Bricker Graydon LLP
100 South Third Street
Columbus, OH 43215
614.227.2300 Office
www.brickergraydon.com

Kara H. Herrnstein
Partner
614.227.4908 Direct Phone
kherrnstein@brickergraydon.com

September 1, 2023

Via Electronic Filing

Ms. Tanowa Troupe
Administration/Docketing
Public Utilities Commission of Ohio
180 East Broad Street, 11th Floor
Columbus, OH 43215-3793

**Re: Powell Creek Solar, LLC,
OPSB Case No. 20-1084-EL-BGN**

Dear Ms. Troupe:

On Tuesday, August 15, 2023, Powell Creek Solar held a community night in Miller City to inform the public about the upcoming start of construction on the Powell Creek Project. Although another community night was not a requirement of the OPSB process, the Powell Creek Solar team felt it was important to provide the community with information about the Project and to hear and respond to any of their questions or concerns. In preparation for the meeting, Powell Creek Solar sent out over 450 invitations to residents in the surrounding community, local government officials, and first responders.

There were approximately 200 attendees at the community night, representing a variety of interests. Attendees were provided an initial opportunity to ask questions about the project and then to view and ask questions about a series of posters showing topics such as area land use, socioeconomic effects, the project layout, the construction process, and simulations of the appearance of the Facility after construction. Copies of these posters can be found as an attachment to this filing.

Attendees expressed an interest in a variety of areas, including the following:

- Property values
- Payment in Lieu of Taxes (PILOT)
- Wastewater treatment facility
- Process for project repairs
- Severe weather and facility design
- Coordination with emergency services

- Socioeconomic effects
- Agricultural use versus solar use
- Project interaction with water wells
- Road use – RUMA, road repairs, maintenance during construction
- Fencing and screening
- Complaint and resolution process
- Construction schedule – overall and daily hours of construction
- Project sound emissions
- Project visibility
- Future residential development
- Public interaction

The meeting started at 5:30 p.m. and concluded at approximately 8:00 p.m. Please contact me if you have any questions.

Sincerely,

Kara H. Herrnstein

Attachments

Cc: Jonathan Pawley (w/Attachments)

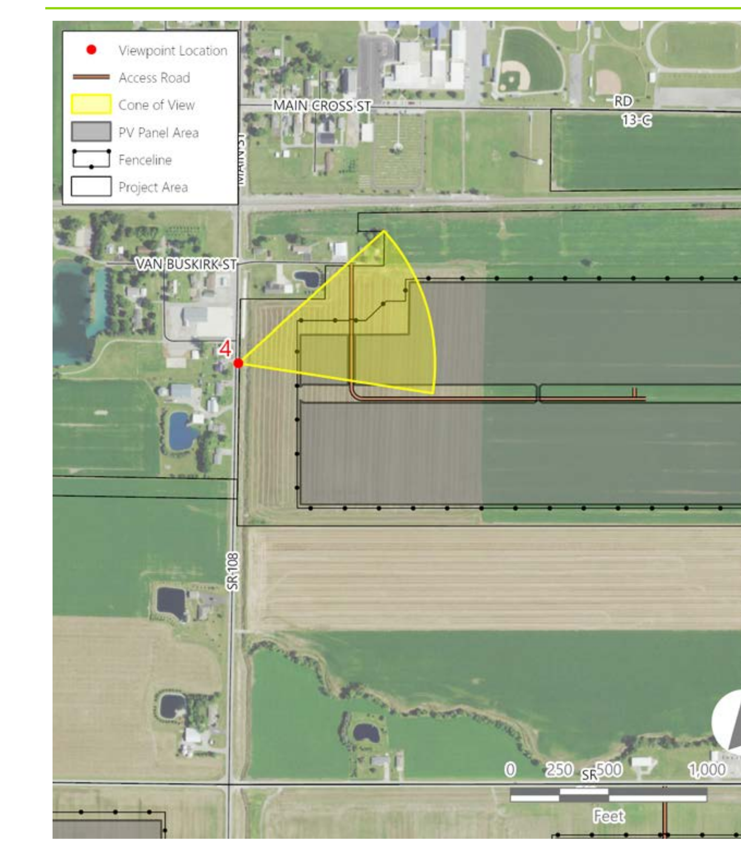
Photosimulation

STATE ROUTE 108 (MAIN STREET)
VIEWPOINT 4

VIEWPOINT INFORMATION

Camera Type	NIKON D7500
Viewpoint Location	41.099353°N, 84.131280°W
Photograph View Direction	East-northeast
Distance to Nearest Project Component	257.8 feet
Time of Photograph	1:35 PM
Date Photograph Taken	May 23, 2020

VIEWPOINT LOCATION AND VIEW DIRECTION



ORIGINAL PHOTOGRAPH

PREPARED FOR:

AVANGRID RENEWABLES

Powell Creek Solar
Liberty and Palmer Townships, Putnam County, Ohio

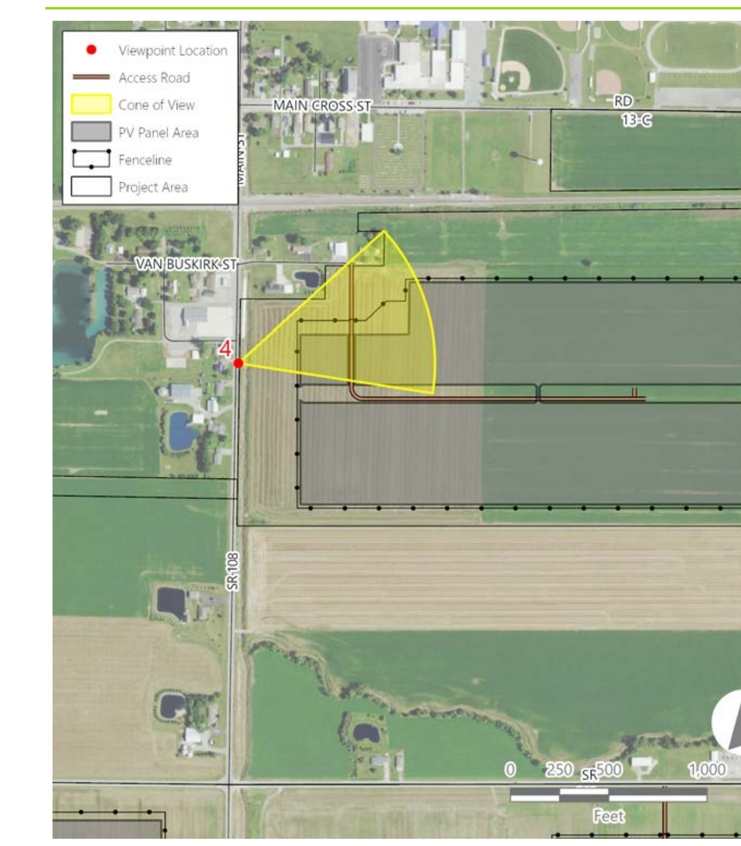
Photosimulation with Mitigation

STATE ROUTE 108 (MAIN STREET)
VIEWPOINT 4

VIEWPOINT INFORMATION

Camera Type	NIKON D7500
Viewpoint Location	41.099353°N, 84.131280°W
Photograph View Direction	East-northeast
Distance to Nearest Project Component	257.8 feet
Time of Photograph	1:35 PM
Date Photograph Taken	May 23, 2020

VIEWPOINT LOCATION AND VIEW DIRECTION



ORIGINAL PHOTOGRAPH

PREPARED FOR:

