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Founded 1909

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July 7, 2022

Ms. Tanowa M. Troupe, Secretary
Public Utilities Commission of Ohio
180 E. Broad Street, 11th Floor
Columbus, OH 43215-3793

Re: Case No. 18-1334-EL-BGN, Hecate Energy Highland LLC
Certificate Compliance – Conditions #3, #12, #13, #14, #19, #24

Dear Ms. Troupe:

On May 16, 2019, Hecate Energy Highland LLC (“Highland Solar”) was issued a certificate of environmental compatibility and public need (“Certificate”) by the Ohio Power Siting Board (“Board”) to construct a 300 MW solar-powered electric generation facility in Highland County, Ohio. Highland Solar, through this correspondence, is providing information on condition compliance under the Certificate. In addition, please be advised that project construction commenced on or around January 14, 2022 with tree clearing following by general construction which commenced on or around January 24, 2022.

Please be advised that Highland Solar has submitted to Staff the following on the dates specified below:

- 1) on August 27, 2021, the Site Plan Layout and design files (CAD and GIS Shapefiles) in compliance with Condition #3 of the Certificate;
- 2) on August 27, 2021, Construction Access Plan (copy attached) in compliance with Condition #24 of the Certificate;
- 3) on August 27, 2021, the Public Information Program and Complaint Resolution Process (copy attached) in compliance with Conditions #13 and #14 of the Certificate;
- 4) on September 24, 2021, the Visual Mitigation Plan dated August 30, 2021 (copy attached) and the Lighting Design & Lumens Study dated June 10, 2021 (copy attached) in compliance with Condition #12 of the Certificate; and



Legal Counsel

Ms. Tanowa M. Troupe, Secretary

July 7, 2022

Page 2

- 5) on December 29, 2021, the Vegetation Management Plan (copy attached) in compliance with Condition #19.

Please do not hesitate to call me if there are any questions on this submittal.

Very truly yours,

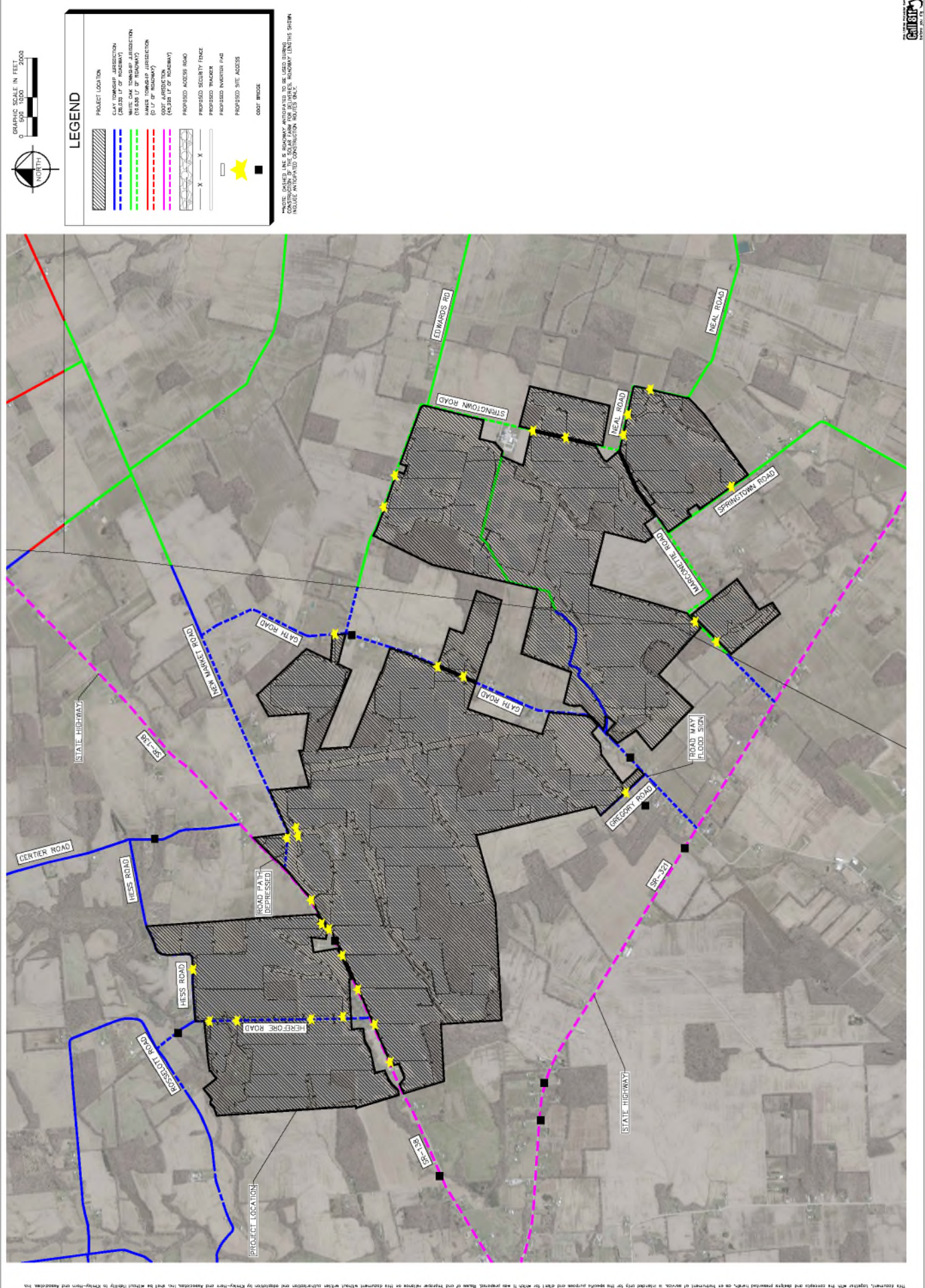
/s/ Michael J. Settineri

Michael J. Settineri
Attorney for Hecate Energy Highland LLC

Attachments

cc: Robert Holderbaum

NO.	REVISIONS	DATE





Highland Solar Project
Hecate Energy Highland, LLC
1166 Avenue of the Americas, 9th Floor
New York, NY 10036

August __, 2021

Re: Notice of the Start of Construction

In the Matter of the Application of Hecate Energy Highland, LLC's Application for a Certificate of Environmental Compatibility and Public Need to Construct a Solar-Powered Electric Generating Facility in Mowrystown, Highland County, Ohio Case No. 18-1334-EL-BGN

Dear Landowner and/or Occupant:

We hope you are doing well. This letter is to advise that construction is expected to start on the Highland Solar Project on October 1, 2021.

Project information, including the location, are detailed at our project website at <https://www.highlandsolarohio.com>. Highland Solar received a certificate of environmental compatibility and public need from the Ohio Power Siting Board for construction and operation of Highland Solar on May 16, 2019. Additional information regarding this project can be found on the Ohio Power Siting Board's website at <http://dis.puc.state.oh.us/CaseRecord.aspx?CaseNo=18-1334-EL-BGN> or by contacting the Board at 180 East Broad Street, 11th Floor, Columbus, Ohio 43215 or by calling 1-866-270-6772.

Construction activity is expected to commence in early October 2021. Construction activities will be limited to the hours of 7am to 7pm or until dusk when sunset is after 7pm. Construction is expected to be completed by the end 2022, with restoration activities to be completed by July 2023.

If you have questions or concerns, please feel free to contact us at 937-365-9069 or email us at info@highlandsolarohio.com and a member of our team will promptly respond. Enclosed please find our complaint resolution plan which outlines the process of receiving feedback from local community members. Comments may also be submitted via our website: www.highlandsolarohio.com.

Sincerely,

Highland Solar



Comments and Complaints Form

Name:	
Address:	
City:	
State:	Zip Code:
Phone:	Email:

COMMENT OR COMPLAINT RECEIVED VIA:

In-Person: ☐ By Phone: ☐ By Email: ☐

NATURE AND DESCRIPTION OF COMMENT OR COMPLAINT (Description, circumstances, place, and time if relevant, etc.):



SECTION FOR USE BY THE PARTY RESPONSIBLE FOR ADDRESSING COMMENTS AND COMPLAINTS

FOLLOW-UP MADE

(Please describe the actions taken following receipt of the comment or complaint)

MITIGATION MEASURES

(Please describe the mitigation measures or corrections taken/made, if required)

FEEDBACK AND INFORMATION

For complaints, when and by what means was a response made to the party filing the complaint?



