLC
5) Wetland Delineation, as prepared by Kimley Horn & Associates, Inc.
6) Environmental Constraints Memorandum, as prepared by Kimley Horn & Associates, Inc.
7) Title Insurance, as prepared by Borrego Solar Systems, Inc.
8) Decommissioning Estimate, as prepared by New Leaf Energy
9) Illinois Department of Natural Resources EcoCAT Termination Report, as prepared by IDNR
10) Illinois Historic Preservation Agency Report, as prepared by Kimley Horn & Associates, Inc.
11) NRI Application & Report, as prepared by Kendall County Soil & Water Conservation District
12) Manufacturer's Specifications
13) Operations and Maintenance Plan, as prepared by Turning Point Energy, LLC
14) Transportation and Access Plan, as prepared by Kimley Horn & Associates, LLC
15) Interconnection Agreement
16) Glare Study and FAA Notice Criteria Filing, as prepared by Turning Point Energy, LLC
17) Containment and Water Studies
18) Viewshed, as prepared by Turning Point Energy, LLC

19) FEMA Firm Map
20) Property Impact Study, as prepared by Cohn Reznick
21) Plan Council Memorandum – March 17, 2023
22) EEI Comments – March 13, 2023
23) Kimley Horn Response – March 21, 2023
24) Hey and Associates Comments – April 4, 2023