

Harvey Solar Project



OPEN ROAD
RENEWABLES

June 23, 2021

Organization Structure and History

- Open Road is a US-based developer of utility-scale solar energy projects
- Open Road focuses on larger solar projects, such as the 200-Megawatt (“MW”) Hillcrest Solar Project now under construction in Brown County, OH and the 150-MW Willowbrook Solar Project in Highland County, OH
- Open Road’s partner is Eolian, one of the most experienced energy investors in the U.S. with close to 16,000 MW of operating wind and solar energy projects
- Harvey Solar, a subsidiary of Open Road and Eolian, will be the “Applicant” in the Ohio Power Siting Board permitting process in Late July of 2021



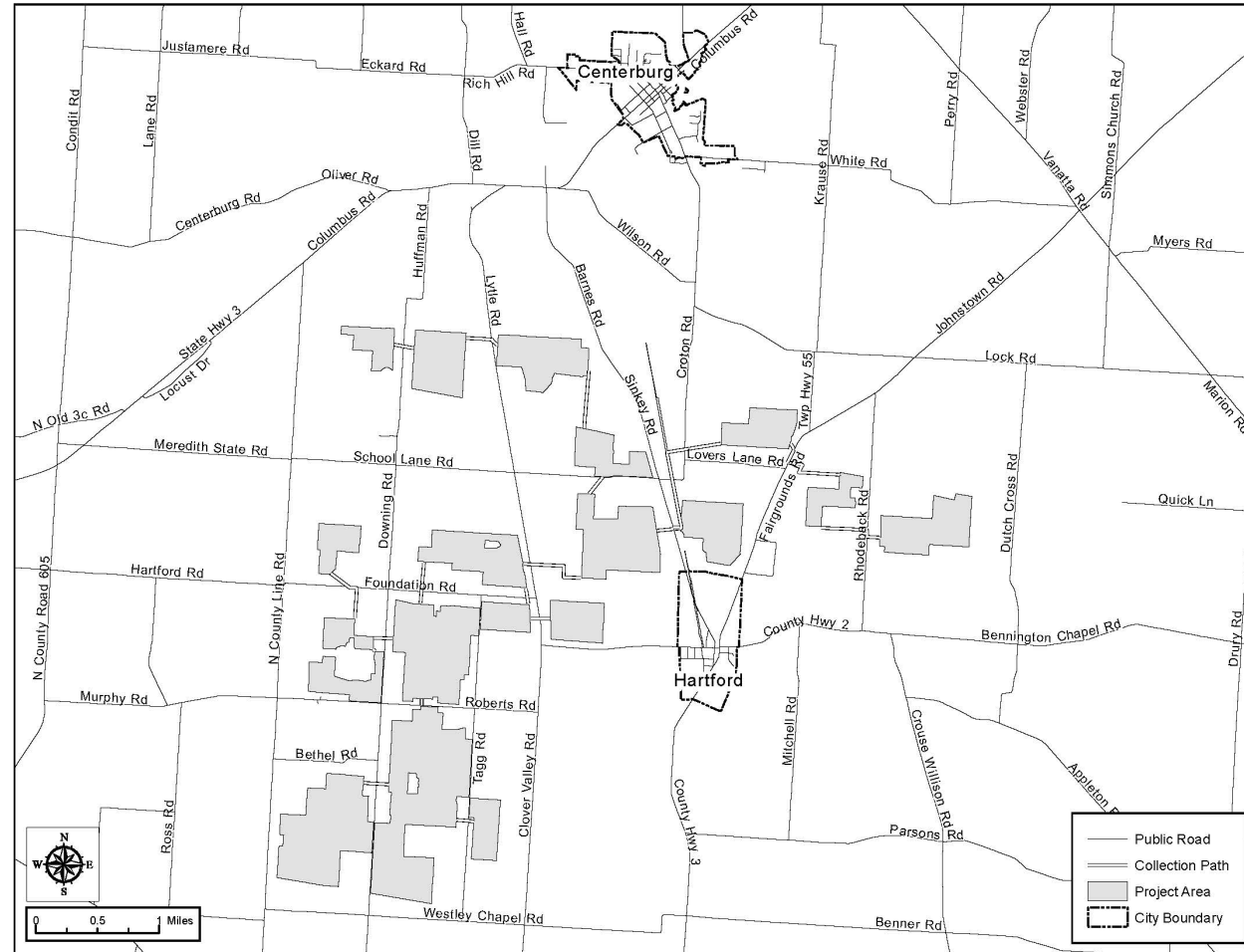
Project Overview

Harvey Solar is a proposed photovoltaic (“PV”) electric generation facility located in Hartford Township, Licking County. The Project will occupy about 2,800 acres of agricultural land for a period of up-to 40 years

Construction of the facility is expected to begin as early as late 2022 and will take approximately 12 months to complete.

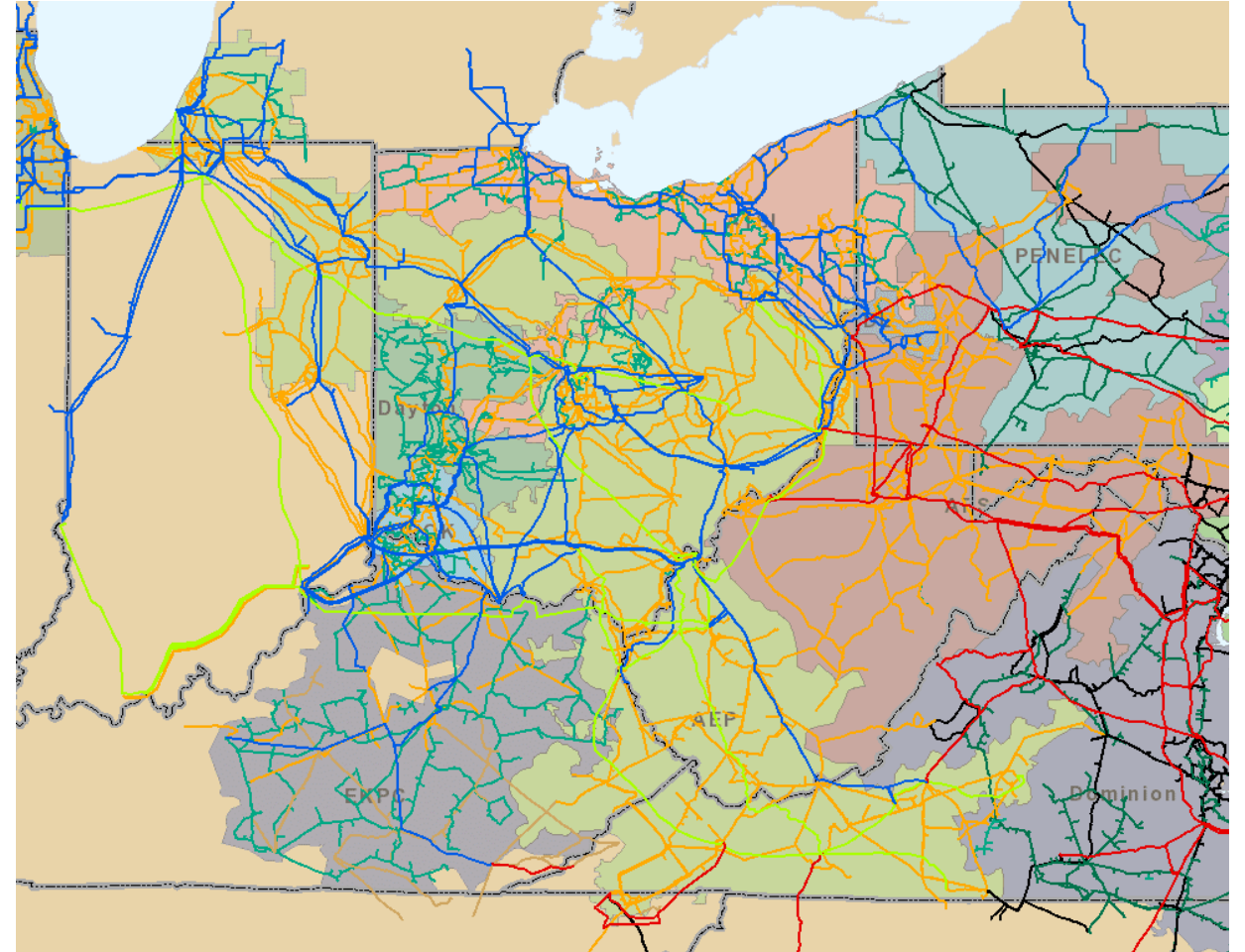
Project Data:

- Technology: Solar PV
- Foundation: Single-Axis Trackers mounted on Driven steel pilings
- Interconnection: AEP 138kV Centerburg Substation on Clover Valley Road
- Nameplate Capacity: 350 MW
- Permit Submission: July of 2021
- Potential Construction Start: 4th Quarter 2022



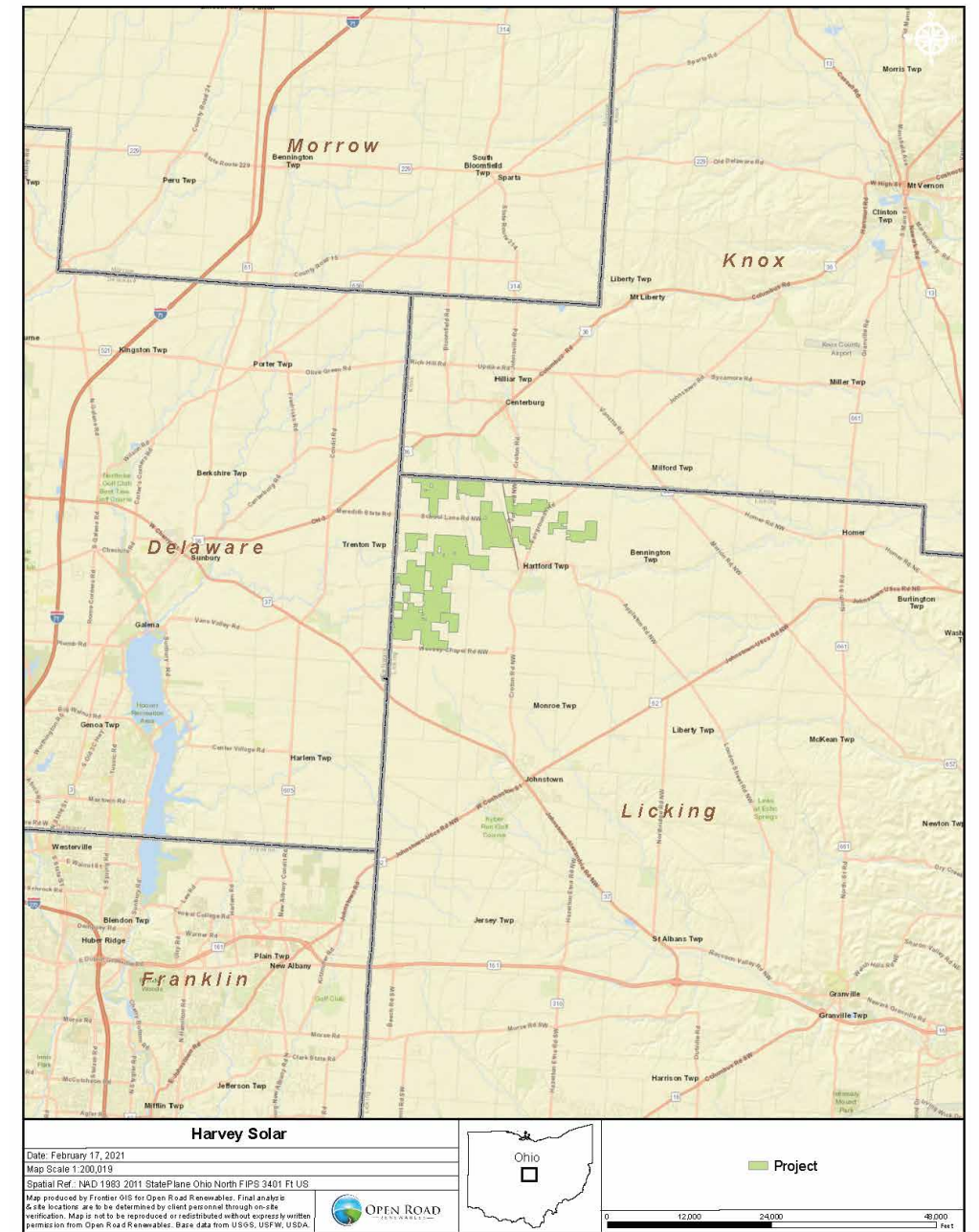
Why Ohio?

1. Solar technology is cost-competitive with most traditional energy sources
2. Ohio has a robust electric transmission network
3. Central Ohio has growing demand for electricity and especially for renewable energy
4. Ohio has an abundance of relatively flat, previously disturbed land – ideal for solar



Why Hartford Township?

- Licking County is in close proximity to end-users of electricity
- Hartford Township hosts several high voltage transmission lines with available capacity
- Plentiful land that is suitable for solar without significant impacts to ecological resources



Voting Board Members



Jenifer French, Chair

Jenifer French was appointed to the Chair of the PUCO by Governor Mike DeWine in 2021.

PUCO

Share



Gregory Murphy, P.E.

Ohio Gov. Mike DeWine nominated Gregory Murphy as the public member of the Ohio Power Siting Board.

Public

Share



Mary Mertz, Director

Ohio Gov. Mike DeWine nominated Mary Mertz as Director of the Ohio Department of Natural Resources.

Ohio DNR

Share



Stephanie McCloud, Director

Stephanie McCloud is Director of Health for the Ohio Department of Health.

ODH

Share



Laurie Stevenson, Director

In Jan. 2019, Governor Mike DeWine appointed Laurie A. Stevenson as director of the Ohio EPA.

Ohio EPA

Share



Lydia Mihalik, Director

Lydia Mihalik is the director of the Development Services Agency and was appointed by Governor DeWine

ODSA

Share



Dorothy Pelanda, Director

Dorothy Pelanda was appointed as the 39th Director of the Ohio Department of Agriculture by Governor

ODA

Share

Non-Voting Legislative Members



Jay Hottinger, Senator

Senator Jay Hottinger represents the people of Ohio's 31st Senate District, which includes all of Li

Ohio Senate

Share



Dick Stein, Representative

Dick Stein is currently serving his third term as state representative. He represents the 57th Ohio

Ohio House o...