ADDITIONAL INFORMATION

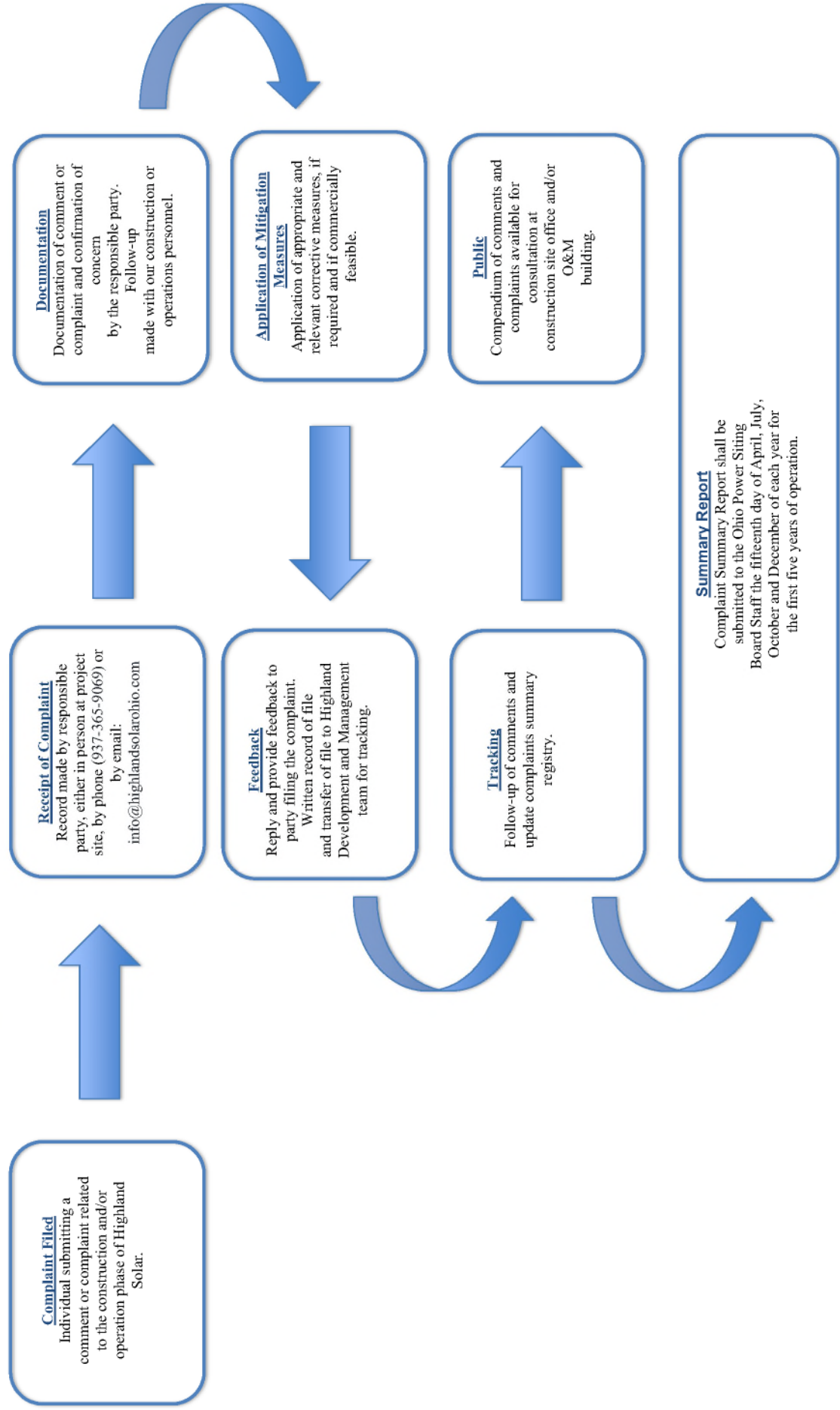
Date completed on: _____

Responsible for comment and complaint follow-up



Diagram of Complaint Resolution process

To address potential public comments or grievances resulting from facility construction and operation and the resolution process for how the public can contact Highland Solar and how Highland Solar would contact anyone issuing a complaint.





Memorandum

To: Aaron Svedlow & Chris Clevenger
From: Gordon Perkins
Date: August 30, 2021
Reference: Highland County Solar Farm – Visual Mitigation
EDR Project No: 21062

On behalf of Hecate Energy Highland LLC (the Client), Environmental Design & Research, Landscape Architecture, Engineering & Environmental Services, D.P.C. (EDR) prepared a mitigation plan for the Highland Solar Farm (Project) in Clay Township, Highland County, Ohio. This plan was developed to comply with the Ohio Power Siting Board (OPSB) regulations regarding stipulations of approval for the construction and operation of the Project. Stipulation 12.0 states the following:

Landscape and Lighting Plan - Prior to construction, the Project shall prepare a landscape and lighting plan that addresses the aesthetic and lighting impacts of the facility where the adjacent non-participating parcel contains a residence with a direct line of site to the project area. Plan shall include measures such as alternate fencing, vegetative screening, good neighbor agreements, or other measures and shall be provided to Staff for review and confirmation of compliance.

For the purposes of the mitigation plan it is assumed that *adjacent non-participating parcels containing a residence with a direct line of sight* are defined as such:

- Non-participating parcels are defined as landowners without prior agreements with Hecate Energy Highland, LLC.
- Adjacent Parcels are parcels that directly abut any Project parcel or directly abut a road or utility right of way that also abuts a Project parcel. Project parcels are defined as any parcel containing visible Project components.
- Direct Line of Sight is defined as a straight line between the observer and the object being observed unobstructed by any physical barrier that materially obstructs a view of the object being observed. EDR anticipates that visibility of the Project will diminish substantially beyond a distance of 1,000 feet. Therefore, the area of potential effect (APE)

and the studies defined below will occur within a 1,000 foot radius of all visible project components (likely defined by the Project fence line).

In addition to Stipulation 12 from OPSB, this mitigation plan also intends to satisfy a requirement set forth in the State Historic Preservation Office (SHPO) Memorandum of Understanding (MOU) which states:

The Plan shall provide for the planting of native trees and large shrubs between the identified [historic] resources and the fence. The Plan shall be designed to enhance the view from the residence and be in harmony with the existing vegetation and viewshed in the area.

Methodology to Identify Adjacent Residences with a Direct Line of Sight

EDR completed a GIS analysis to identify all non-participating parcels adjacent to the Project parcels. EDR then used the United States Building Footprints Dataset (Microsoft, 2018) and sound receptors (points identifying residential dwellings) provided by Terracon, Inc. to identify all non-participating residents within 1,000 feet of the nearest Project fence line. In addition, a shapefile containing the location of all identified historic and eligible properties within the Project Area of Potential Effect (APE) were included in the analysis (Figure 1). Once the affected residential structures and historic properties (collectively referred to as receptors) were identified, EDR completed a viewshed analysis originating at each of the receptors to determine if a direct line of sight to the Project was available.

A digital surface model (DSM) viewshed analysis for the receptors was conducted to evaluate potential views toward the Project site considering the screening effects of topography, structures, and vegetation. The DSM viewshed analysis for the proposed PV panels was prepared using: 1) a DSM derived from the Ohio Statewide Imagery Program's (OSIP) 2007 lidar data for Highland County, Ohio; 2) sample points to represent adjacent residences which were assigned a height of 15 feet to account for second story views; 3) and an assumed maximum solar panel height of 12 feet was applied to the entire Project area enclosed by fence.

A few modifications were made to the lidar-derived DSM prior to analysis. All areas within the PV array fence lines were cleared of any vegetation to reflect the bare-earth elevation and the DSM features representing the residences were cleared to reflect bare earth conditions to prevent unintended screening by the receptor. This modified DSM was then used as a base layer for the viewshed analysis. Once the viewshed analysis was completed, a conditional statement was used within ArcGIS® to set solar panel visibility to zero in locations where the DSM elevation exceeded

the bare earth elevation by 6 feet or more, indicating the presence of vegetation or structures that exceed viewer height. This was done for two reasons: 1) in locations where trees or structures are present in the DSM, the viewshed would reflect visibility from the vantage point of standing on the treetops, which is not the intent of this analysis, and 2) to reflect the fact that ground-level vantage points within buildings or areas of vegetation exceeding 6 feet in height will generally be screened from views of the Project.

Because it accounts for the screening provided by topography, vegetation and structures, the DSM viewshed analysis is a very accurate representation of potential Project views from receptors. The resulting viewshed analysis illustrates the areas of visible landscape from each of the receptors. Where these areas intersect the Project fence, it can be assumed that that receptor will have some degree of visibility of the Project (Figure 2). Areas where visibility intersected the Project fence line were the focus areas for the mitigation efforts, described below.

Mitigation Methodology

To reduce and minimize potential visual effects associated with the Project, EDR developed four mitigation modules (Figure 3). Each module is described below and illustrated in Attachment A (Drawing L-601).

Module 1 consists of a narrow ten foot wide buffer and utilizes small evergreen trees and large deciduous shrubs to partially screen/soften views from adjacent residences. Module 1 was designed to address visibility in areas that have horizontal constraints limiting the use of wider modules. These constraints typically consist of above-ground/underground utilities, road easements, and limited space along Project property/parcel lines.

Module 1 was specified for approximately 7,083 feet of fence line resulting in a total of 732 plants. The breakdown of plant material is included in the table, below.

Module 1 (10'x300')				
Material Type	Module Count	Module Length (ft)	Applied Length of Module (ft)	Total Plant Count
<i>Small / Medium Evergreen</i>	16	300	7,083	378
<i>Medium Shrub</i>	15	300	7,083	354
Module 1 Total				732

Module 2 was designed to create an intermittent, natural buffer that includes a mix of deciduous and evergreen shrubs and trees clumped in intervals along the Project fence. The module is offset

ten feet from the Project fence and the planting area is approximately 25 feet wide. This module is most appropriate in locations where significant setbacks or existing vegetation and structures are expected to reduce the potential visual impacts resulting from the Project. While the intention of this module is not to fully screen the Project, it will break up the horizontal lines introduced by the Project across the landscape and soften the appearance of the fence and solar arrays. The introduction of natural vertical elements formed by the vegetation will also add an element of interest while partially screening portions of the Project from receptors.

Module 2 was specified for approximately 14,267 feet of fence line resulting in a total of 857 plants. The breakdown of plant material is included in the table, below.

Module 2 (25'x300')				
Material Type	Module Count	Module Length (ft)	Applied Length of Module (ft)	Total Plant Count
<i>Medium Deciduous Tree</i>	1	300	14,267	48
<i>Small Flowering Tree</i>	2	300	14,267	95
<i>Small / Medium Evergreen</i>	5	300	14,267	238
<i>Medium Shrub</i>	10	300	14,267	476
Module 2 Total				857

Module 3 is a 25-foot wide dense vegetative buffer that includes an arrangement of deciduous and evergreen shrubs and trees aligned to provide a substantial vegetative buffer and seasonal interest through the strategic arrangement of plant layers which are taller on the back side of the module (Project facing side) and successively shorter on the public-facing side of the module. Over time, this module will result in significant seasonal screening of the solar arrays from nearby adjacent receptors. Module 3 uses small and medium trees and can be applied in areas where vertical constraints (such as overhead transmission lines) exist.

Module 3 was specified for approximately 2,174 feet of fence line resulting in a total of 406 plants. The breakdown of plant material is included in the table, below.

Module 3 (25'x300')				
Material Type	Module Count	Module Length (ft)	Applied Length of Module (ft)	Total Plant Count
<i>Small Flowering Tree</i>	5	300	2,173	36
<i>Small / Medium Evergreen</i>	8	300	2,173	58
<i>Large Mass-Forming Shrub</i>	9	300	2,173	65
<i>Medium Shrub</i>	14	300	2,173	101
<i>Small Shrub</i>	20	300	2,173	145
Module 3 Total				406

Module 4, a 25-foot wide buffer similar to Module 3, includes dense vegetation which uses a varied, naturalistic arrangement of deciduous and evergreen shrubs and trees. This module was placed in areas with ample space and minimal horizontal and vertical constraints. Like Module 3, this module is most appropriate where adjacent receptors have proximate and open views toward the Project and the additional screening provided by this more intense buffer will help reduce and minimize potential visual impacts.

Module 4 was specified for approximately 6,170 feet of fence line resulting in a total of 823 plants. The breakdown of plant material is included in the table, below.