AVANGRID RENEWABLES

Powell Creek Solar
Liberty and Palmer Townships, Putnam County, Ohio

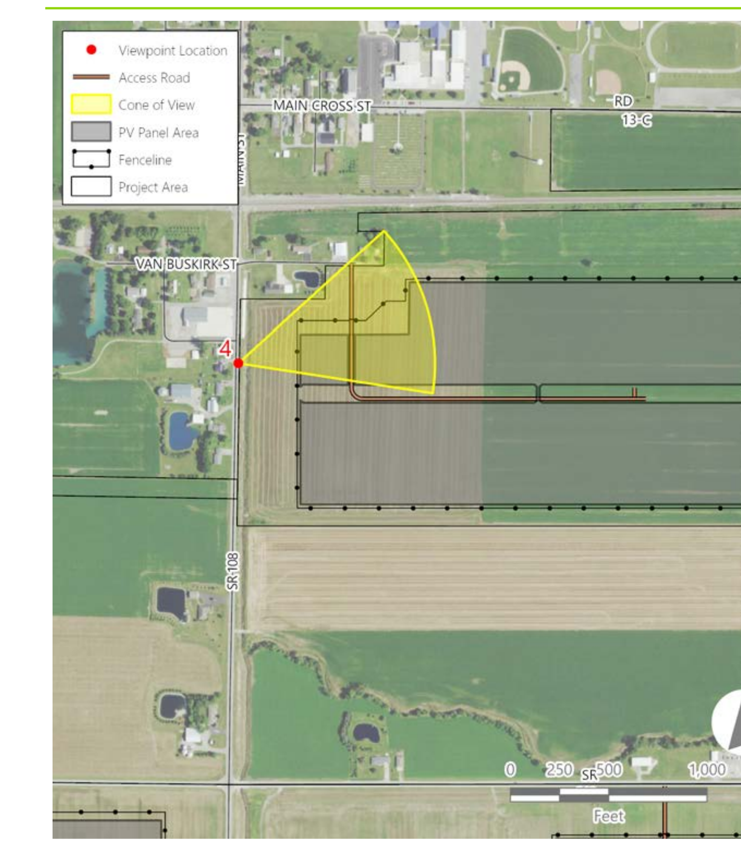
Photosimulation with Mitigation & Crops

STATE ROUTE 108 (MAIN STREET)
VIEWPOINT 4

VIEWPOINT INFORMATION

Camera Type	NIKON D7500
Viewpoint Location	41.099353°N, 84.131280°W
Photograph View Direction	East-northeast
Distance to Nearest Project Component	257.8 feet
Time of Photograph	1:35 PM
Date Photograph Taken	May 23, 2020

VIEWPOINT LOCATION AND VIEW DIRECTION



ORIGINAL PHOTOGRAPH

PREPARED FOR:

AVANGRID RENEWABLES

Powell Creek Solar
Liberty and Palmer Townships, Putnam County, Ohio

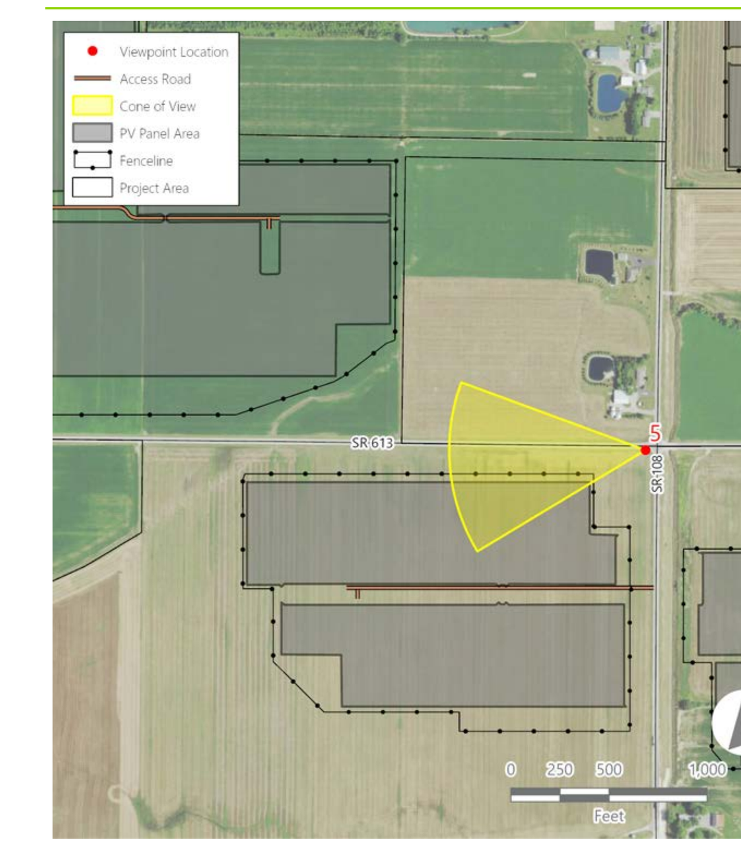
Photosimulation

INTERSECTION OF STATE ROUTE 108 AND STATE ROUTE 613
VIEWPOINT 5

VIEWPOINT INFORMATION

Camera Type	NIKON D7500
Viewpoint Location	41.093421°N, 84.131521°W
Photograph View Direction	West
Distance to Nearest Project Component	142.7 feet
Time of Photograph	1:46 PM
Date Photograph Taken	May 23, 2020

VIEWPOINT LOCATION AND VIEW DIRECTION



ORIGINAL PHOTOGRAPH

PREPARED FOR:

AVANGRID RENEWABLES

Powell Creek Solar
Liberty and Palmer Townships, Putnam County, Ohio

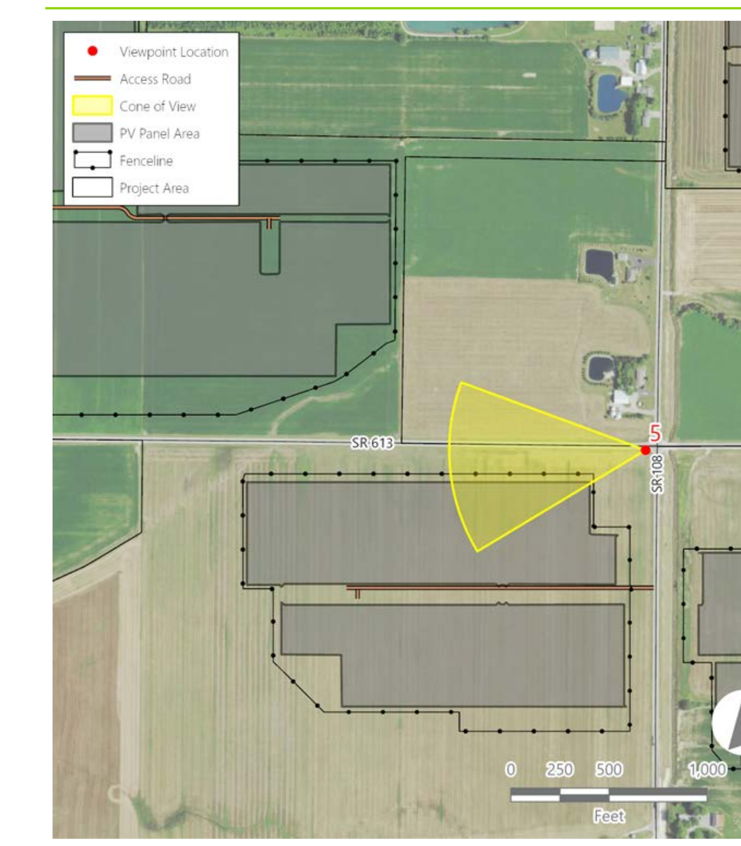
Photosimulation with Crops

INTERSECTION OF STATE ROUTE 108 AND STATE ROUTE 613
VIEWPOINT 5

VIEWPOINT INFORMATION

Camera Type	NIKON D7500
Viewpoint Location	41.093421°N, 84.131521°W
Photograph View Direction	West
Distance to Nearest Project Component	142.7 feet
Time of Photograph	1:46 PM
Date Photograph Taken	May 23, 2020

VIEWPOINT LOCATION AND VIEW DIRECTION



ORIGINAL PHOTOGRAPH

PREPARED FOR:

AVANGRID RENEWABLES

Solar Development and Agricultural Land Use

As solar development expands and renewable energy gains traction as a solution to energy challenges, considerations about land use have emerged among stakeholders concerned with farmland preservation and those who express reservations about solar energy. It is not uncommon for misunderstandings about solar development to arise. Solar development, when appropriately managed, is generally not a substantial threat to agricultural activity and the preservation of farmland. Moreover, it has the potential to offer certain benefits to the farming community, including opportunities for maintaining generational farmland, generating additional income for farming families, and preserving productive land for future agricultural use.