Share



Jeffrey Crossman, Representative

Representing Parma, Brooklyn Heights, Cuyahoga Heights, and part of Southwest Cleveland.

Ohio House o...

Share



Sandra Williams, Senator

State Senator Sandra Williams, who represents Ohio's 21st Senate District, is currently serving her

Ohio Senate

Share

Next Steps – The Ohio Power Siting Board

The Ohio Power Siting Board's mission is to support sound energy policies that provide for the installation of energy generation and transmission infrastructure for the benefit of Ohio citizens, promoting the state's economic interests, and protecting the environment and land use.

- This is a state-run process involving all relevant state agencies
- The process is lengthy, thorough, and transparent
- ***Significant opportunity for local involvement in the process***

Permit Timeline

January to May 2021

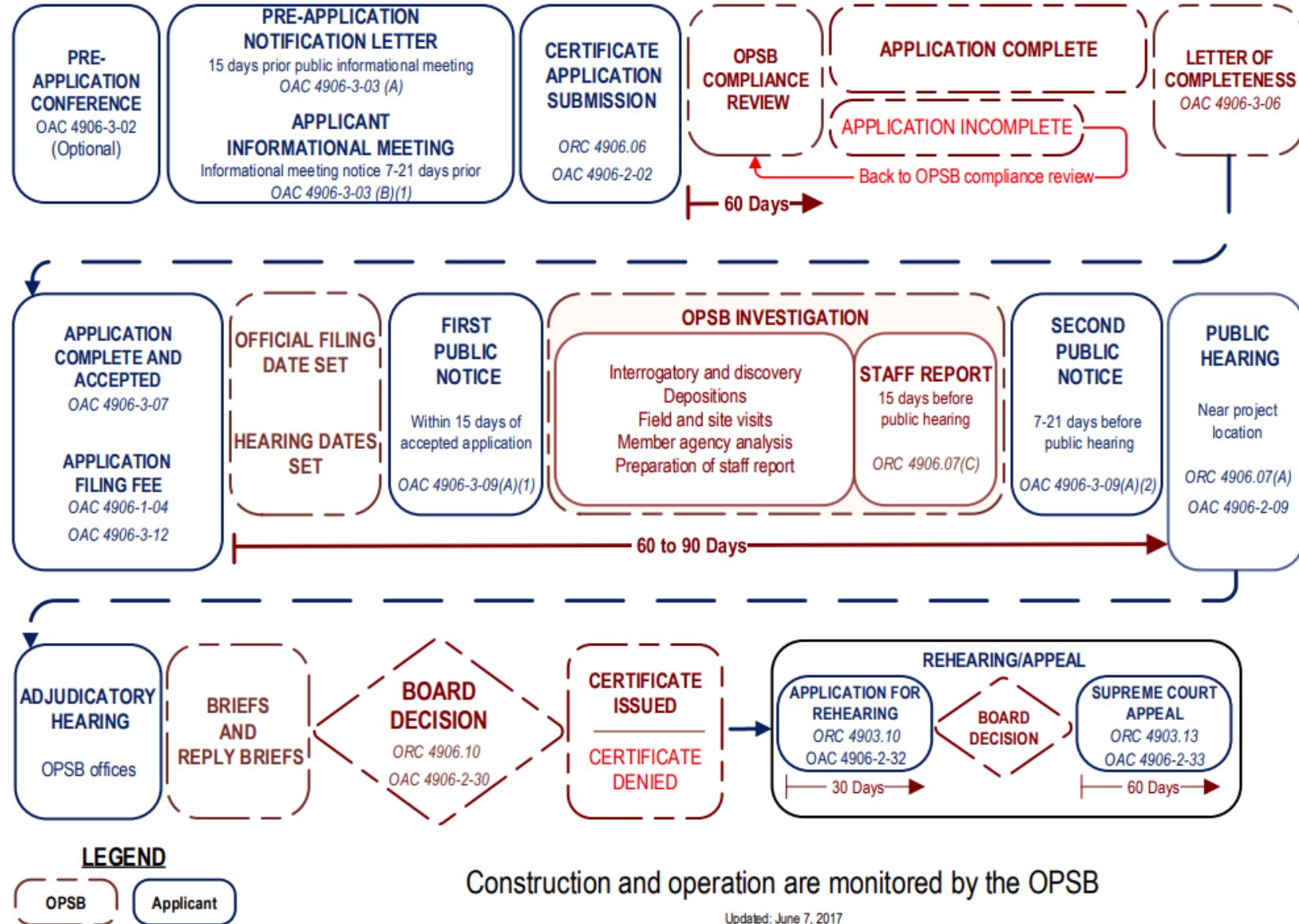
- Harvey Solar has met with OPSB Staff to present an overview of the project
- Harvey Solar has been working to complete key field studies

June 2021

- Field surveys complete
- Harvey Solar office opens in Croton
- June 21, 22, 23rd meetings at Fairgrounds

July 2021

- Public Information Meeting on July 14th at the Fairgrounds
- Harvey Solar will submit its permit Application to the OPSB



OPSB Application Contents

- Harvey has completed numerous Civil, Cultural, Socioeconomic, Transportation, Ecological, and Interconnection related studies and plans
- These studies will form the basis for Harvey’s Application and will inform its design
- The full application, including all plans and studies, will be readily available to the public for review and comment

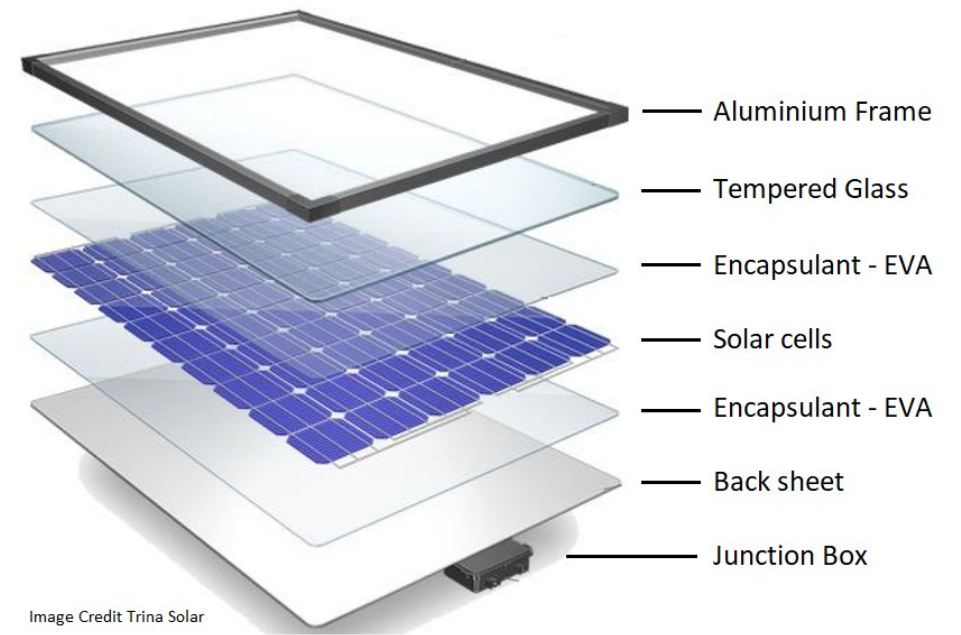
Civil	Cultural	Socioeconomic / Transportation	Environmental / Ecological	Interconnection
Drainage Assessment	Cultural + Historical Desktop Study	Economic Impact Study	Wildlife Report	Feasibility Study
Culvert Inventory	Visual Resources Assessment	Transportation / Route Study	Wetland Delineation	System Impact Study
Decommissioning Plan	Phase I Workplans		Vegetation Management Plan	Facilities Study
Well Survey & Groundwater	Phase I Architecture Survey		Glint & Glare Analysis	Interconnection Services Agmt
Prelim Geotech Investigation	Phase I Archeology Survey		Sound Level Assessment	
Preliminary Design			Landscaping Plan	
			USACE Jurisdictional Determination	

What is Solar PV?