Module 4 (25'x300')				
Material Type	Module Count	Module Length (ft)	Applied Length of Module (ft)	Total Plant Count
Large Deciduous Tree	2	300	6,220	41
Medium Deciduous Tree	2	300	6,220	41
Small Flowering Tree	7	300	6,220	145
Large Evergreen	9	300	6,220	187
Small / Medium Evergreen	6	300	6,220	124
Medium Shrub	14	300	6,220	290
Module 4 Total				829

Plant Material

This mitigation plan specifies the type, growth habit, and form of plant materials along with several representative species that could perform the intended function of the mitigation plan. With a few exceptions (cultivars), the example species are native to the state of Ohio and Highland County. The example species do not include all species that could achieve the intent of the mitigation plan, rather they provide representative examples. Plant availability, site specific conditions, and

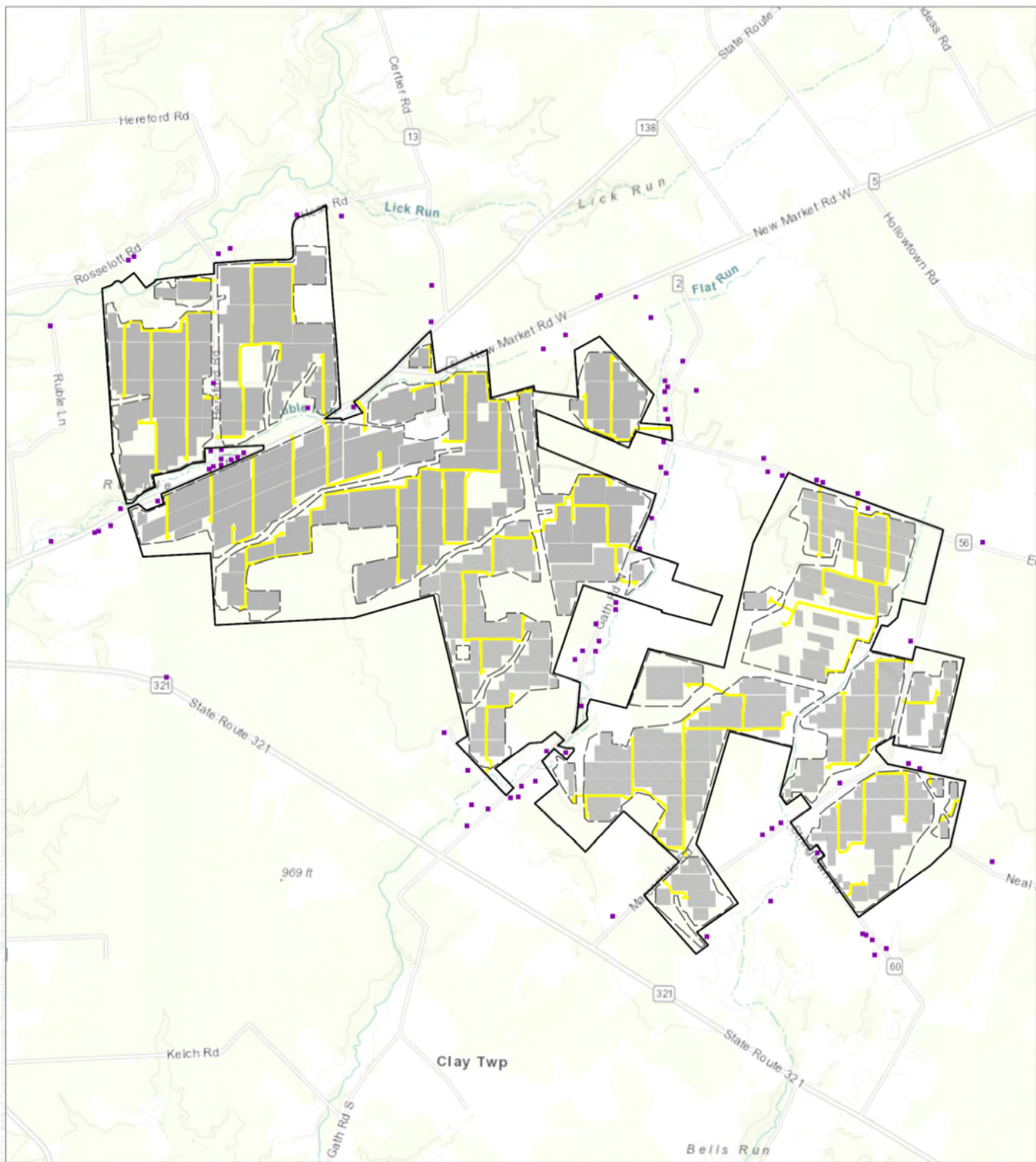
survivability will all influence the optimal choice of plant materials during the development of contract drawings.

Conclusion

The methodology described above satisfies the requirements outlined in the OPSB Stipulation 12.0 by identifying those residential dwellings and historic properties that are adjacent to the Project and could have a direct unobstructed line of sight in the direction of the Project considering the screening effect of vegetation, structures, and topography. The DSM viewshed analysis used to identify these properties and their potential views also provided an accurate prediction of the visible portions of the Project. This allowed the designers to apply vegetative mitigation to only those portions of the Project that could potentially result in visual impacts to the receptors. The proposed mitigation utilizes plants to soften and/or screen views of the Project. Additional site-specific investigations will be required to determine physical and ecological constraints, but implemented correctly, the proposed mitigation will help to reduce and/or minimize potential visual impacts associated with the Project.

Figures

Figure 1. Project Layout and Adjacent Non-Participating Residences



Highland Solar Farm

Clay Township, Highland County, Ohio

Landscape Mitigation Plan



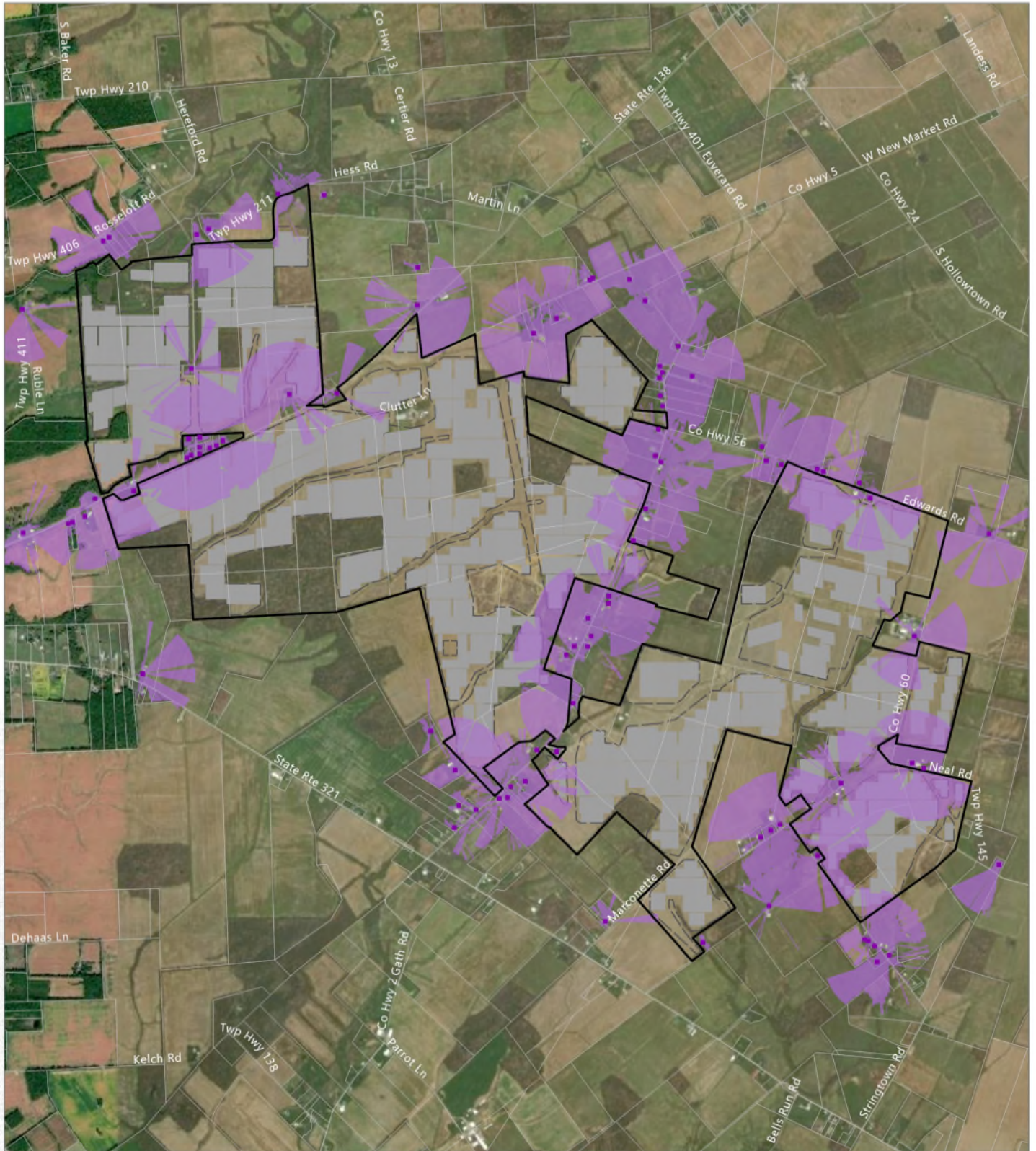
- Adjacent Non-Participating Residence
- PV Panel
- Fenceline
- Access Road
- ▭ Project Area



0 1,000 2,000 4,000
Feet

Prepared August 24, 2021
Basemap: Esri ArcGIS Online "World Topographic Map" map service.