Urban Land Development vs Solar development

According to the American Farmland Trust's 2018 report titled "Farms Under Threat: The State of America's Farmland," ***between 1992 and 2012 the expansion of urban areas was responsible for 18 million acres of farmland conversion, and low-density residential development was responsible for 13 million acres of additional farmland conversion.***[1] Comparatively, agricultural land loss due to solar development is negligible. For example, as of March 2022 North Carolina ranked fourth in the country for installed solar capacity, yet solar development has only been used for 0.28% of cropland in the state.[2] While the American Farmland Trust does express concerns about the majority of solar projects being installed on farmland and ranchland, they also acknowledge the imperative for large-scale utility solar projects to address escalating energy demands, as well as the need to reduce greenhouse gas emissions and transition to clean energy.[3]

According to estimates from a 2013 report released by the National Renewable Energy Laboratory, the entire U.S. could be powered for one year by 21,250 square miles of solar panels, which is about 0.5% of total land space in the country.[4] In comparison, the amount of land used to grow corn for ethanol in the U.S. is 49,300 square miles.[4]

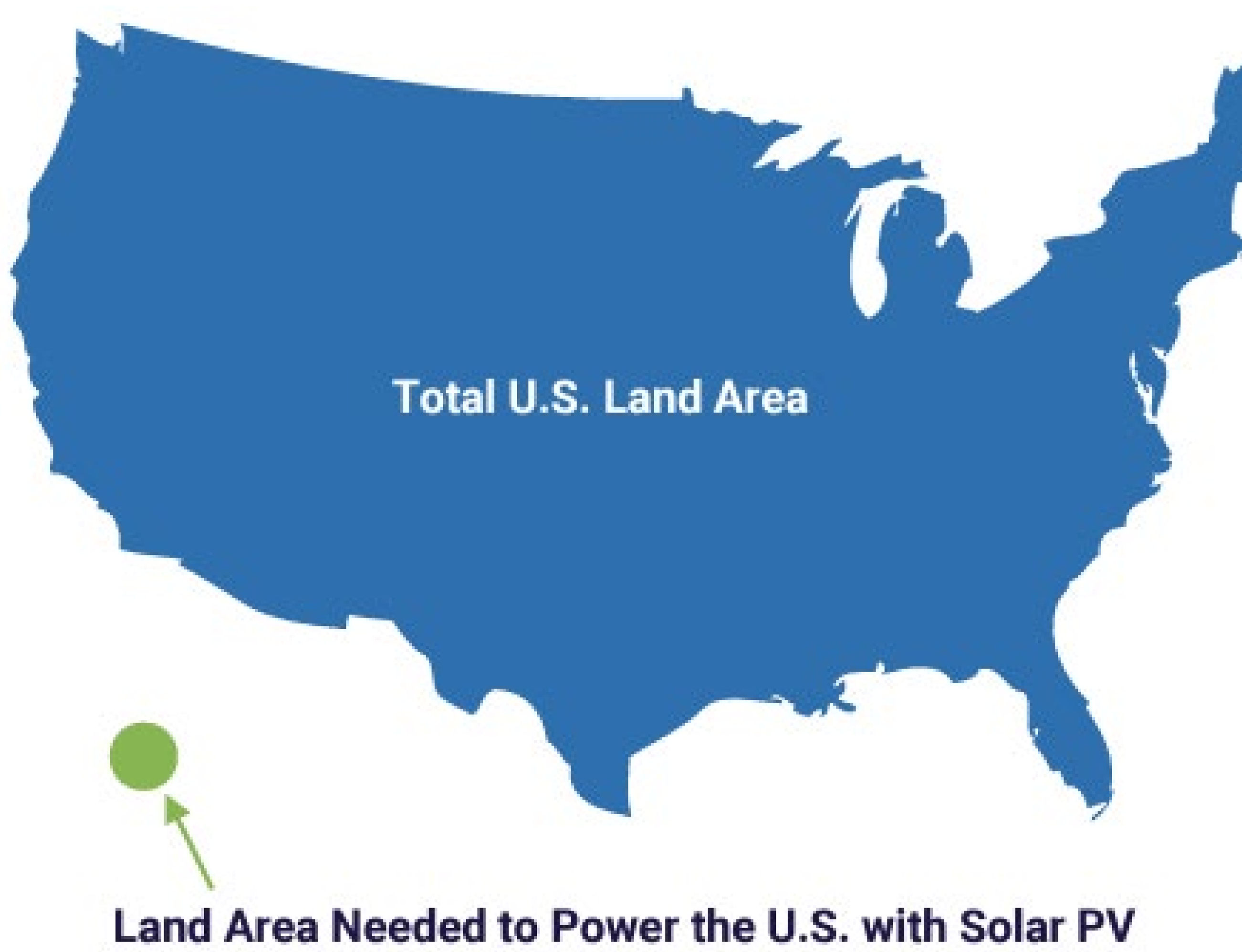


Diagram illustrating the amount of land area needed to power the U.S. with solar panels for one year in comparison to total U.S. Land Area. Image from the Solar Energy Industries Association.

Low-impact solar project installation of the Aurora Solar Project with native plant growth under the solar panel area. Photo from the National Renewable Energy Laboratory.

Soil Preservation and Decommissioning

It is important to discuss the differences between land utilized for urban expansion and land designated for solar projects. ***Urban expansion typically implies a permanent alteration in land use, whereas solar projects typically have a lifespan of approximately 20 to 50 years.*** Once these projects reach their decommissioning phase, the land can be returned to agricultural use when proper care is taken.

Whereas other types of development can severely disturb land and render it unusable for agriculture, solar projects have great potential for lower land impact. Low-impact solar development often entails preserving topsoil and planting vegetation under the solar panel area and throughout the site. This vegetation **can *help prevent erosion, preserve and improve soil health and provide a habitat for native species.***[5] Additionally, drain tiles, which are tubes placed in the ground at a shallow depth to help drain soil, are typically avoided, repaired or replaced in a solar development site, thus preserving the potential for high-yield productive cropland.

Local Agricultural Landscape

In Putnam County and Miller City, soybeans tend to be the dominant crop, occupying a substantial portion of agricultural land acreage, as revealed by the 2017 Putnam County Census of Agriculture.[6] A significant portion of Ohio's soybean harvest is not used within the state or the county. According to the Office of the United States Trade Representative, soybeans were Ohio's top agricultural export in 2017.[7] Corn, another important crop in Putnam County, is often grown for fuel production. Ohio has 7 ethanol production facilities that use approximately one third of Ohio's corn crop each year, according to Ohio Corn & Wheat.

Solar development offers a distinct local advantage through Payments in Lieu of Taxes (PILOT). This arrangement ensures that the county directly benefits from tax revenues from a solar projects over the life of the project.

According to the American Farmland Trust, solar facilities lease land from landowners the majority of the time, rather than purchase them and they tend to offer very high lease rates.[3] With this arrangement, agricultural landowners have the opportunity to diversify their income while maintaining generational ownership of their farmland.

References

[1] American Farmland Trust. 2018. Farms Under Threat: The State of America's Farmland. May 9.https://farmlandinfo.org/wp-content/uploads/sites/2/2020/05/AFT_FUT_SAF_2020final.pdf

[2] North Carolina Sustainable Energy Association. 2022. North Carolina Solar Land Use and Agricultural report. https://bit.ly/2022SolarAg.

[3] American Farmland Trust. 2022. Potential Placement of Utility-scale Solar Installations on Agricultural Lands in the U.S. November 1. https://farmlandinfo.org/wp-content/uploads/sites/2/2023/03/AFT_FUT2040-solar-white-paper.pdf.

[4] Nussey, Bill. 2018. How Much Solar Would It Take To Power The U.S.? July 18. https://www.freeingenergy.com/how-much-solar-would-it-take-to-power-the-u-s/.

[5] Dreves, Harrison. 2019. Beneath Solar Panels, the Seeds of Opportunity Sprout. April 1. https://www.nrel.gov/news/features/2019/beneath-solar-panels-the-seeds-of-opportunity-sprout.html.

[6] United States Department of Agriculture. 2017. 2017 Census of Agriculture County Profile: Putnam County, Ohio. https://www.nass.usda.gov/Publications/AgCensus/2017/Online_Resources/County_Profiles/Ohio/cp39137.pdf.

[7] Office of the United States Trade Representative. 2018. State Benefits of Trade: Ohio. https://ustr.gov/map/state-benefits/oh.