Solar Panels or Modules

Solar photovoltaic (PV) is a mature, safe technology used to produce energy in many settings such as at homes, schools, farms, or businesses

- Solar PV harnesses the power of the sun through the “photoelectric effect” of photons interacting with a conductive material (silicon or thin film substrate) to produce electricity
- Solar projects use several industry standard solar panel varieties: Crystalline, Crystalline Bi-facial, or Thin Film
- Solar panels are composed of layers of tempered glass, encapsulant, solar cells, and a back sheet
- In the event of cracking or breakage, solar panels maintain their integrity (similar to a car windshield) and contain nothing that can leak



Common Components of a Solar Facility

- Steel pilings are driven into the ground using GPS guided pile-drivers
- No cement or foundations are needed
- Piling embedment depth is typically 6 – 10' below ground surface (depending on local conditions)
- Pilings are sited to avoid drain tile and sensitive ecological features



- Single-Axis tracking arrays follow the sun's path from east to west
- Racking is affixed to the driven pilings and is turned by a motor powered by the array
- Racking intelligently stows in adverse weather conditions to avoid damage to itself or the solar modules
- Modern solar racking and modules are designed to withstand winds upwards of 140 MPH and large hail

Common Components of a Solar Facility

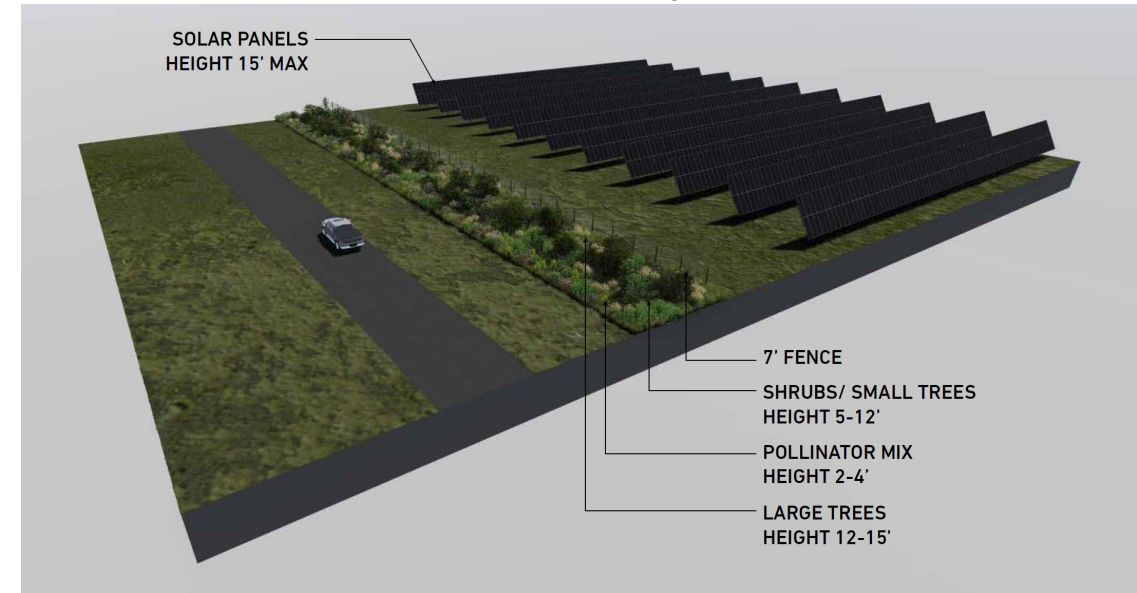
- Central Inverters convert electricity from DC (what is produced by the panels) to AC (like we use in our homes)
- Inverters and the associated medium voltage transformers are the only equipment on a solar project that produce noise during operation
- Harvey Solar is locating all inverters a minimum of 500' from residences or the distance at which there is no discernable increase in sound – whichever is greater



- All DC and AC electric cables are buried 2 – 4' below ground
- DC electric cables are low voltage and bring the power from the modules to the inverters
- AC electric cables are medium voltage (34.5kV) and bring the power from the inverters to a central collection station located on Clover Valley Road
- Drain tile will be avoided, re-routed, repaired, or replaced depending on the location and depth of a given trench

Common Components of a Solar Facility

- The National Electric Code mandates that solar facilities have a minimum 7' tall fence
- Harvey Solar will use a wildlife friendly, agricultural-style fence on the perimeter of the solar arrays
- All landscaping will be located between the fence and neighboring properties



- The entire fenced area of the solar facility will be vegetated except for gravel access roads
- The perimeter of the project fence will host a 15 – 25' wide buffer of bushes, trees, and pollinator habitat
- Harvey Solar works with MKSK, a leading Columbus-based landscaping firm

Operational Impacts

- No pollution
- No odor
- No dust
- No discernable movement
- Quiet
- Not operated at night
- Minor traffic
- Minimal light



Removal & Return to Farming

At the end of the Project's 40-year life, the solar project will be decommissioned, and land restored to its current agricultural condition.

As part of its OPSB submission, Harvey will submit a preliminary Decommissioning Plan that describes:

- Bonding to ensure funds are available for decommissioning and restoration
- Removal of equipment from the site
- Removal and decompaction of roads
- Restoration of agricultural land to substantially its pre-solar condition



Common Myths About Utility-Scale Solar

- **Solar panels are toxic and will pollute soil and groundwater**

- Panels contain nothing that can leak or leach and are constructed with layers of glass and encapsulant - preventing water intrusion in the event of damage
- In the US, panels undergo the EPA's Toxicity Characteristic Leaching Procedure to allow landfill disposal. People often mistake these results for the operational safety

Information Resource: "Health and Safety Impacts of Solar Photovoltaics"

- **Solar PV facilities kill birds**

- Frequently quoted statistics refer to solar thermal, which concentrates the sun's energy via an array of mirrors to generate heat – not how solar panels work

- **Solar causes a "heat island" effect in the local area**

- There is no expected increase in temperature with the planting and maintenance of vegetative ground cover
- Frequently cited scientific reports focus on desert landscapes, rooftops, and arrays with gravel or bare ground

Common Myths Cont'd.