Figure 2. Project Visibility from Adjacent Non-Participating Residences



Highland Solar Farm

Clay Township, Highland County, Ohio

Landscape Mitigation Plan

- Adjacent Non-Participating Residence
- Potential Visibility from Adjacent Non-Participating Residence

- PV Panel
- Fenceline
- Parcel Boundary
- Project Area

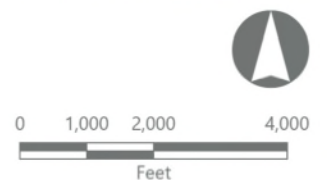
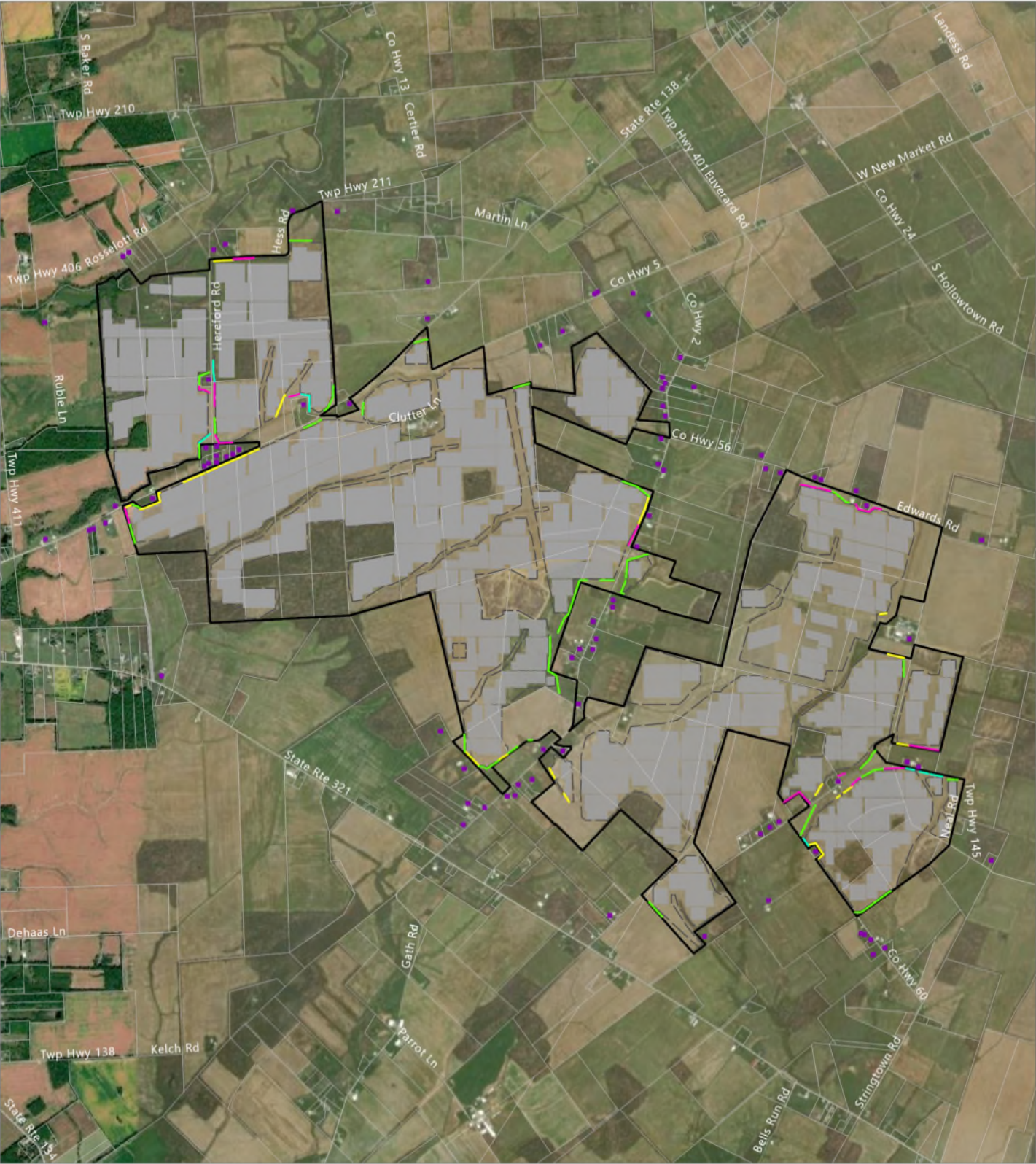


Figure 3. Mitigation Module Overview

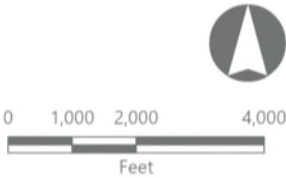


Highland Solar Farm
Clay Township, Highland County, Ohio

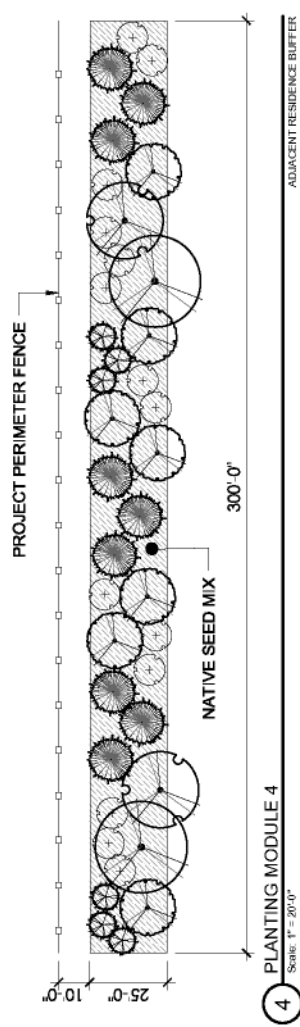
Landscape Mitigation Plan

- Adjacent Non-Participating Residence
- Mitigation Module 1
- Mitigation Module 2
- Mitigation Module 3
- Mitigation Module 4

- Fenceline
- PV Panel
- Parcel Boundary
- ▭ Project Area



Attachment A



<p> <i>Interpret edge and node weights as the probability of a transition between two states. The weights are assumed to be non-negative and to sum to 1. The transition probabilities are assumed to be independent of the current state. The transition probabilities are assumed to be independent of the current state.</i> </p>																																																																																																																																																											
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PROJECT TITLE:	HIGHLAND SOLAR FARM
PROJECT LOCATION:	CLAY TOWNSHIP, HIGHLAND COUNTY, OHIO
OWNER:	NORTH LIGHT ENERGY, LLC / HECATE ENERGY HIGHLAND, LLC
DRAWING TITLE:	DETAILS

DATE: AUGUST 20, 2021	SCALE: AS SHOWN	DATE: 08-18-2021	FILE NAME: 210621-L-600-SERIES.dwg	DRAWING NAME: 02 L-601
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Highland Solar Project

Lighting Design & Lumens Study

Prepared for:

Hecate Energy Highland LLC

Prepared by:

Erin Bryden, P.E., P.Eng., ebryden@ceg-engineers.com

Naga Pavithra Guddeti, Project Engineer, nguddeti@ceg-engineers.com

Vince L. Granquist, P.E., vgranquist@ceg-engineers.com

Rev 0

June 10, 2021

Consulting Engineers Group
21875 Grenada Ave,
Lakeville, MN 55044



CONSULTING ENGINEERS GROUP

Engineering Powerful Solutions



Document History

Revision	Date	Description
Rev 0	06/10/2021	Initial Lighting Design & Lumen Study



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1. Introduction

Consulting Engineers Group (CEG) is pleased to provide this Lighting design and Lumen study for Highland Substation. The purpose of this study is to determine sufficient illumination level within the substation yard. This study does not evaluate the interior of the control cabinet.

2. Highland Project Site Description

The Highland Solar Project is located in Highland County, Ohio. The project consists of solar arrays feeding into 84 TMEIC Ninja 4200 kVA inverters with 0.80 leading to 0.80 lagging power factor (PF) capability. The inverter's output voltage is 630 Vac and is connected to a 3360/4200 kVA pad-mount transformer (PMT). The PMT converts the 630 Vac to the collection system voltage of 34.5 KV. The collection system consists of cable sizes 4/0, 1/0, 500 KCMIL, 750 KCMIL, 1000 KCMIL, and 1250 KCMIL, and comes into substation on six feeders. Two 96/128/160 MVA, 34.5 kV/345 kV main power transformers (MPT) connect the project to the Clinton 345kV point of interconnect (POI).

3. Lighting Design Guidelines

The substation and control cabinet should be provided with lighting sufficient to ensure adequate levels of substation yard illumination. CEG uses the illumination levels from IEEE Standard-National Electric Safety code (NESC) as a guideline for design and considers the following:

- Under normal conditions, outdoor lighting is not required at unattended substations, however permanent or portable lighting may be provided during times that personnel perform work in the substation at night.
- Illumination levels not less than those listed in Table 111-1 are recommended for safety to be maintained, but not required.
- Table 111-1 lists illumination levels for substations at 22 lux (2 foot-candles) "General horizontal" and "Specific Vertical".
- 110 lux (10.2 foot-candles) recommended for entrances and 2.2 lux (.21 foot-candles) for the fence or open yard.

Table 111-1 gives recommended Illumination levels for different locations from the NESC:

Table 111-1—Illumination levels

Location	lux	footcandles
Generating station (interior)		
Highly critical areas occupied most of the time ^①	270	25
Areas occupied most of the time ^②	160	15
Critical areas occupied infrequently ^③	110	10
Areas occupied infrequently ^④	55	5
Generating station (exterior)		
Building pedestrian main entrance	110	10
Critical areas ^⑤	55	5
Areas occupied occasionally by pedestrians ^⑥	22	2
Areas occupied occasionally by vehicles ^⑦	11	1
Areas occupied infrequently ^⑧	5.5	0.5
Remote areas ^⑨	2.2	0.2
Substation		
Control building interior	55	5
General exterior horizontal and equipment vertical	22	2
Remote areas ^⑩	2.2	0.2

① Such as: Chemical laboratory, large centralized control room 1.68 m (66 in) above floor, section of duplex facing away from operator, bench boards (horizontal level), dispatch boards—horizontal plane (desk level), dispatch boards—vertical face of board [1.22 m (48 in) above floor, facing operator]—system load dispatch room.

② Such as: Ordinary control room 1.68 m (66 in) above floor, secondary dispatch room, turbine room.

③ Such as: Auxiliaries, battery areas, boiler feed pumps, tanks, compressors, gage area, burner platforms, hydrogen and carbon dioxide manifold area, screen house, power switchgear, telephone equipment room, turbine bay sub-basement, visitors' gallery, water treating area.

④ Such as: Air-conditioning equipment, air preheater and fan floor, ash sluicing, boiler platforms, cable room, circulator, or pump bay, coal conveyor, crusher, feeder, scale area, pulverizer, fan area, transfer tower, condensers, de-aerator floor, evaporator floor, heater floors, area inside duplex switchboards, rear of all switchboard panels (vertical), precipitators, soot or slag blower platform, steam headers and throttles, piping tunnels or galleries.

⑤ Such as: Coal unloading dock (loading or unloading zone), coal unloading car dumper, gate house conveyor entrance, fuel-oil delivery headers, platforms—boiler, turbine deck.

⑥ Such as: Catwalks, coal unloading tipple, conveyers, secondary building entrances.

⑦ Such as: Oil storage tanks, roadway between or along buildings.

⑧ Such as: Coal unloading barge storage area, roadway not bordered by buildings.

⑨ Such as: Cinder dumps, fence, open yard.