Solar Development and Agricultural Land Use

As solar development expands and renewable energy gains traction as a solution to energy challenges, considerations about land use have emerged among stakeholders concerned with farmland preservation and those who express reservations about solar energy. It is not uncommon for misunderstandings about solar development to arise. Solar development, when appropriately managed, is generally not a substantial threat to agricultural activity and the preservation of farmland. Moreover, it has the potential to offer certain benefits to the farming community, including opportunities for maintaining generational farmland, generating additional income for farming families, and preserving productive land for future agricultural use.

Urban Land Development vs Solar development

According to the American Farmland Trust's 2018 report titled "Farms Under Threat: The State of America's Farmland," **between 1992 and 2012 the expansion of urban areas was responsible for 18 million acres of farmland conversion, and low-density residential development was responsible for 13 million acres of additional farmland conversion.[1]** Comparatively, agricultural land loss due to solar development is negligible. For example, as of March 2022 North Carolina ranked fourth in the country for installed solar capacity, yet solar development has only been used for 0.28% of cropland in the state.[2] While the American Farmland Trust does express concerns about the majority of solar projects being installed on farmland and ranchland, they also acknowledge the imperative for large-scale utility solar projects to address escalating energy demands, as well as the need to reduce greenhouse gas emissions and transition to clean energy.[3]

According to estimates from a 2013 report released by the National Renewable Energy Laboratory, the entire U.S. could be powered for one year by 21,250 square miles of solar panels, which is about 0.5% of total land space in the country.[4] In comparison, the amount of land used to grow corn for ethanol in the U.S. is 49,300 square miles.[4]

Soil Preservation and Decommissioning

It is important to discuss the differences between land utilized for urban expansion and land designated for solar projects. **Urban expansion typically implies a permanent alteration in land use, whereas solar projects typically have a lifespan of approximately 20 to 50 years.** Once these projects reach their decommissioning phase, the land can be returned to agricultural use when proper care is taken.

Whereas other types of development can severely disturb land and render it unusable for agriculture, solar projects have great potential for lower land impact. Low-impact solar development often entails preserving topsoil and planting vegetation under the solar panel area and throughout the site. This vegetation can **help prevent erosion, preserve, and improve soil health and provide a habitat for native species.[5]** Additionally, drain tiles, which are tubes placed in the ground at a shallow depth to help drain soil, are typically avoided, repaired or replaced in a solar development site, thus preserving the potential for high-yield productive cropland.

Diagram illustrating the amount of land area needed to power the U.S. with solar panels for one year in comparison to total U.S. Land Area. Image from the Solar Energy Industries Association.

Solar Development and Agricultural Land Use

Low-impact solar project installation of the Aurora Solar Project with native plant growth under the solar panel area. Photo from the National Renewable Energy Laboratory.

Local Agricultural Landscape

In Putnam County and Miller City, soybeans tend to be the dominant crop, occupying a substantial portion of agricultural land acreage, as revealed by the 2017 Putnam County Census of Agriculture.[6] A significant portion of Ohio's soybean harvest is not used within the state or the county. According to the Office of the United States Trade Representative, soybeans were Ohio's top agricultural export in 2017.[7] Corn, another important crop in Putnam County, is often grown for fuel production. Ohio has 7 ethanol production facilities that use approximately one third of Ohio's corn crop each year, according to Ohio Corn & Wheat.

Solar development offers a distinct local advantage through Payments in Lieu of Taxes (PILOT). This arrangement ensures that the county directly benefits from tax revenues from a solar projects over the life of the project.

According to the American Farmland Trust, solar facilities lease land from landowners the majority of the time, rather than purchase them and they tend to offer very high lease rates.[3] With this arrangement, agricultural landowners have the opportunity to diversify their income while maintaining generational ownership of their farmland.

References

[1] American Farmland Trust. 2018. Farms Under Threat: The State of America's Farmland. May 9. https://farmlandinfo.org/wp-content/uploads/sites/2/2020/05/AFT_FUT_SAF_2020final.pdf

[2] North Carolina Sustainable Energy Association. 2022. North Carolina Solar Land Use and Agricultural report. https://bit.ly/2022SolarAg.

[3] American Farmland Trust. 2022. Potential Placement of Utility-scale Solar Installations on Agricultural Lands in the U.S. November 1. https://farmlandinfo.org/wp-content/uploads/sites/2/2023/03/AFT_FUT2040-solar-white-paper.pdf.

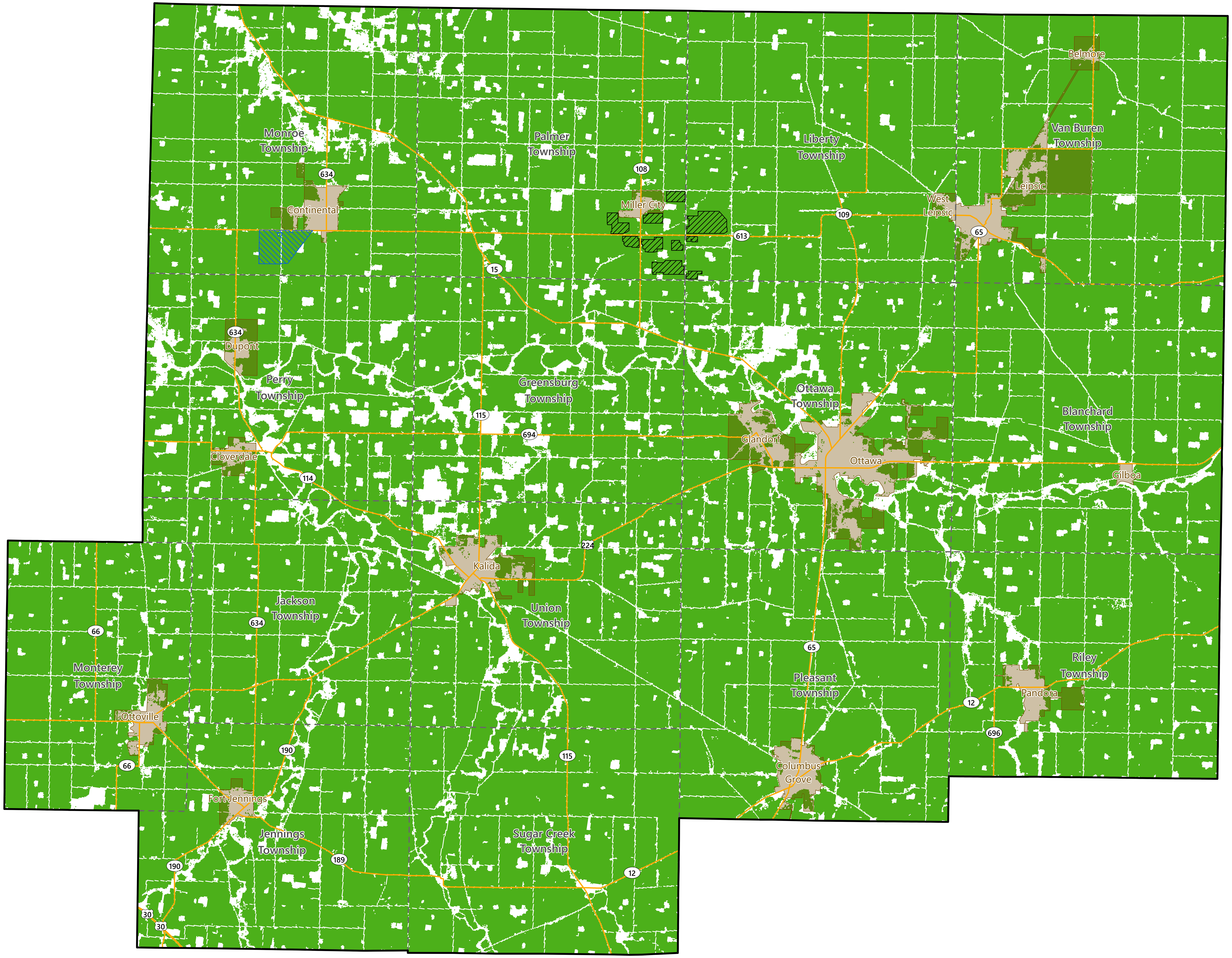
[4] Nussey, Bill. 2018. How Much Solar Would It Take To Power The U.S.? July 18. https://www.freeingenergy.com/how-much-solar-would-it-take-to-power-the-u-s/.

[5] Dreves, Harrison. 2019. Beneath Solar Panels, the Seeds of Opportunity Sprout. April 1. https://www.nrel.gov/news/features/2019/beneath-solar-panels-the-seeds-of-opportunity-sprout.html.