- **Solar doesn't create jobs**

- Careers for most tradespeople are comprised of countless projects. Fewer projects mean less room in that career field for more workers.
- Solar directly and indirectly supports local suppliers of project materials and services

- **Land cannot easily be returned to farming after solar**

- There is no research showing solar has negative long-term impacts on farmland
- Extensive research exists regarding the benefits of leaving land fallow, CRP, cover crops, no-till, and improving soil health – all of which is comparable to the low-impact nature of solar

Information Resource: "Balancing Agricultural Productive with Ground-Based Solar Photovoltaic Development"

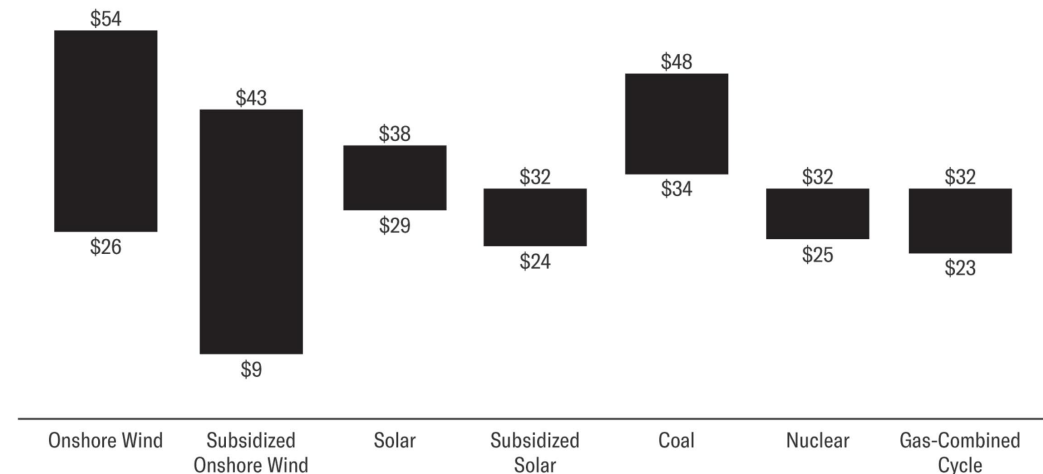
- **Solar doesn't work in Ohio/isn't economical**

- Solar produces "on-peak" electricity close to the end-users of electricity - no electricity source is "on" 24/365 which is why a centralized authority balances the mix and delivery of electricity across Ohio and neighboring states
- With or without incentives, solar is competitive due to continued advances in technology

Information Resource: "Lazard LCOE Analysis 2020"

Energy Cost Comparison

Dollars per megawatt hour



Source: Lazard, Levelized Cost of Energy Analysis 2020

Local Benefits

The PILOT Program is administered by the Ohio Development Services Agency and is designed to bring investment, revenue and jobs to the county while ensuring energy projects have a positive impact on local services.

- **Workforce Development** - The PILOT program requires that 80% of construction employees must live in Ohio—a potential impact of hundreds of local jobs
- **Economic and Educational Benefits** - Over \$2.4 million in revenue per year ($\$7,000/\text{MW}/\text{Year} \times 350 \text{ MW} = \$2,450,000$) to local taxing jurisdictions
- **Additional Revenue for the General Fund** – Harvey would also pay an additional \$700,000/year ($\$2,000/\text{MW}/\text{YR} \times 350 \text{ MW} = \$700,000$)
- **Emergency Response Training** – Harvey will be required to conduct ongoing training and provide necessary equipment for first responders
- **Road Use and Maintenance Agreement** – Harvey will be required to negotiate a bonded RUMA committing to improve and repair roads impacted by project activities during construction, operation, and decommissioning
- **University or Vocational Support** – Harvey will be required to work with a college or vocational school, providing funding, apprenticeship opportunities, or other kinds of support

Annual Revenue*	Current Revenue	Projected Revenue w/ PILOT
\$/Acre	\$40/ac	\$1,500/ac
Total	\$84,000	\$3,150,000

*assuming 2,100-acre array area with an average CAUV tax rate of \$40/acre and a \$9,000 total PILOT



How Harvey Solar Addresses Concerns

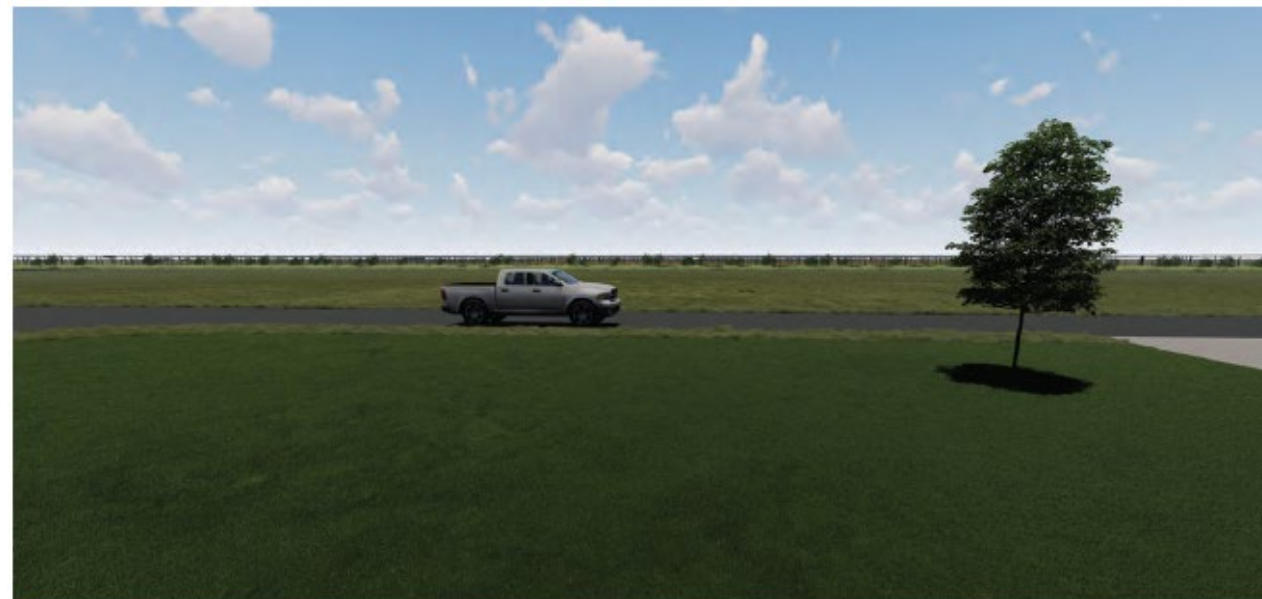
- Project Outreach and Communication
- Appearance and Landscaping
- Setbacks from Homes
- Drain Tile
- Safety of Construction Methods