⑩ Such as: Fence, open yard.

4. Lighting Design

The substation is equipped with eight (8) floodlights to provide lighting for the majority of the substation yard with emphasis on the control cabinet, control cabinet access, MPT, and feeder breakers. The Isofootcandle profile of one of the flood lights is shown on the substation equipment layout in Figure 1.

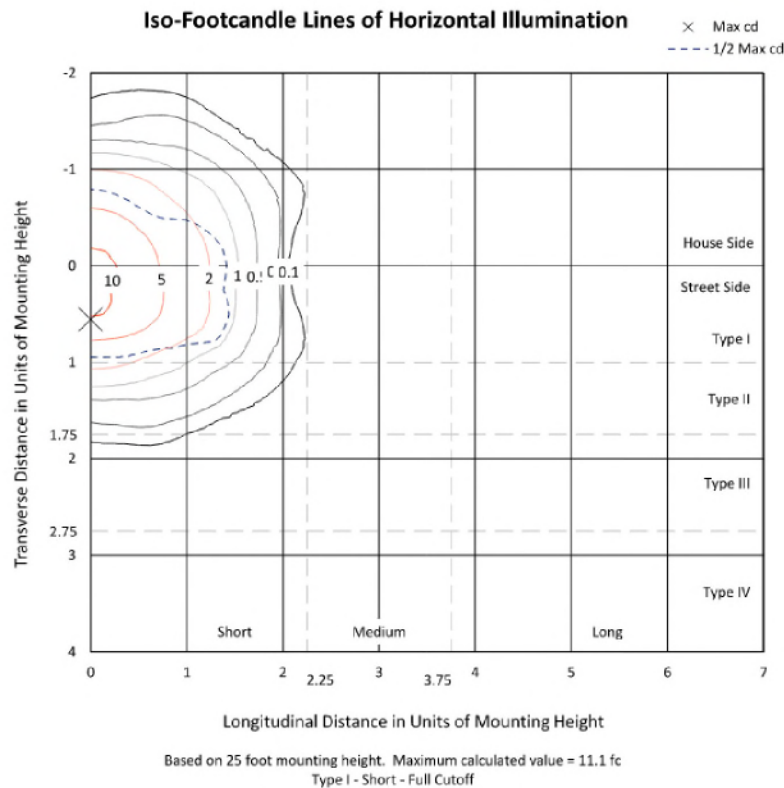


Figure 1 Substation Isofoot-candles Profile from (1) Flood Lights

The control cabinet building is equipped with indoor lighting, lighting on the exterior wall of the building above each door, and emergency lighting. This report only evaluates the exterior lighting. The exterior lighting near the doors will exceed values around 2.5 foot-candles.

Illumination level of bulbs/lamp selected for the substation floodlights and control cabinet building exterior lights are shown in Figure 2. These levels shall comply with NESC – IEEE standards.

SUBSTATION	DESCRIPTION	MANUFACTURE	QUANTITY	ILLUMINATION LEVELS FROM NESC (FOOTCANDLE)	MINIMUM ILLUMINATION LEVELS CALCULATED (FOOTCANDLE)	NOTES
FLOOD LIGHTS	UTILITY FLOOD, LED LAMP 15,500 LUMENS	Street Works UFLD-C40-E-U-66-T-AP-4- 10K	8	2	2	Mounting height of 30' Pointed various directions to illuminate paths around control house, feeder breakers, MPT, and other substation equipment.
	FLOODLIGHT FIXTURE, 128 WATT, 120-277V, TRUNNION BOX	EATON	8	-	-	-
CONTROL BUILDING						
EXTERIOR	LIGHT FIXTURE - LED - 1932 LUMEN, 12W COOL LED LOW PROFILE - BRONZE	RAB SLIM12	2	2	>2.5	Mounting height of 8' (above doors)

Figure 2 Substation & Control Cabinet Lighting Equipment



CONSULTING ENGINEERS GROUP

5. Professional Engineer Approval of Report

Signed:

Sincerely,

Vince Granquist, P.E.
President / Senior Project Engineer
Consulting Engineers Group
Office 651-463-6350

I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly licensed professional engineer under the laws of the state of:

Ohio

License Number: 77907

Vince Granquist, P.E.
Consulting Engineers Group



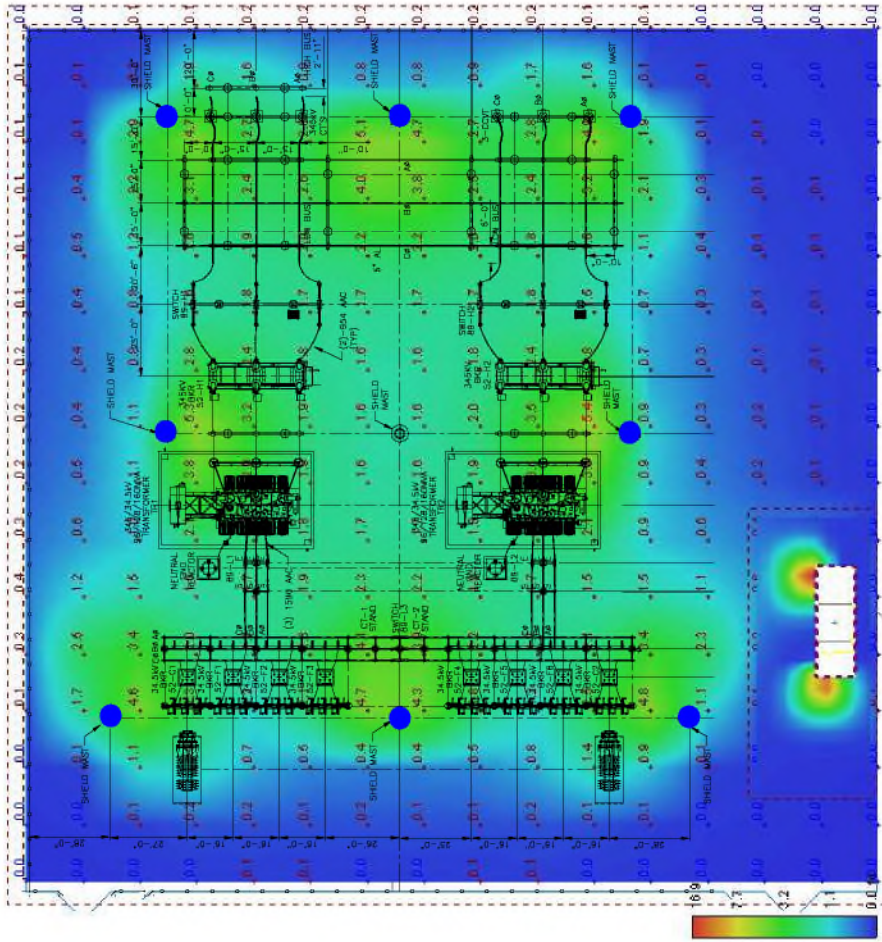
6. Appendix

The appendix includes the following attachments:

- 6.1. Substation floodlight iso foot-candle lines**
- 6.2. Substation floodlight spec sheet**
- 6.3. Control cabinet exterior lighting equipment spec sheet**







Designer
Erin Bryden
Date
06/10/2021
Scale
Not to Scale
Drawing No.
Lighting Study
Summary



Statistics						
Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
SWITCHYARD	+	1.2 fc	5.4 fc	0.0 fc	N/A	N/A
BLDG ENTRY	+	0.9 fc	16.9 fc	0.0 fc	N/A	N/A

Luminaire Locations										
Location						Aim				
No.	Label	X	Y	Z	MH	Orientation	Tilt	X	Y	Z
10	A	-74.00	51.00	30.00	30°	135.00	45.00	-59.00	36.00	8.79
11	A	25.00	31.00	30.00	30°	180.00	45.00	25.00	9.79	8.79
12	A	135.50	31.00	30.00	30°	225.00	45.00	120.50	16.00	8.79
13	A	135.50	-50.00	30.00	30°	270.00	45.00	114.29	-50.00	8.79
14	A	135.50	-131.00	30.00	30°	315.00	45.00	120.50	-116.00	8.79
15	A	25.00	-131.00	30.00	30°	0.00	45.00	25.00	-109.79	8.79
16	A	-74.00	-151.00	30.00	30°	45.00	45.00	-59.00	-136.00	8.79
17	A	-74.00	-50.00	30.00	30°	90.00	45.00	-52.79	-50.00	8.79
4	C	-24.00	-199.00	7.50	7° 6"	0.00	0.00	-24.00	-199.00	0.00
5	C	-60.00	-202.00	7.50	7° 6"	270.00	0.00	-60.00	-202.00	0.00

Wattage													
Symbol	Label	QTY	Manufacturer	Catalog Number	Description	Lamp	Number Lamps	Filename	Lumens per Lamp	Lumen Multiple	LLF	Efficiency	Polar Plot
	A	8	COOPER LIGHTING SOLUTIONS - STREETWORKS (FORMERLY EATON)	UFLD-C40-X-U-66	NIGHT FALCON LED FLOOD LIGHT	(2) 4000K CCT, 72 CRI LEDS	2	UFLD-C40-X-U-66.les	8436	1	1	100%	
	C	2	RAB LIGHTING INC. RC LIGHTING	SLIM12	CAST BROWN PAINTED FINNED METAL HOUSING, 1 CIRCUIT BOARD WITH 1 LED, MOLDED PLASTIC REFLECTOR WITH SPECULAR FINISH, CLEAR FLAT GLASS LENS IN CAST BROWN PAINTED METAL LENS FRAME.	ONE WHITE MULTI-CHIP LIGHT EMITTING DIODE (LED), AIMED 20+ DEGREES FROM VERTICAL BASE-UP POSITION.	1	rab04264mod5 0.les	1931	1	1	100%	

DESCRIPTION

The UFLD LED floodlight luminaire combines high-efficiency optics, superior thermal management and energy efficiency in a cost-effective solution. The compact, robust design incorporates a separate driver compartment for maximum heat dissipation to insure longevity of both the fixture and the optics. The UFLD luminaire uses precision engineered optics delivering superior uniformity and excellent illumination to the targeted application. Typical applications include area lighting for security, building facade lighting, accent and signage lighting in both commercial and industrial applications. The UFLD luminaire is UL/cUL listed for wet locations and is IP66 rated.