[6] United States Department of Agriculture. 2017. 2017 Census of Agriculture County Profile: Putnam County, Ohio. https://www.nass.usda.gov/Publications/AgCensus/2017/Online_Resources/County_Profiles/Ohio/cp39137.pdf.

[7] Office of the United States Trade Representative. 2018. State Benefits of Trade: Ohio. https://ustr.gov/map/state-benefits/oh.

Cultivated Land in Putnam County per USDA National Agricultural Statistics Service (NASS)

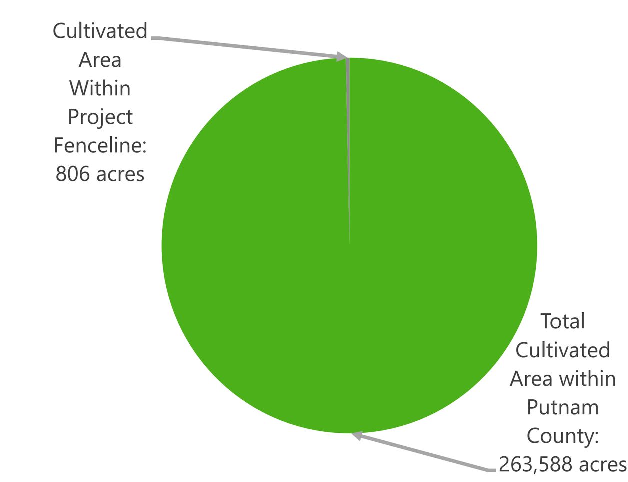


Powell Creek Solar

Putnam County, Ohio

The National Agriculture Statistics Service of the USDA publishes annual updates of the CropScape dataset. CropScape is a nation-wide, crop-specific dataset that is created using satellite imagery and agricultural ground truthing. One of the layers produced annually as a part of CropScape identifies cultivated areas using the last five years of CropScape data. Areas are classified as cultivated if they were listed as cultivated for at least two of the previous five years, or if they were listed as cultivated in the most recent CropScape dataset.

- State and US Highways
- Powell Creek Facility Fenceline
- Cultivated Land
- Township Boundary
- Village Boundary
- Approximate Location of Blue Harvest Solar Park



Powell Creek SOLAR PLANT

0 0.5 1 2
Miles

Prepared August 11, 2023
USDA National Agricultural Statistics Service. (2022). Cropland Data National Cultivated Layer.

EDR

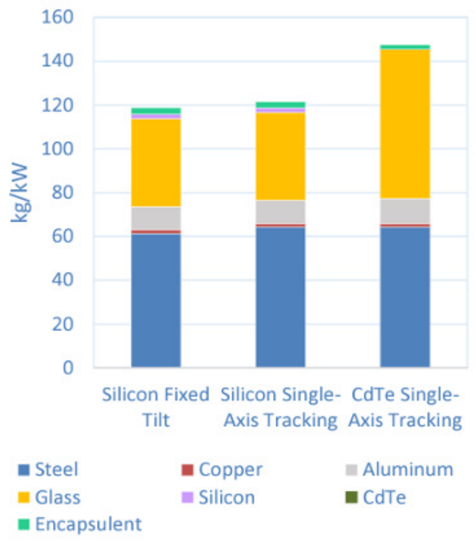
Solar Panels and Your Community

Solar energy has been growing rapidly across the United States. As facilities are proposed in more and more communities, community members have questions about what materials are included in solar photovoltaic (PV) panels, and if they pose an environmental or health risk to surrounding neighbors. The fact sheet below explores the materials in solar panels, and how utility-scale solar facilities are safe for your community.

What is inside of a solar panel?

Solar panels consist of glass, aluminum, copper, and semiconductor materials. Solar cells are made of either connected silicon atoms or thin layers of photovoltaic material that have been placed onto glass or metal and are responsible for converting energy from sunlight into electricity. The thin layer of solar cells is sealed on both sides and covered with glass and an aluminum frame. The primary solar cell technologies used are Crystalline silicon (c-Si) and thin film Cadmium telluride (CdTe). While several different solar cell technologies exist, over 90% of the U.S. solar market uses Crystalline silicon (c-Si) cells.[1]

20 MV PV Plant Component Materials by Weight (kg/kW)



Source: U.S. Department of Energy Solar Energy Technologies Office. Photovoltaics End-of-Life Action Plan. March 2022. Accessible: https://www.energy.gov/sites/default/files/2022-03/Solar-Energy-Technologies-Office-PV-End-of-Life-Action-Plan.pdf

Are the materials in solar panels safe?

Modern commercial solar panels do not contain sufficient hazardous materials to pose a danger to the environment and human health. The primary component in crystalline silicon solar cells is silicon, the second-most common element on earth and found in most consumer electronics, from cell phones to computer chips.[2,3] An assessment by the Ohio Department of Health highlighted the safety of crystalline silicone panels, concluding "Information to date does not indicate a public health burden from the use of crystalline silicone (c-Si) in solar farms...[as] crystalline silicone itself is non-toxic to humans."[4] Other components used in c-Si cells include boron and phosphorus, which are also non-hazardous to the environment and human health. While some older panels may contain trace amounts of lead used to join the c-Si cells, manufacturers are increasingly ceasing use of lead. Furthermore, the amount of lead needed to solder the cells is roughly 1/750th of the amount used in a conventional car battery or half of the amount in a single 12-gauge shotgun shell. While a large solar energy project contains hundreds of panels, the leaded portions of the panel are enclosed in nonporous, non-toxic substances like glass, preventing the lead material from escaping or leaching into the ground.[5]

Another trace element found in c-Si solar panels is cadmium, which is sometimes used in the glass frit, materials used for the electrodes to make electrical contact with the PV cell, or the solder, which is used to join cells. However, according to the North Carolina Clean Energy Technology Center, research demonstrates the amount of cadmium found in solar panels poses negligible toxicity risk to public health and safety.[6] Additionally, an assessment by the Ohio Department of Health determined that "the trace amounts of hazardous components used in solar panels...are not likely to enter the environment," as the materials are fully encapsulated by glass.[7]

Cadmium telluride (CdTe) is another trace component found in thin film solar panels; however, CdTe contains 1/100th the toxicity of free cadmium[8], has a much lower risk of being released, and is not soluble in water.[9] Additionally, researchers have found that use of cadmium telluride solar cells reduces the public's exposure to cadmium – as solar energy reduces the need for fossil fuel generation, which is a major source of cadmium exposure. For every five megawatts of solar power installed, it is estimated that 157 grams of cadmium are prevented from being released into the environment because of the reduction in traditional energy generation.[10]

Can solar panels leach chemicals or metals?

Solar panels are designed and manufactured to withstand harsh environmental conditions and extreme weather events. These hardened structures protect the solar cells from the elements and support plans to keep the facilities operating for 35+ years; therefore, the panels pose little risk of leaching during operation or during removal and disposal. In order to operate, the internal components of modules must be protected from the elements, particularly moisture, in order to prevent corrosion and the release of materials.

Furthermore, the EPA requires that solar panel modules pass toxicity characteristic leaching procedure (TCLP) testing before being disposed of in a landfill. TCLP testing assesses impacts of landfill conditions on solar panels, including leaching potential. This test is typically conducted during manufacturing to ensure the solar panels will meet the requirements of disposal at end-of-life. Testing has found that panels are durable and even capable of withstanding extreme weather events without leaching. In 2013, researchers at the University of Tokyo tested the environmental impact of CdTe panels being exposed to fires, floods, and earthquakes, and found that even under worst-case-scenario conditions, it is unlikely that the cadmium concentrations in air and sea water will exceed the environmental regulation values.

For more information on decommissioning solar facilities and disposal, please visit What Happens When a Solar Project is Decommissioned and Solar Panel Recycling and Disposal.