Outreach and Communication

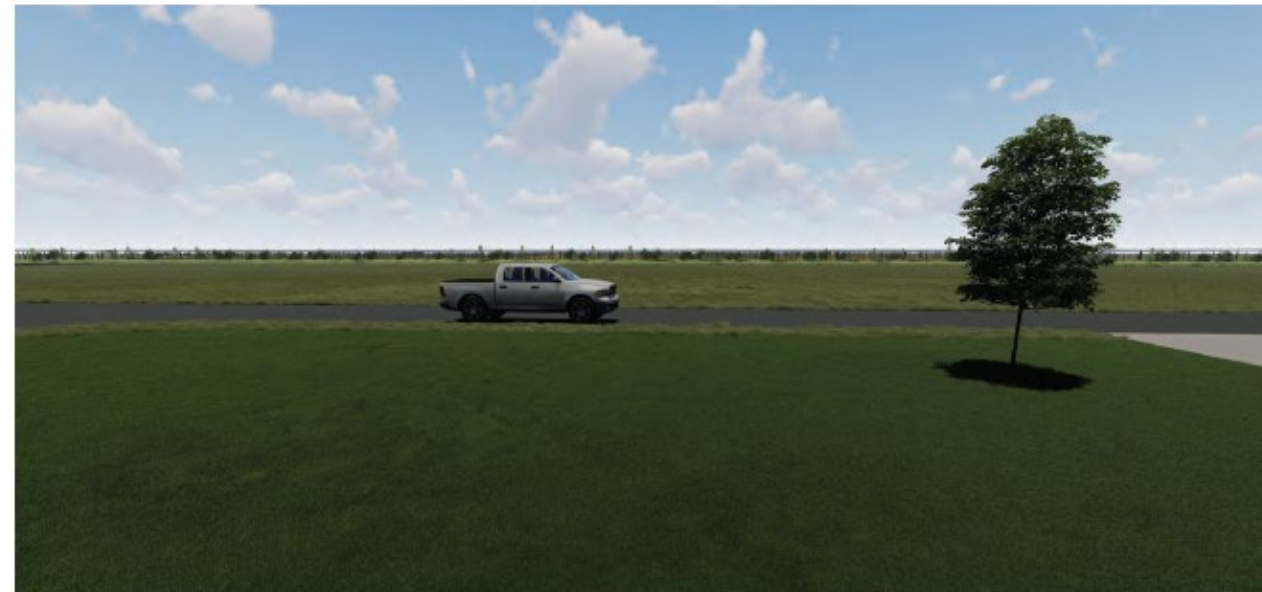
- Harvey Solar holds weekly “virtual” Q+A sessions
- Harvey Solar has opened an office in Croton – contact us to set up a time to meet
- Meetings both in Croton to provide updates regarding the project
- The OPSB requires a Public Information Meeting prior to filing an application
- The OPSB holds a Public Hearing following its investigation to solicit input and feedback from all stakeholders

Appearance and Landscaping

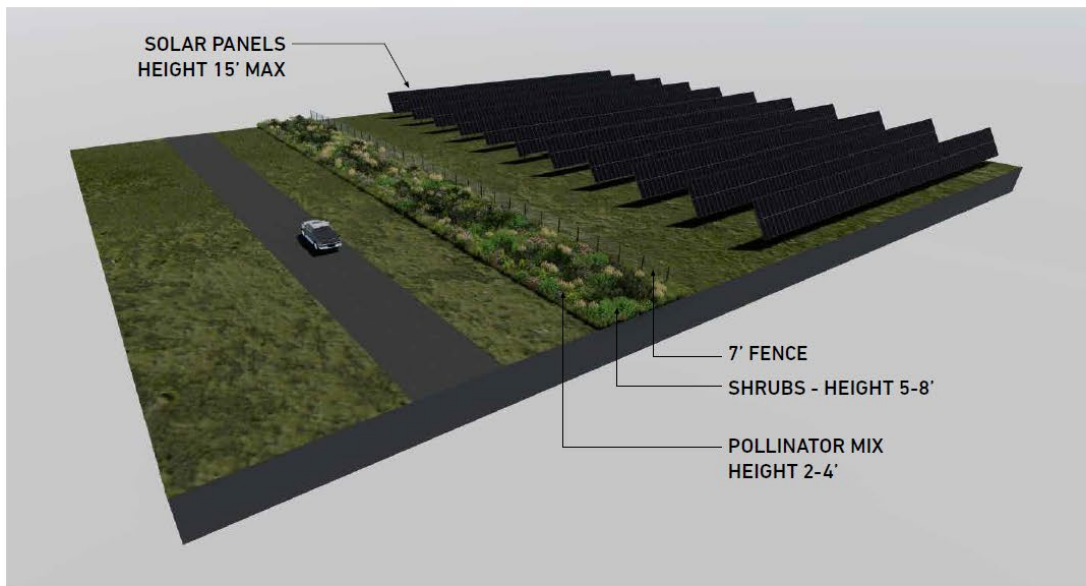
- Project will keep solar panels below 15' in height – most designs are 12' or less – and represent the tallest structures in the project area outside the substation
- Project has worked (and will continue to work) with a Columbus-based landscaping architecture firm – MKSK – to design perimeter landscaping
- Most nearby parcels with a home have received and provided resources to review containing:
 - An overview map of the landscaping in their area
 - Diagram of the proposed plantings
- Landscaping is installed during construction and maintained by the Project during operation



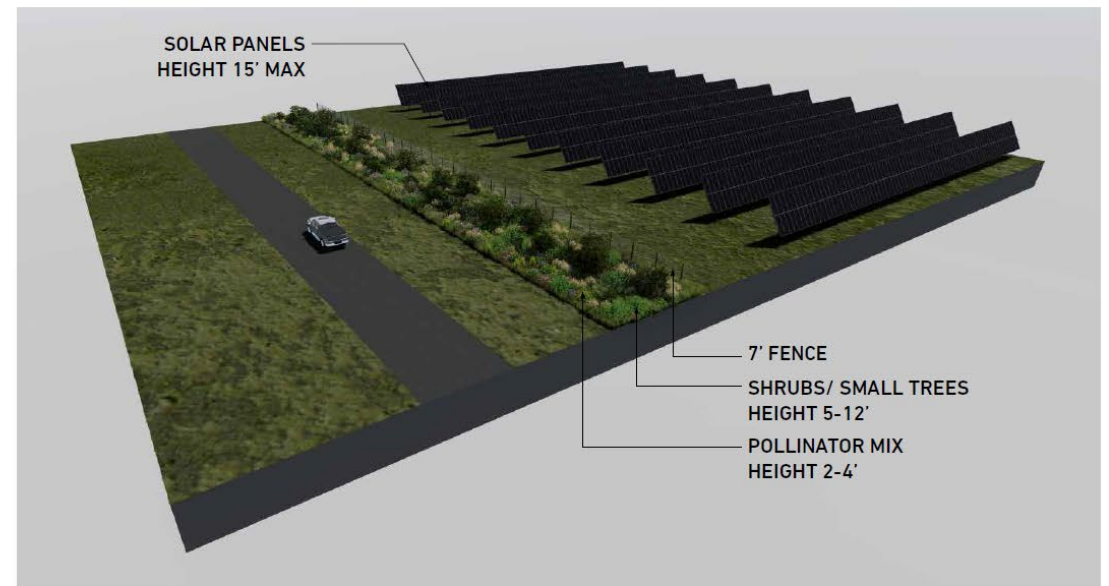
MEDIUM DENSITY PLANTING - POLLINATOR MIX AND LARGE SHRUB / SMALL TREES
SOLAR PANELS FROM OVER A 300' DISTANCE ON A NORTH-SOUTH ROAD. PANELS SHOWN FLAT AT MINIMUM 9' HEIGHT.