SPECIFICATION FEATURES

Construction

Heavy-duty, die cast aluminum housing, driver compartment and driver door. A separate driver compartment and external fins provide optimal thermal management that result in longer LED and driver life. The housing, optical chamber and driver compartment are IP66 rated. Access to the driver for maintenance is achieved with a removable driver door using pan head screws. A one-piece silicone gasket seals the door to the fixture housing. The fixture is 3G vibration rated (ANSI C136.31) to ensure durability in area and site lighting applications. Suitable for mounting within 4' (1.2m) of the ground.

Optics

The LED chamber incorporates a vacuum metalized reflector that provides high-efficiency illumination. Optics are precisely designed to shape the NEMA type 6H x 6V wide distribution and 3H x 3V spot distribution, maximizing efficiency and application spacing. Clear glass tempered lens with full circumference form-in-place silicone gasket protects the optics from damage. Offered standard in

4000K (+/- 275K) CCT and minimum 70 CRI. Optional 5700K CCT, 5000K CCT and 3000K CCT and minimum 70 CRI are available.

Electrical

LED driver is mounted to the removable die-cast aluminum door for optimal heat sinking and ease of maintenance. 120-277V 50/60Hz, 347V 60Hz or 480V 60Hz operation. Integral 6kV surge is standard. 10kV/10kA common- and differential- mode surge protection available as an option. 0-10V dimming driver is available to accommodate controls capability such as dimming and occupancy. Available with 3-PIN or 7-PIN NEMA photocontrol receptacles. Suitable for ambient temperatures from -40°C to 40°C. Optional 50°C HA (high ambient) available. 90% lumen maintenance greater than 50,000 hours per IESNA TM-21.

Accessories

Heavy-duty steel top and side visors control glare and spill light. 1/8" thick UV stabilized vandal guard shields glass lens from impact when mounted at low levels. Easy to install wire guard features a heavy-gauge welded

construction with corrosion resistant polyester powder coat finish to protect glass from projected objects.

Mounting

Mounting options include an integral die-cast aluminum slipfitter that is preset to a tilt of 45°. The knuckle base is supplied with a tooth lock adjustment that can be adjusted in 5° increments. Visual 15° adjustment indicators on the knuckle allow for 180° field rotation of the floodlight assembly. The slipfitter fits standard 2-3/8"-3" O.D. tenon. The trunnion mounting includes a 3/16" polyester powder coated galvanized steel trunnion with a 16/3 STW-A cord. The trunnion mount uses an interlocking slide adjustment that is locked in place with a set screw.

Finish

Housing and cast parts finished in five-stage super TGIC polyester powder coat paint, 2.5 mil nominal thickness for superior protection against fade and wear.

Warranty

Five-year warranty.



UFLD UTILITY FLOOD

Solid State LED

FLOODLIGHT



CERTIFICATION DATA

UL/cUL Wet Location Listed
IP66 Fixture and Optical Chamber
LM79/LM80 Compliant
3G Vibration Rated
RoHS Compliant
DesignLights Consortium® Qualified*

ENERGY DATA

Electronic LED Driver
> 0.9 Power Factor
< 20% Total Harmonic Distortion
120V 50/60Hz, 347V/60Hz and 480V/60Hz
-40°C Minimum Ambient Temperature Rating
+40°C Maximum Ambient Temperature Rating

EPA

Effective Projected Area (Sq. Ft.): 1.25

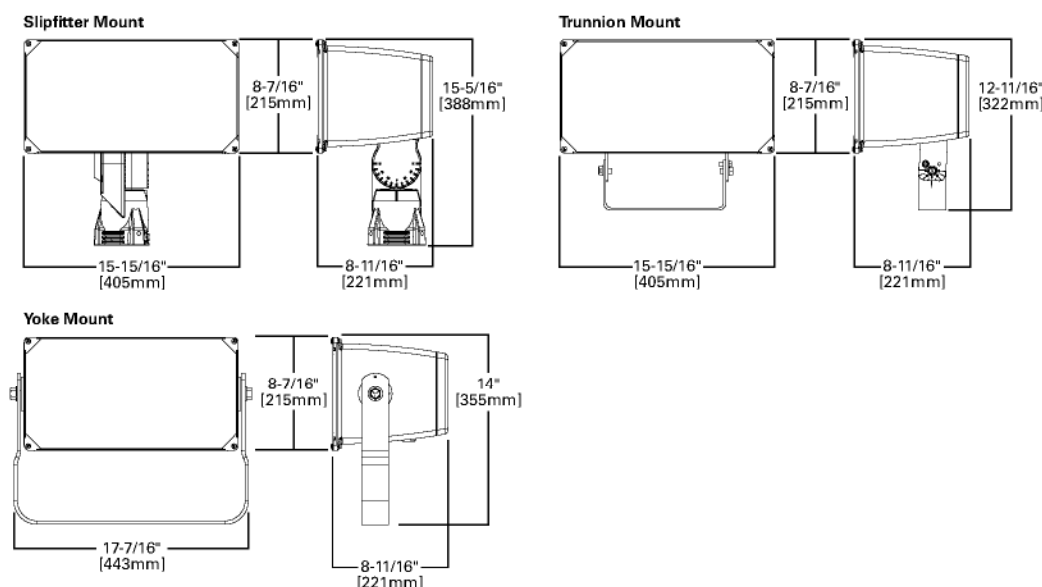
SHIPPING DATA

Approximate Net Weight:
20 lbs. (9.09 kgs.)



TD506008EN
November 19, 2018 12:05 PM

DIMENSIONS



POWER AND LUMENS

	6x6				3x3			
C25 LED	UFLD-C25	UFLD-C25-7030	UFLD-C25-7050	UFLD-C25-7060	UFLD-C25	UFLD-C25-7030	UFLD-C25-7050	UFLD-C25-7060
Delivered Lumens	10,530	10,122	10,383	10,217	10,272	9,874	10,128	9,967
CCT (Kelvin)	4000K	3000K	5000K	5700K	4000K	3000K	5000K	5700K
CRI (Color Rendering Index)	70	70	70	70	70	70	70	70
Power Consumption (Watts)	85W	85W	85W	85W	93W	93W	93W	93W
C40 LED	UFLD-C40	UFLD-C40-7030	UFLD-C40-7050	UFLD-C40-7060	UFLD-C40	UFLD-C40-7030	UFLD-C40-7050	UFLD-C40-7060
Delivered Lumens	16,932	16,268	16,686	16,421	14,113	13,567	13,916	13,694
CCT (Kelvin)	4000K	3000K	5000K	5700K	4000K	3000K	5000K	5700K
CRI (Color Rendering Index)	70	70	70	70	70	70	70	70
Power Consumption (Watts)	128W	128W	128W	128W	143W	143W	143W	143W
C55 LED	UFLD-C55	UFLD-C55-7030	UFLD-C55-7050	UFLD-C55-7060				
Delivered Lumens	19,943	19,407	20,144	20,285				
CCT (Kelvin)	4000K	3000K	5000K	5700K				
CRI (Color Rendering Index)	70	70	70	70				
Power Consumption (Watts)	145W	145W	145W	145W				
C70 LED	UFLD-C70	UFLD-C70-7030	UFLD-C70-7050	UFLD-C70-7060				
Delivered Lumens	23,797	23,157	24,037	24,205				
CCT (Kelvin)	4000K	3000K	5000K	5700K				
CRI (Color Rendering Index)	70	70	70	70				
Power Consumption (Watts)	184W	184W	184W	184W				

CURRENT DRAW

Voltage (V)	Model Series					
	6x6				3x3	
	UFLD-C25	UFLD-C40	UFLD-C55	UFLD-C70	UFLD-C25	UFLD-C40
	Current (A)	Current (A)	Current (A)	Current (A)	Current (A)	Current (A)
120V	0.708	1.070	1.2299	1.5695	0.778	1.190
277V	0.340	0.465	0.535	0.6726	0.340	0.531
347V	0.251	0.377	0.4213	0.5334	0.271	0.419
480V	0.195	0.273	0.3044	0.3831	0.207	0.320

LUMEN MAINTENANCE

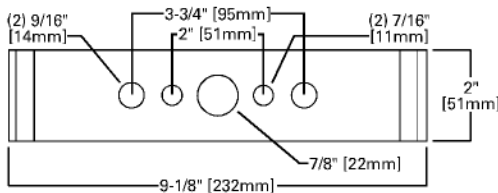
Ambient Temperature	TM-21 Lumen Maintenance (60,000 Hours)	Theoretical L70 (Hours)
6H x 6V (Wide)		
25°C	> 94.55%	> 388,000
40°C	> 93.58%	> 327,000
50°C	--	--
3H x 3V (Spot)		
25°C	>92.18%	>262,000
40°C	>91.81%	>249,000

LUMEN MULTIPLIER

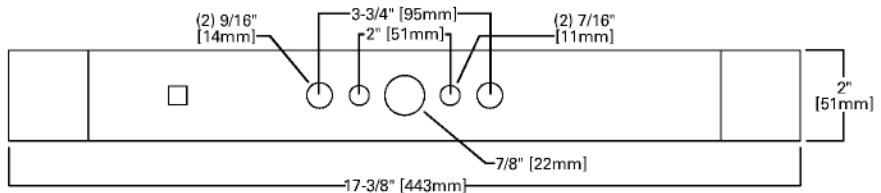
Ambient Temperature	Lumen Multiplier
10°C	1.03
15°C	1.02
25°C	1.00
40°C	0.97
50°C	0.96