---

[1] International Renewable Energy Agency (IRENA). 2016. "End of Life Management of Solar Photovoltaics." Accessed at: https://www.irena.org/publications/2016/Jun/End-of-life-management-Solar-Photovoltaic-Panels

[2] Department of Energy. 2022. "Solar Photovoltaic Cell Basics." Accessed at: https://www.energy.gov/eere/solar/solar-photovoltaic-cell-basics

[3] U.S. Geological Survey. 2016. "A World of Minerals in Your Mobile Phone." Accessed at: https://pubs.usgs.gov/gip/0167/gip167.pdf

[4] Ohio Department of Health. 2022. "Ohio Department of Health Solar Farm and Photovoltaics Summary and Assessments." Accessed at: https://ohiodnr.gov/wps/wcm/connect/gov/fc124a88-62b4-4e91-b30b-bc1269d0dde5/ODH+Solar+Farm+and+PVs+Summary+Assessments_2022.04.pdf?MOD=AJPERES&CONVERT_TO=url&CACHEID=ROOTWORKSPACE.Z18_K9I401S01H7F40QBNJU3SO1F56-fc124a88-62b4-4e91-b30b-bc1269d0dde5-o3S-Ssh

[5] Ohio Department of Health, 2022.

[6] NC Clean Energy Technology Center. 2017. "Health and Safety Impacts of Solar Photovoltaics." NC State University. Accessed at: https://content.ces.ncsu.edu/health-and-safety-impacts-of-solar-photovoltaics

[7] Ohio Department of Health, 2022.

[8] NC Clean Energy Technology Center, ibid.

[9] Bonnet, Dieter and Meyers, Peter. 1998. "Cadmium-telluride-Material for thin film solar cells." Journal of Materials Research. Accessed at: https://www.cambridge.org/core/journals/journal-of-materials-research/article/abs/cadmiumtelluridematerial-for-thin-film-solar-cells/8BEF27C9423BD204A4BC0AD1C34F2983

[10] NC Clean Energy Technology Center, 2017.

[11] NC Clean Energy Technology Center, 2017.

[12] North Carolina Department of Environmental Quality and the Environmental Management Commission. 2021. "Final Report on the Activities Conducted to Establish a Regulatory Program for the Management and Decommissioning of Renewable Energy Equipment." Accessed at: https://files.nc.gov/ncdeq/documents/files/DEQ_H329%20FINAL%20REPORT_2021-01-01.PDF

[13] Matsuno, Yasunari. December 2013. Environmental Risk Assessment of CdTe PV Systems to be considered under Catastrophic Events in Japan. First Solar. Accessed at: https://www.firstsolar.com/-/media/First-Solar/Sustainability-Documents/Sustainability-Peer-Reviews/Japan_Peer-Review_Matsuno_CdTe-PV-Tsunami.ashx.

Solar Energy
Development

AVANGRID RENEWABLES

Frequently Asked Questions

Why is Avangrid Renewables interested in my property?
Avangrid Renewables develops renewable energy projects near existing electrical infrastructure in states with expected demand for clean energy. Avangrid Renewables looks for large, buildable properties in rural areas as potential sites for solar farms.

Does solar make sense in our part of the country?
Yes. Solar is an increasingly cost effective and productive form of energy. Improving economics make solar a competitive source of energy in most climates. In fact, solar is most productive in the summer when energy consumption is at its highest.

What if I am currently using the property for agriculture?
Renewable projects generally take 3-5 years to develop. During this time, we work with landowners, state and local officials, and utility representatives to ensure the project is feasible. Leases typically allow for continued agricultural use until the construction period begins.

Who pays for the increased taxes on the property?
Renewable developments often benefit local communities through increased tax revenue for schools, libraries and other public priorities. Avangrid Renewables will pay any increase in taxes resulting from the project's development and operation.

What will happen to my drain tiles?
Avangrid Renewables works with local experts and property owners to gain a deep understanding of drain tile networks. We work to maintain drainage flow throughout the project area. Avangrid Renewables will be responsible for rerouting and repairing drain tiles if necessary.

Who controls the weeds?
Avangrid Renewables is responsible for weed control and property maintenance. It is in the best interest of Avangrid Renewables to maintain a clean landscape as tall weeds can cast shadows over the panels or disrupt electrical equipment.

Will Avangrid Renewables plant grass under the panels?
In most cases, Avangrid Renewables will have a low mow grass seed mix planted underneath the panels. The appearance is similar to the grass along rural roadsides and will be mowed by Avangrid Renewables periodically if needed.

What will Avangrid Renewables do if my crops are damaged during construction?
Avangrid Renewables will pay for the loss of crops if they are damaged as a result of solar farm development or construction activities.

What happens to the property after the lease term?
Avangrid Renewables will remove electrical infrastructure and restore the property to pre-construction condition.

How do I know Avangrid Renewables will have the money and resources to remove the solar farm after the lease has expired?
Avangrid Renewables will work with local government officials to hold a decommissioning security deposit which will be used to remove the solar farm after the lease period is complete.

How long does it take to construct a solar farm?
Avangrid Renewables spends years developing a project. During this time, the company works with the community, local and state governments, and local energy utility. Once construction is ready to begin, a large-scale solar project can take 1-2 years to construct depending on a variety of factors.

Solar Energy
Development

AVANGRID RENEWABLES

Avangrid Renewables is at the forefront of transforming the way the world produces energy. Strongly positioned to develop, build, and operate the clean energy infrastructure of the future, we are already generating power from 60 renewable energy projects in the United States and are helping lead America's transition to a competitive, clean energy future.

Avangrid Renewables, LLC

- Headquartered in Portland, Oregon
- More than $10 billion of operating assets in 20 U.S. states
- One of the largest providers of clean, renewable wind power in the U.S. with nearly 8,000 MW of owned and controlled wind and solar power facilities
- Subsidiary of AVANGRID, Inc. (NYSE: AGR), and part of the Iberdrola Group

AVANGRID, Inc.

- Diversified energy and utility company
- $40 billion in assets
- Operations in 24 states

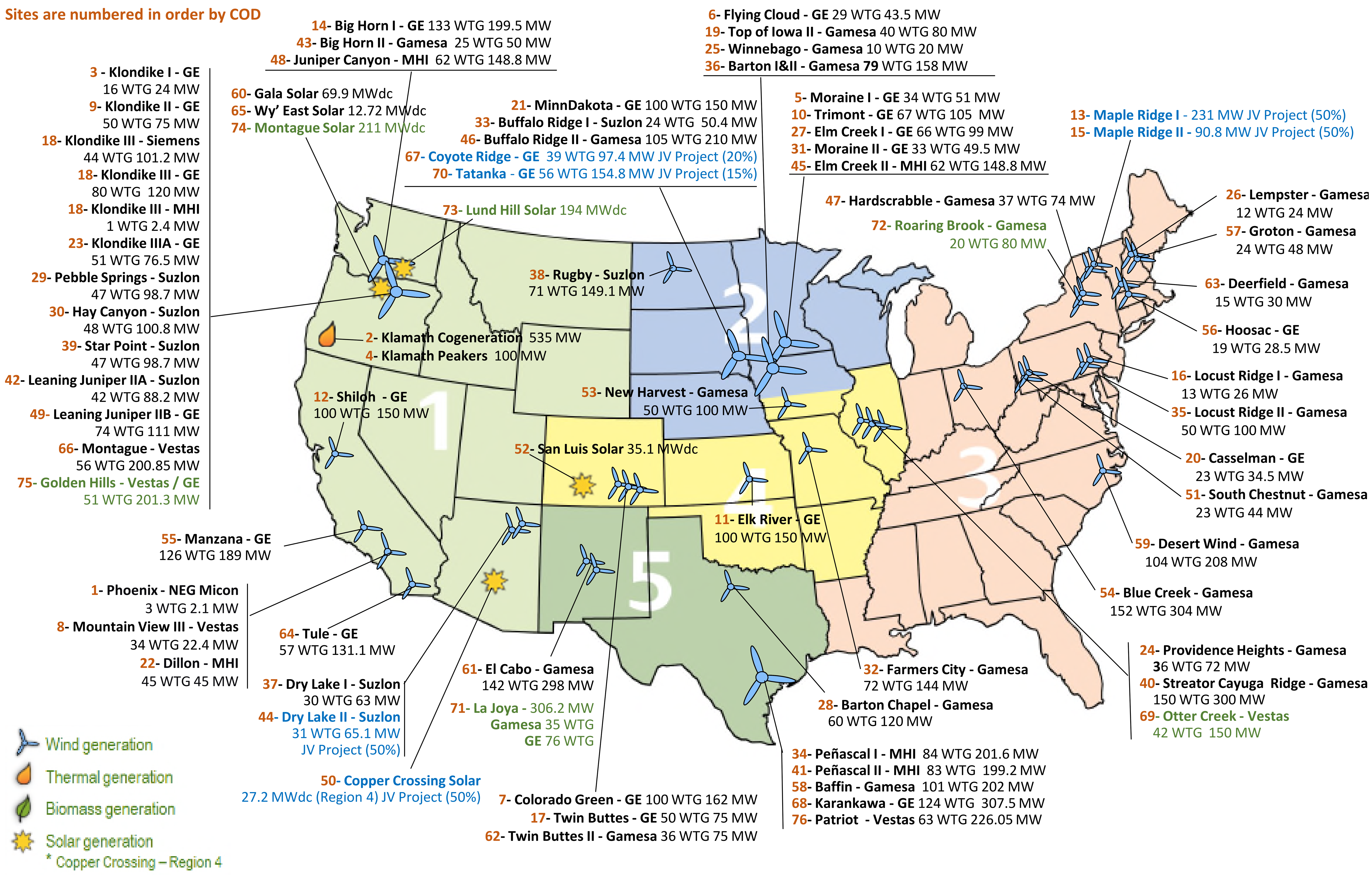
Iberdrola, S.A.