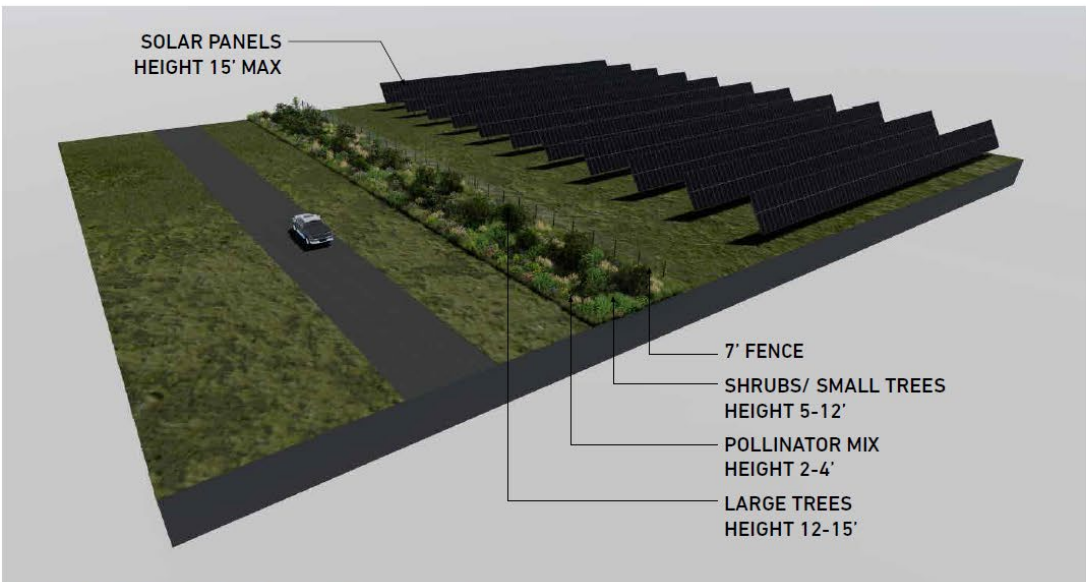
HIGH DENSITY PLANTING - POLLINATOR MIX, LARGE SHRUB / SMALL TREES AND LARGE TREES
SOLAR PANELS FROM OVER A 300' DISTANCE ON A NORTH-SOUTH ROAD. PANELS SHOWN FLAT AT MINIMUM 9' HEIGHT.



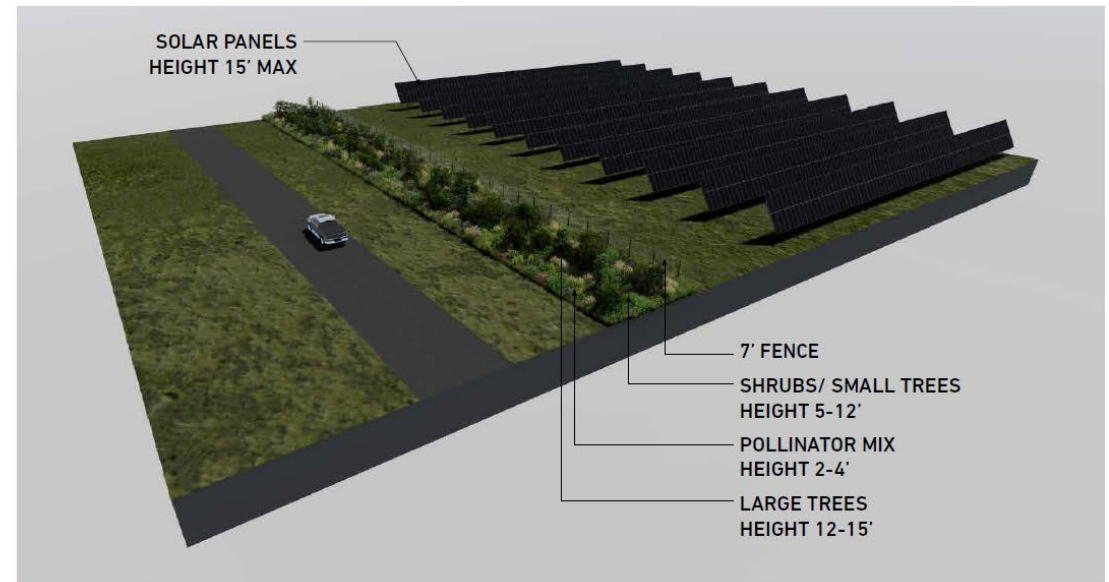
**5 YEAR LOW DENSITY PLANTING -
POLLINATOR MIX**



**5 YEAR MEDIUM-LOW DENSITY PLANTING -
POLLINATOR MIX AND LARGE SHRUB / SMALL TREES**



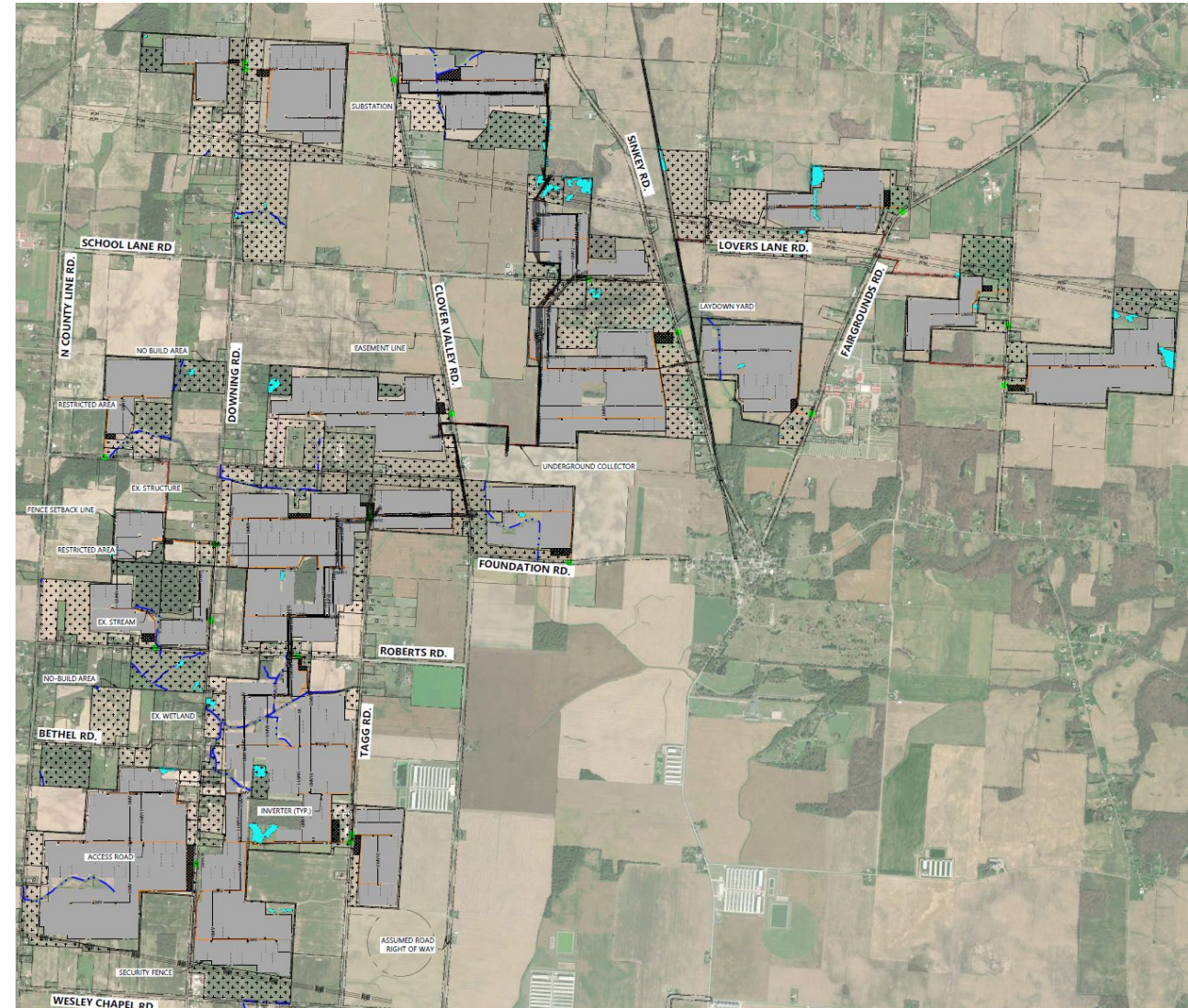
**5 YEAR MEDIUM-HIGH DENSITY PLANTING -
POLLINATOR MIX, LARGE SHRUB / SMALL TREES AND LARGE TREES**