DRILLING PATTERNS

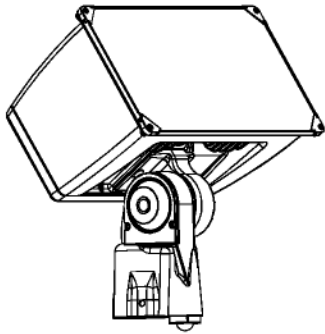
Trunnion Mount



Yoke Mount

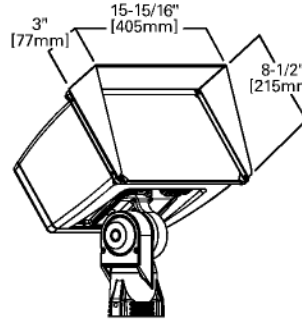


OPTIONAL INTEGRATED SENSOR

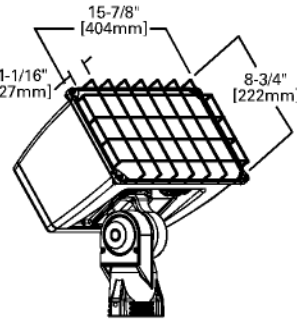


ACCESSORIES

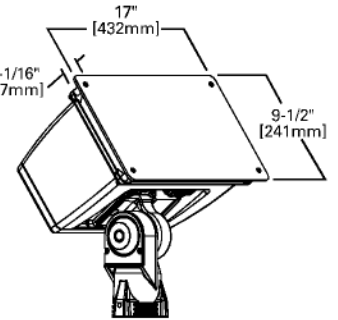
Top and Side Visors



Wire Guard



Vandal Shield



ORDERING INFORMATION

UFLD-C40-E-U-66-T-AP-4-10K

Sample Number: UFLD-C40-D-U-66-S-AP-4N7

Product Family	Light Engine ¹	Driver ²	Voltage	Distribution	Mounting	Color
UFLD=Utility LED Floodlight	C25=10,400 Nominal Lumens C40=15,500 Nominal Lumens C55=20,000 Nominal Lumens C70=24,000 Nominal Lumens	E=Non-Dimming D=Dimming (0-10V) ³	U=120-277V 8=480V ⁴ 9=347V ⁴	66=NEMA 6Hx6V Wide 33=NEMA 3Hx3V Spot ⁵	C=Slipfitter, 2-3/8"-3" O.D. (Cord through housing) S=Slipfitter, 2-3/8"-3" O.D. (Leads through slipfitter) T=Trunnion Y=Yoke	AP=Grey (Standard) BZ=Bronze BK=Black WH=White
Options (Add as Suffix)			Accessories (Order Separately) ¹¹			
7030=70 CRI / 3000K ⁶ 7050=70 CRI / 5000K ⁶ 7060=70 CRI / 5700K ⁶ 4=NEMA 3-PIN Twistlock Photocontrol Receptacle 4N7=NEMA 7-PIN Twistlock Photocontrol Receptacle ⁷ 10K=10kV/10kA UL 1449 Surge Protective Device HA=50°C High Ambient Temperature ⁸ D10=<10% Dimming ⁷ MSP/DIM-L12=Integrated Sensor for Dimming Operation, 8' - 12' Mounting Height ^{9,10} MSP/DIM-L30=Integrated Sensor for Dimming Operation, 12' - 30' Mounting Height ^{9,10} MSP-L12=Integrated Sensor for ON/OFF Operation, 8' - 12' Mounting Height ^{9,10} MSP-L30=Integrated Sensor for ON/OFF Operation, 12' - 30' Mounting Height ^{9,10} CXXX=Cord Type ¹⁶			FA63=3" O.D. Surface Mount Bracket ¹² OA1223=10kV/10kA UL 1449 Surge Protective Device Replacement OA/RA1013=Photocontrol Shorting Cap OA/RA1014=NEMA Photocontrol - 120V OA/RA1016=NEMA Photocontrol - Multi-Tap OA/RA1027=NEMA Photocontrol - 480V OA/RA1201=NEMA Photocontrol - 347V RAB-XX=Right Angle Pipe Bracket for Slipfitter SAB-XX=Steel Angle Bracket for Trunnion TYS-XX=Slipfitter Adapter for 2-3/8", 3" or 3-1/2" O.D. Tenon ¹³ TS2/UFLD-XX=Top and Side Visors ¹⁴ VS/UFLD=Vandal Shield ¹⁴ WG/UFLD=Wire Guard ¹⁴ ISHH-01=Integrated Sensor Programming Remote LLPC=Long-life Photocontrol ¹⁵ LLPC-FO=Long-life Photocontrol (Fail-Off)			

NOTES:

- Standard 4000K CCT and minimum 70 CRI. Consult IES file for actual lumen output.
- Consult factory for driver surge protection values.
- Must specify 4N7 option.
- Only for use with 480V Wye systems. Per NEC, not for use with ungrounded systems, impedance grounded systems or corner grounded systems (commonly known as Three Phase Three Wire Deltas, Three Phase High Leg Delta and Three Phase Corner Grounded Delta systems)
- Only available with C25 and C40 light engines.
- Extended lead times apply. Use dedicated IES files for 3000K, 5000K, and 5700K when performing layouts. These files are published on the UFLD luminaire product page on the website.
- Must order with dimming driver.
- Not available with 3H x 3V spot distribution.
- 0-10V dimming driver required. Integrated sensor option only available in slipfitter mounting.
- Not available with Photocontrol.
- Replace XX with color designation. Additional brackets and adaptors available on the poles product page on the website.
- Not available with tenon mount.
- Not available with slipfitter mount.
- Cannot combine TS2 (Top and Side Visor), VS (Vandal Shield), or WG (Wire Guard), limited to one external guard per fixture.
- Sold as accessory. Not covered under luminaire warranty.
- 3-conductor cord available in 12, 14, and 16 gauge with lengths of 5, 8, 10, 15, 20, and 25 feet. Specify cord gauge with the first 2 digits and cord length with the last 2 digits (ex: C1605 = 16-gauge, 5 feet length cord). Standard cord is 16-gauge with length of 3.5 ft if not specified.



12, 18 and 26 Watt SLIM wall packs are ultra efficient and deliver impressive light distribution with a compact low-profile design that's super easy to install as a downlight or uplight.

Color: Bronze

Weight: 4.5 lbs

Project:

Type:

Prepared By:

Date:

Driver Info

Type	Constant Current
120V	0.12A
208V	0.08A
240V	0.07A
277V	0.06A
Input Watts	15.70W
Efficiency	76%

LED Info

Watts	12.00W
Color Temp	5100K (Cool)
Color Accuracy	75 CRI
L70 Lifespan	100,000
Lumens	1,932
Efficacy	123.1 LPW

Technical Specifications

Listings

UL Listed:

Suitable for wet locations. Suitable for mounting within 1.2m (4ft) of the ground.

ADA Compliant:

SLIM™ is ADA Compliant

IESNA LM-79 & LM-80 Testing:

RAB LED luminaires and LED components have been tested by an independent laboratory in accordance with IESNA LM-79 and LM-80.

DLC Listed:

This product is listed by Design Lights Consortium (DLC) as an ultra-efficient premium product that qualifies for the highest tier of rebates from DLC Member Utilities. DLC Product Code: PMV178BC

Construction

IP Rating:

Ingress Protection rating of IP66 for dust and water

Cold Weather Starting:

Minimum starting temperature is -40°C (-40°F)

Maximum Ambient Temperature:

Suitable for use in 40°C (104°F)

Housing:

Precision die-cast aluminum housing

Mounting:

Heavy-duty mounting bracket with hinged housing for easy installation

Recommended Mounting Height:

Up to 8 ft

Lens:

Tempered glass lens

Reflector:

Specular thermoplastic

Gaskets:

High-temperature silicone

Finish:

Formulated for high durability and long-lasting color

Green Technology:

Mercury and UV free. RoHS-compliant components.

LED Characteristics

LED:

Multi-chip, long-life LED

Lifespan:

100,000-hour LED lifespan based on IES LM-80 results and TM-21 calculations

Color Consistency:

7-step MacAdam Ellipse binning to achieve consistent fixture-to-fixture color

Color Stability:

LED color temperature is warrantied to shift no more than 200K in CCT over a 5-year period

Technical Specifications (continued)

LED Characteristics

Color Uniformity:

RAB's range of CCT (Correlated Color Temperature) follows the guidelines for the American National Standard for Specifications for the Chromaticity of Solid State Lighting (SSL) Products, ANSI C78.377-2017.

Other

Patents:

The design of the SLIM™ is protected by patents in U.S. Pat D681,864, and pending patents in Canada, China, Taiwan and Mexico.

HID Replacement Range:

Replaces 70W Metal Halide

Warranty:

RAB warrants that our LED products will be free from defects in materials and workmanship for a period of five (5) years from the date of delivery to the end user, including coverage of light output, color stability, driver performance and fixture finish. RAB's warranty is subject to all terms and conditions found at rablighting.com/warranty.

Buy American Act Compliance:

RAB values USA manufacturing! Upon request, RAB may be able to manufacture this product to be compliant with the Buy American Act (BAA). Please contact customer service to request a quote for the product to be made BAA compliant.

Optical

BUG Rating:

B1 U1 G0

Electrical

Driver:

Constant Current, Class 2, 100-277V, 50/60 Hz., 4KV surge protection, 120V: 0.14A, 208V: 0.08A, 240V: 0.07A, 277V: 0.06A

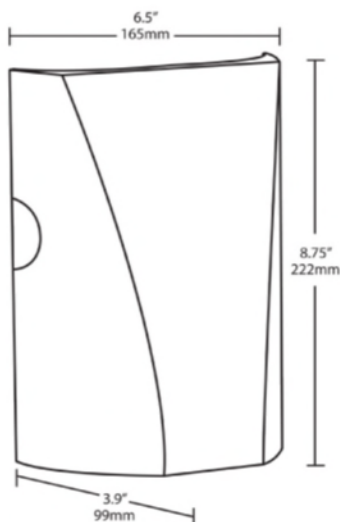
THD:

7.7% at 120V, 13.3% at 277V

Power Factor:

99.4% at 120V, 95.4% at 277V

Dimensions



Features

- Full cutoff, fully shielded LED wall pack
- Can be used as a downlight or uplight
- Contractor friendly features for easy installation
- 100,000-hour LED Life
- 5-Year, No-Compromise Warranty

Ordering Matrix

Family	Wattage	Color Temp	Finish	Driver	Options
SLIM	12				
	12 = 12W 18 = 18W 26 = 26W	Blank = 5000K (Cool) N = 4000K (Neutral) Y = 3000K (Warm)	Blank = Bronze W = White	Blank = Standard (120-277V) /D10 = Dimmable	Blank = No Option /PC = 120V Button /PC2 = 277V Button /LC = Lightcloud® Controller



Highland Solar

Vegetation Management Plan

Highland County, Ohio



CLEARING

Trees must be felled between October 1st and March 31st to maintain compliance with US Fish and Wildlife Service and OPSB requirements. Clearing areas depicted in Attachment 1. Dispose of woody debris by one or more of the following:

- Utilizing chips as perimeter stormwater BMP by constructing a low berm.
- Spreading in a layer not to exceed 1-inch depth and incorporate into the soil by disc or similar.
- Removing from the site, if necessary
- Burning, if authorized.

To minimize clearing of woody vegetation only those areas needed to be cleared for the solar array, as well as for access roads, and for shading purposes around the array, will be cleared. Where possible, unless required to be removed for the Highland facility, trees and woody shrubs will be left in place, except for hazardous trees that pose a threat to safety or equipment.

SEEDING

Two seed mixes have been prepared for this site. The Solar Array Mix is low growing and will be planted across most of the site, including all areas within the array. The secondary Pollinator Mix should be planted in designated areas outside the array.