- Largest renewable asset base of any company in the world – nearly 35,000 megawatts (MW) renewables globally.
- Employs more than 35,000 employees in nearly 40 countries
- The environment and sustainable development are at the center of its global strategy

Avangrid Renewables' commitment to renewable energy features a growing solar business. Our expertise as one of the nation's leading wind farm developers has uniquely prepared the company to develop and operate commercial-scale photovoltaic ("PV") projects. We leverage our success working with landowners, government agencies, permitting authorities and customers to thoughtfully and competitively deliver solar projects to the energy grid. The company's development portfolio includes federal, state and private lands for commercial-scale PV projects, and features projects in multiple states either in operation or under construction, along with a significant development pipeline of new projects in permitting across the country.

U.S. Power Assets

Sites are numbered in order by COD



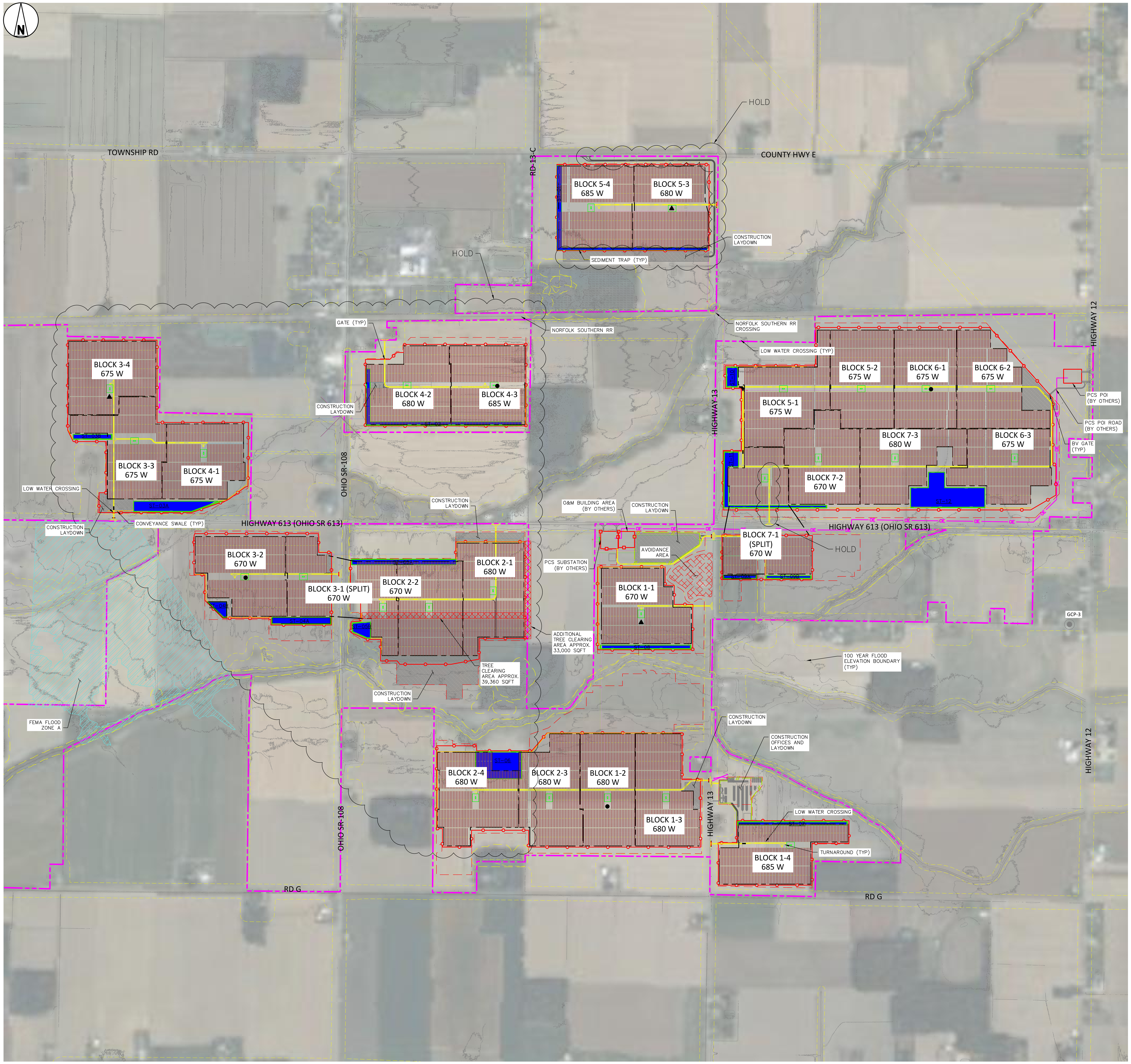
Avangrid Renewables works hard to earn the trust and respect of the communities where we do business. We believe in developing and maintaining strong relationships with landowners and local communities, as long-term project ownership is a key part of our strategic business model. We are one the few vertically integrated developers in the U.S., meaning we develop, build, own and operate these power plants. We take pride in the long-term relationships we've built with thousands of landowners in dozens of communities, and hope to one day be a part of your community too.

Contact Us

To find out more about Avangrid Renewables' solar energy development capabilities, visit **avangridrenewables.com** or one of our social media channels:

- twitter.com/AvangridRen
- facebook.com/AvangridRen
- linkedin.com/company/avangrid-renewables
- instagram.com/AvangridRen
- youtube.com/c/AvangridRenewables
- twitter.com/AvangridRen

About AVANGRID: AVANGRID, Inc. (NYSE: AGR) is a leading sustainable energy company transitioning America toward a clean and connected future headquartered in Orange, CT, and has a footprint in 24 states with $40 billion in assets. Our primary businesses are Avangrid Networks, which serves 3.3 million electric and natural gas customers in the Northeast, and Avangrid Renewables, the third-largest renewable energy company in the U.S. with a diverse onshore and offshore renewable energy portfolio. With more than 7,000 employees, AVANGRID has built a culture that blends diversity, equity and inclusion guided by the company's ESG+F framework and the UN Sustainable Development Goals. This has led to recognition by JUST Capital in 2021 and 2022 as one of America's best corporate citizens and second in utilities for our commitment to the environment and the communities we serve. AVANGRID has been named one of the World's Most Ethical Companies for three consecutive years by the Ethisphere Institute.