**5 YEAR HIGH DENSITY PLANTING -
POLLINATOR MIX, LARGE SHRUB / DENSE SMALL TREES AND LARGE TREES**

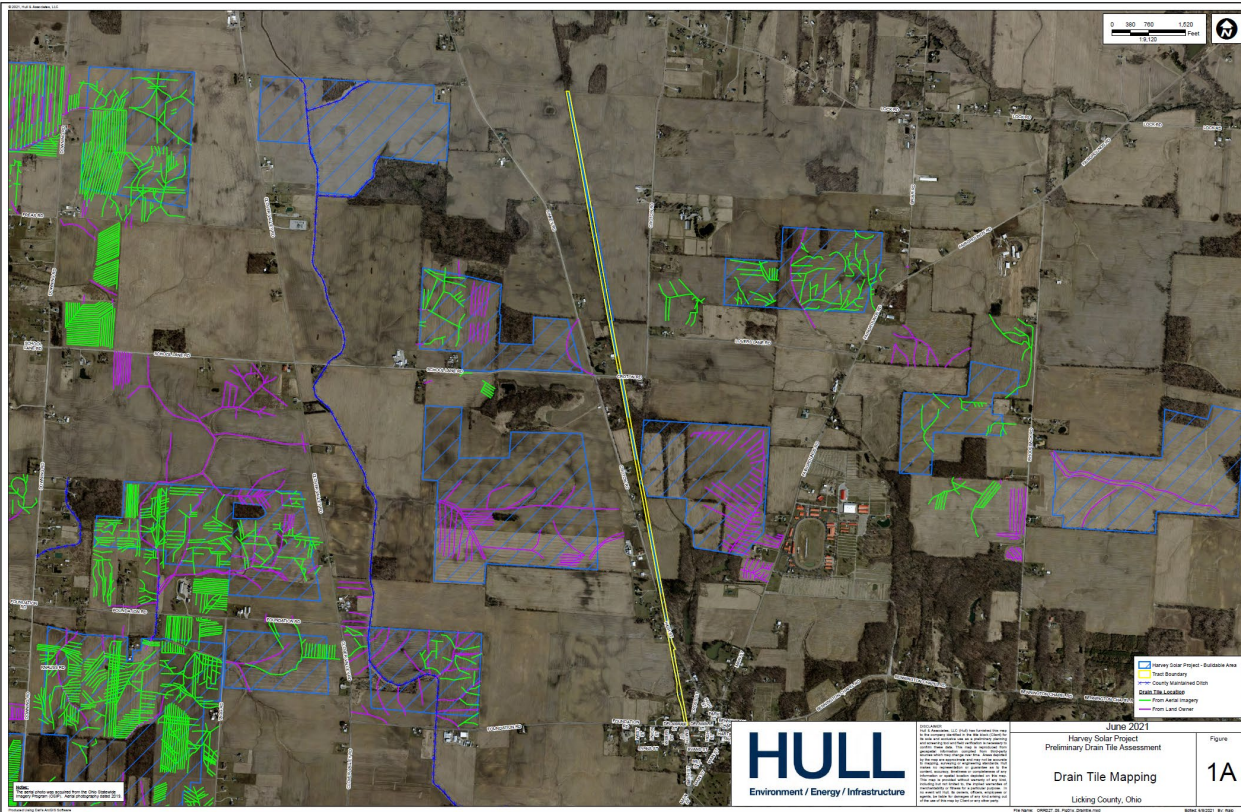
Setbacks from Homes

- Harvey Solar is designing the Project to adhere to the following minimum setbacks:
 - At least 150' from any home
 - At least 25' from property lines
 - At least 25' from the edge of the Public Rights of Way
 - At least 500' from any home to a central inverter
- All neighboring parcels with a home were notified of the distance between their home and the nearest fence
- Setbacks and project location are detailed in Application's preliminary site plan and Project's website



Drain Tile

- Application will include a “Preliminary Drain Tile Assessment”
- Project will be reaching out to neighboring farms for tile information
- Harvey will commits – and will be required by the OPSB – to prevent impacts to neighboring property owners
- Tile identified prior to and during construction will be avoided, re-routed, or repaired as necessary
- Shared main tile within the project area that fails during operation will be repaired to avoid impacts to neighboring property owners



Safety of Construction Methods



STABLE AT FLAT STOW Nextracker's 2P NX Gemini tracker—shown here at the National Renewable Energy Laboratory's (NREL) Flat Irons Campus for wind testing in Boulder, Colorado, U.S.A.—incorporates self-locking linear actuators at each foundation to ensure stability against dynamic wind effects.

- Solar modules are designed to withstand large hail, high winds, and extreme temperature swings
- Piling embedment depth is based upon analysis local soil and weather conditions, racking/module choice and configuration
- Racking and module configurations are designed to withstand winds of up to 140 MPH and adjust to optimal stowage conditions prior to wind/hail events

Next Steps and Resources

- You will soon receive notice of a Public Information Meeting
 - Open House-style meeting with Harvey Solar staff, OPSB staff, and outside experts on hand to answer questions
- Virtual Office Hours
 - Continuing through the OPSB process every Friday
- In-Person Meetings at Croton Office
 - Reach out to us at: Harvey@openroadrenewables.com
- If you have questions about the OPSB permitting process:
 - Learn more on their website: <https://opsb.ohio.gov/wps/portal/gov/opsb/about-us/resources/public-participation>
 - Follow OPSB on Facebook: <https://www.facebook.com/OhioPSB>
 - Email OPSB Staff with questions: contactOPSB@puco.ohio.gov

Questions?

Email: Harvey@openroadrenewables.com

Website: www.harveysolar.com

OPSB: <https://opsb.ohio.gov/wps/portal/gov/opsb/>

Facebook: <https://www.facebook.com/Harvey-Solar-Project-105951714803123>