In all areas, seeding prior to pile driving is preferred. In graded areas, additional soil preparation and amendments may be needed based on soil properties (soil sampling).

UNDISTURBED AREAS (NO CUT-FILL OR GRADING)

Directly drill seed the appropriate seed mix using an appropriate and calibrated no till or native seed drill. Drill seeding may be performed directly over existing vegetation, where cover is sparse.

DISTURBED AREAS AND TREE CLEARING AREAS

Redistribute stockpiled topsoil and drill seed the appropriate seed mix.

SEED MIXES

SOLAR ARRAY MIX			
Common Name	Scientific Name	# PLS/acre	% of Mix
Little Bluestem	<i>Schizachyrium scoparium</i>	2.01	20
Sideoats Grama	<i>Bouteloua curtipendula</i>	2.74	20
Virginia Wildrye	<i>Elmymus virginicus</i>	6.5	20
Autumn Bentgrass	<i>Agrostis perennans</i>	0.05	15
Prairie Junegrass	<i>Koeleria macrantha</i>	0.11	10
Red Clover	<i>Trifolium pratense</i>	0.95	10
Partridge Pea	<i>Chamaecrista fasciculata</i>	2.1	5
Total	--	14.5	100
Notes: Add 8 lbs Annual Ryegrass per acre to the above mix as a cover crop.			
# PLS= pounds Pure Live Seed, listed as drill seeding rates. Seeding applied by broadcast must be 2x the rate.			



POLLINATOR MIX *			
Common Name	Scientific Name	# PLS/acre	% of Mix
Canada Wildrye	<i>Elymus canadensis</i>	3.98	15.0%
Virginia wildrye	<i>Elymus virginicus</i>	6.81	15.0%
Sideoats Grama	<i>Bouteloua curtipendula</i>	1.60	10.0%
Little Bluestem	<i>Schizachyrium scoparium</i>	3.52	30.0%
Blanket Flower	<i>Gaillardia aristata</i>	0.23	1.0%
Smooth Penstemon	<i>Penstemon digitalis</i>	0.01	1.0%
Purple Prairie Clover	<i>Dalea purpureum</i>	0.13	1.0%
Golden Alexanders	<i>Zizia aurea</i>	0.17	1.0%
Common Milkweed	<i>Asclepias syriaca</i>	0.24	0.5%
Wild Bergamot	<i>Monarda fistulosa</i>	0.01	0.5%
Partridge pea	<i>Chamaecrista fasciculata</i>	1.41	2.0%
Purple Coneflower	<i>Echinacea purpurea</i>	0.29	1.0%
White clover	<i>Trifolium repens</i>	0.20	5.0%
Stiff Goldenrod	<i>Oligoneuron rigidum</i>	0.05	1.0%
Lanceleaf Coreopsis	<i>Coreopsis lanceolata</i>	0.14	1.0%
Black eyed susan	<i>rudbeckia hirta</i>	0.02	1.0%
Common sneezeweed	<i>Helenium autumnale</i>	0.02	1.0%
Prairie blazing star	<i>Liatris pycnostachya</i>	0.17	1.0%
Frost Aster	<i>Symphyotrichum pilosum</i>	0.01	0.5%
Plains coreopsis	<i>coreopsis tinctoria</i>	0.01	1.0%
Wild lupine	<i>Lupinus perennis</i>	0.66	0.5%
Blanket Flower	<i>Gaillardia aristata</i>	0.23	1.0%
Crimson clover	<i>Trifolium incarnatum</i>	1.63	8.0%
Indian blanket	<i>Gaillardia pulchella</i>	0.13	1.0%
Total	--	21.66	100.0%
Notes: Add 8 lbs Annual Ryegrass per acre to the above mix as a cover crop, seed mix composition subject to availability at time of planting. # PLS= pounds Pure Live Seed, listed as drill seeding rates. Seeding applied by broadcast must be 2x the rate.			

Attachment 1



**Weed Management Plan
for
Highland 300 Solar Facility**





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Figure 1 Area Site Map

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Appendix A Detailed Weed Fact Sheets



1 INTRODUCTION

Hecate Energy Highland, LLC has prepared this Weed Management Plan (WMP) for their Highland 300 solar field. The Highland 300 solar facility is in Highland County, Ohio. This WMP is designed to assist in the identification, and control of noxious and invasive weeds. This WMP details the plans and procedures that will be implemented to identify and manage noxious and invasive weeds within the project area.

This WMP is comprised of six sections. Section 1.0 is this introduction. Section 2.0 is the site description Highland 3 solar facility. Section 3.0 identifies the purpose of this WMP. The Integrated Weed Management Plan (IWM) is in Section 4.0 with recommendations identified in Section 4.2. The following IWM plan has been created for the Highland 2 solar facility and will be updated periodically throughout the life of the solar facility.

2 SITE DESCRIPTION

The Highland 300 solar facility is in southwest Highland County and is approximately 1 mile northeast of Buford, Ohio along Highway 138. Currently the site is at the beginning of construction, which is anticipated to last for 12 months. Once construction is completed operations and maintenance will continue throughout the life of the project which is anticipated to last for 30 years. The solar facility has mostly been planted to a grass/forb mixture under the arrays. There are multiple access roads, inverter pads and storm water basin, which will be maintained throughout site operations. Site location and layout are provided in Figure 1.

3 PURPOSE

The purpose of this WMP is to provide guidelines for Noxious and Invasive weeds management within the Highland 300 solar facility and to promote a vibrant and self-sustaining vegetative community. This plan implements integrated weed management (IWM) options that will minimize the spread of noxious and invasive weeds while promoting the successful revegetation of preferred species. Monitoring, mapping, preventative measures and IWM control measures will ensure that the goal of a self-sustain vegetative community is achieved. This is a living document and will be updated as needed to successfully manage weedy species at the Highland 300 solar facility

Figure 1. Area Site Map





4 INTEGRATED WEED MANAGEMENT PLAN

The Highland 300 solar facility WMP was developed based on an IWM approach. This plan is intended to locate and identify weed populations, develop a treatment plan for noxious and invasive weed management and then implement prescribed treatment plans at appropriate timings to ensure adequate control of the intended species. Through the IWM approach it is understood that a healthy and productive vegetative community system is the most effective weed management tool available.

The Highland 300 solar facility plan was developed based on noxious and invasive weeds identified during site assessment visits during the summer of 2021. Subsequent visits will be conducted with the information evaluated by an agronomist to determine the best management options available to address identified noxious and invasive weed populations on a site-specific basis. Noxious and invasive weeds will be evaluated for presence on and immediately adjacent (roads, and fence lines). If the noxious and invasive weeds are discovered during the site visits management may be adjusted to account for the native populations. The IWM includes the following management options:

- herbicide application,
- over seeding of desired species,
- hand pulling,
- clipping and collecting seed heads,
- mowing, tillage,
- allowing winter kill or
- other management techniques

4.1 WEED IDENTIFICATION

To manage the presence of noxious and invasive weed species a series of tasks will be conducted. The tasks will include in-field monitoring, documentation of in-field findings, data review and evaluation by an agronomist and creation of treatment/management recommendations for affected area and development of site-specific plans when IWM protocols dictate treatment is required.

Periodically until the site is decommissioned, the solar facility will be monitored for Noxious and Invasive weeds. The monitoring will be conducted by site personnel trained in noxious and invasive species identification. If noxious and invasive weeds are identified during a monitoring event the weed(s) present and general location will be recorded. This information will be provided to the supervisors to determine if treatment action is required. If treatment is not deemed necessary, the location of the weeds will be monitored at least once per quarter for the remainder of the year. During the quarterly monitoring event treatment options will be evaluated to determine if IWM methods should be used. In addition, the area where the weeds are present will be presented to all site personnel and traffic limited through the identified area. In addition, if any adjacent landowner notifies Highland 300 of a weed concern, that area identified will be specifically monitored and a formal IWM Plan, for that area, will be developed by a weed scientist, rangeland ecologist, or agronomist with experience in weed management.



4.1.1 Identified Weeds Summer 2021

Highland 300 was made aware of possible noxious and invasive weeds growing on the solar facility. The site was reviewed by a professional and it was determined that multiple areas had the existence of noxious and invasive water hemp and palmer amaranth. The pressure rating observed during the monitoring event ranged from 1 to 5 depending on the location. Most of the site fell into a pressure rating of 1 and 2. Due to the sporadic nature of the weeds, presence of newly germinated desired forbs and newly planted grass management it was determined through IWM approach that mowing was the preferred treatment method. Although it is known that mowing will not eradicate the species of concern this option was chosen due to presence of young immature grasses and forbs and the broadcast application of herbicides that would be required across the site. Another component of the IWM protocols is that the site will be monitored again in the spring of 2022 to determine if further treatment is necessary

Pressure ratings are estimated as:

- 1 = Rare
- 2 = Mild
- 3 = Moderate
- 4 = Moderately severe
- 5 = Severe

4.1.2 Noxious and Invasive Weeds Summer 2022

Noxious and Invasive Weeds as identified in ODA 901:5-37-01 and identified during the Summer 2021 monitoring event included:

- Water Hemp (*Amaranthus tuberculatus*)
- Palmer amaranth (*Amaranthus palmeri*)

4.2 RECOMMENDED MANAGEMENT

The recommended management of noxious and invasive weeds are determined by many factors including:

- | | |
|--------------------------|-----------------------|
| • Weed Pressure | • Weed physiology |
| • Adjacent weed pressure | • Climatic conditions |
| • Vegetative success | • Timing |
| • Adjacent crops | • Other |
-

Management options and preferred control methods, for weeds identified within the proposed disturbance areas have been developed based on the detailed weed fact sheets included in Appendix A as well as experience and agronomic knowledge.

4.2.1 2021 Recommendations

Based on the survey conducted in Summer 2021 and factors listed above the following general recommendations have been created for the Highland 300 Solar Facility:

- 1) The variable populations of water hemp and palmer amaranth within the Highland 300 solar facility and the newly planted grass/forb mixture makes mowing the preferred option.
- 2) Mowing should occur prior to seed head development and maturation.
- 3) Follow-up monitoring of the fields should be conducted in the early summer of 2022 to determine if further control measures are required.

5 SITE-SPECIFIC WEED CONTROL PLANS

No site-specific weed plans have been developed for the Highland 300 solar facility at this time. If site-specific weed plans are deemed necessary, they will be developed as appropriate.

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Summary: Correspondence Regarding Condition Compliance electronically filed by
Mr. Michael J. Settineri on behalf of Hecate Energy Highland LLC