SYSTEM SPECIFICATIONS

CLIENT	AVANGRID
SITE LOCATION	MILLER CITY, PUTNAM COUNTY, OHIO
SYSTEM STC DC RATING (MW)	202.78
SYSTEM AC RATING AT POI (MW)	150.0
DC/AC RATIO	1.35
MODULE 1 MANUFACTURER	CANADIAN SOLAR
MODULE 1 MODEL	CS7N-675W-TB
MODULE 1 STC DC RATING (W)	675
MODULE 1 COUNT	8874
MODULE 2 MANUFACTURER	CANADIAN SOLAR
MODULE 2 MODEL	CS7N-680W-TB
MODULE 2 STC DC RATING (W)	680
MODULE 2 COUNT	45878
MODULE 3 MANUFACTURER	CANADIAN SOLAR
MODULE 3 MODEL	CS7N-685W-TB
MODULE 3 STC DC RATING (W)	685
MODULE 3 COUNT	154744
MODULE 4 MANUFACTURER	CANADIAN SOLAR
MODULE 4 MODEL	CS7N-690W-TB
MODULE 4 STC DC RATING (W)	690
MODULE 4 COUNT	86713
MODULES PER STRING	29
STRING COUNT	10202
2 STRING RACKS (MODULE 1)	153
2 STRING RACKS (MODULE 2)	791
2 STRING RACKS (MODULE 3)	2668
2 STRING RACKS (MODULE 4)	1489
INVERTER MANUFACTURER	INGECON
INVERTER MODEL	INGETEAM SUN 3825TL C660
INVERTER NAMEPLATE (kVA @ 35°)	3658
QUANTITY OF INVERTERS	50
PCS TRANSFORMER RATING (kVA @ 50°)	7316/3658
QUANTITY OF TRANSFORMERS	7316KVA – 23 3658KVA – 4
MAXIMUM DC SYSTEM VOLTAGE (V)	1500
SYSTEM VOLTAGE (kV)	34.5
AC COLLECTION SYSTEM	UG TRENCH
DC COLLECTION SYSTEM	AG CAB AND UG TRENCH
RACKING MANUFACTURER	PV HARDWARE
RACKING SYSTEM	AXONE DUO
RANGE OF MOTION	+/- 55
AZIMUTH	180
GCR	35.6, 36.7
PITCH (FEET)	22.00, 21.33
BUILDING CODE	ASCE 7-16 AND 2017 OHIO BUILDING CODE WITH AUG 2018 UPDATES (BASED ON IBC 2015 AND 2018)
RISK CATEGORY	I
SITE ELEVATION (MEAN SEA LEVEL; FEET)	732.00
GROUND RACK CLEARANCE (INCHES)	18.00
RAINFALL (24 HOUR, 100 YEAR EVENT; INCHES)	5.33
FROST DEPTH (INCHES)	36"
BASIC WIND SPEED (MPH)	100
GROUND SNOW LOAD (PSF)	20
NOMINAL ICE THICKNESS (INCHES)	2.00
SEISMIC DESIGN CATEGORY	B
DESIGN LIFE (YEARS)	30

SETBACKS

STREAM	50'	WETLAND CATEGORY-1	25'
FLOOD AVOIDANCE AREA	(AVOIDANCE)	WETLAND CATEGORY-2	75'
PROPERTY BOUNDARY	32'	WETLAND CATEGORY-3	120'
EQUIPMENT / FENCE (MIN.)	10'		
EQUIPMENT / EQUIPMENT (MIN.)	4'		
EXISTING OVERHEAD ELECTRICAL	65'		
RAILROAD ROW	50'		
NHD FLOWLINE	50'		
CULTURAL SITE	50'		
STRUCTURES SAFETY (RESIDENTIAL YARD)	100'		

ROADS

ROAD WIDTH	14'-0"
EQUIPMENT / ROAD (MIN.)	10'-0"
ROAD CORRIDOR WIDTH	34'-0"
ROAD TURNING RADIUS	50'-0"
PUBLIC ROAD RIGHT OF WAY SETBACK	100'

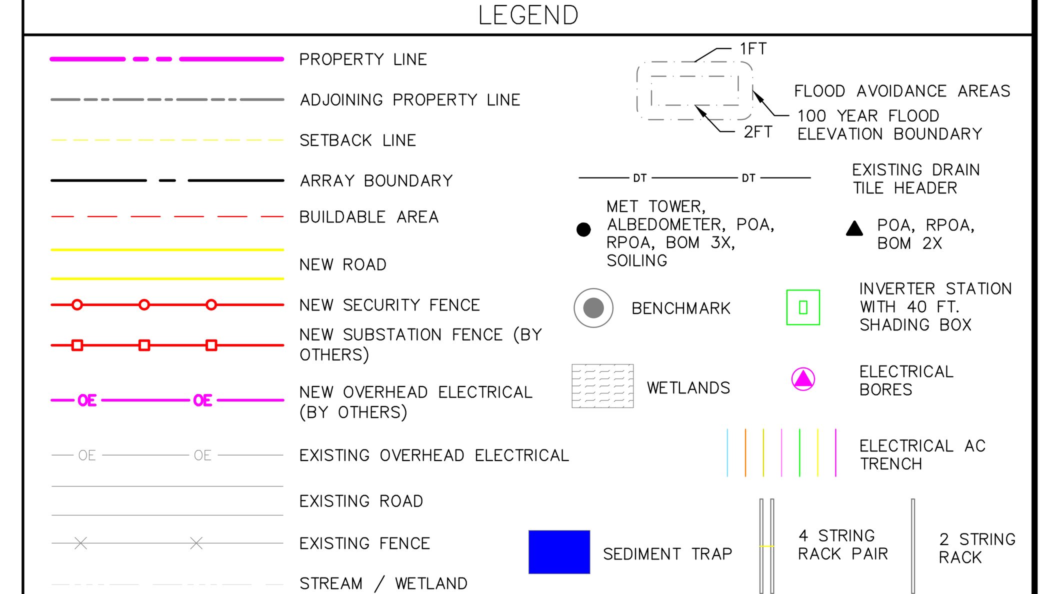
PROJECT SURVEY CONTROL

BENCHMARK LOCATIONS

BENCHMARK	STATE PLANE COORDINATES		ELEVATION	REMARKS
	NORTHING	EASTING		
GCP-1	533889.9270	1524353.8550	739.051	EC EA
GCP-2	526937.3100	1510991.2570	729.406	EA
GCP-3	522581.3400	1529337.2840	737.314	EC EA
GCP-4	520488.0810	1510937.2150	727.531	EC EA
LATER	LATER	LATER	LATER	LATER
LATER	LATER	LATER	LATER	LATER
LATER	LATER	LATER	LATER	LATER
LATER	LATER	LATER	LATER	LATER
LATER	LATER	LATER	LATER	LATER
LATER	LATER	LATER	LATER	LATER

NOTES:
1. HORIZONTAL CONTROL IS BASED ON THE OHIO STATE PLANE – NORTH ZONE NAD83 SYSTEM.
2. THE ELEVATIONS ARE BASED ON THE NAVD88 DATUM.

LEGEND



NOTES

1. SEE PCS-C-820 SERIES DRAWINGS FOR GRADING, DRAINAGE, ROADS, AND FENCING PLANS.
2. SEE PCS-C-830 SERIES DRAWINGS FOR EROSION AND SEDIMENT CONTROL PLANS.
3. SEE DRAWING PCS-C-864-01 FOR CONSTRUCTION FACILITIES PLAN.
4. SEE PCS-S-810 SERIES DRAWINGS FOR PILE ARRANGEMENT PLANS.
5. SEE DRAWING PCS-S-800-01 FOR PILE REMEDIATION PLAN.
6. SEE DRAWING PCS-S-820-01 FOR INVERTER SKID AND MET STATION LAYOUT.

NOT TO BE USED FOR CONSTRUCTION

THE DISTRIBUTION AND USE OF THE NATIVE FORMAT CAD FILE OF THIS DRAWING IS UNCONTROLLED. THE USER SHALL VERIFY TRACEABILITY OF THIS DRAWING TO THE LATEST CONTROLLED VERSION.

NO.	REVISIONS	DATE	BY	CHK	APR
0	ISSUED FOR INFORMATION	03/AUG/23	MBN	AVN	AJG

BLACK & VEATCH
11401 LAMAR AVENUE
OVERLAND PARK, KANSAS 66211
OHIO REGISTERED
ENGINEERING FIRM
COA.01645

500' 250' 0 500' 1000'
1"=500'

I HEREBY CERTIFY THAT THIS DOCUMENT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF OHIO.
SIGNED –
DATE – REG NO. –

AVANGRID RENEWABLES

ENGINEERING RECORD	DATE
DRAWN: MBN	03/AUG/23
DESIGNED: MBN	03/AUG/23
CHECKED: AVN	03/AUG/23
APPROVED: AJG	03/AUG/23

POWELL CREEK SOLAR, LLC
POWELL CREEK PV SOLAR PROJECT
GENERAL ARRANGEMENT PLAN
SITE LAYOUT WITH AERIAL IMAGE

CADFILE: PCS-G-200-01 | SCALE: 1"=500'-0" | DWG.NO. PCS-G-200 | SHEET:01 | REV 0

NOF90436