Chairman Peterson, Vice chair Schuring, Ranking Member Williams and members of the Committee, my name is Mike Volpe, Vice President at Open Road Renewables, and I'd like to share my written testimony in ***opposition*** to Senate Bill 52.

As a bit of background, Open Road has been actively developing solar projects in Ohio for more than 5 years. The first project we kicked off is the 200 MW Hillcrest Solar Project in Brown County, which is nearing completion after employing more than 400 OH-based workers. The project will provide clean power to thousands of Ohio homes and businesses and pay $1.8M per year in PILOT proceeds to the local taxing entities.

You may have heard from proponents of this bill that there's uncertainty about PILOT revenues from solar facilities. That is simply not true. We've worked directly with the DSA and county auditors to confirm that the local taxing entities will, in fact, receive the full benefit of PILOT revenue. See the attached ***Appendix*** content on the information we shared with Brown County Auditor approximately a year ago in response to her concerns about PILOT revenue. Additionally the ***Appendix*** contains the line-item detail on the nearly $180M/year in PILOT proceeds available across the state based upon the projects under development.

Throughout the development process, our goal is to understand the interests of the community and take that feedback into account as we finalize the project footprint and prepare for the formal OPSB review process. The ***Appendix*** contains the USSEC FAQ of common concerns and our responses.

When we engage with local landowners and communities, we tend to hear the same handful of concerns, and chief among them is that solar may ruin the pleasant and familiar views of Ohio's rural landscapes. We respect this perception, and take it seriously. We are talking about whether our business will affect the "look" and "feel" of people's communities–and that matters.

But in reality members of this Committee may drive by any number of solar farms a few years after construction and not realize they had done so because the solar farms have a low profile, generally are constructed in extremely flat areas, and feature setbacks and vegetative screening around the perimeter. OPSB certificates for solar farms routinely limit their height and require setbacks and landscaping around the edges to mitigate their visual impacts to nearby neighbors.

Solar actually is unique among virtually all types of facilities permitted by OPSB, most of which are excluded from this bill, in the degree to which its visual impact can be practically and effectively mitigated with setbacks and landscaping.

The ***Appendix*** contains the permitting conditions that have been proposed on the Alamo Solar project and condition #15 states the following:

> *Prior to commencement of construction, the Applicant shall prepare a landscape and lighting plan in consultation with a landscape architect licensed by the Ohio Landscape Architects Board that addresses the aesthetic and lighting impacts of the*

facility with an emphasis on any locations where an adjacent non-participating parcel contains a residence with a direct line of sight to the project area and also include a plan describing the methods to be used for fence repair. The plan shall include measures such as fencing, vegetative screening or good neighbor agreements. Unless alternative mitigation is agreed upon with the owner of any such adjacent, non-participating parcel containing a residence with a direct line of sight to the fence of the facility, the plan shall provide for the planting of vegetative screening designed by the landscape architect to enhance the view from the residence and be in harmony with the existing vegetation and viewshed in the area.

The Applicant shall maintain vegetative screening for the life of the facility and the Applicant shall replace any failed plantings so that, after five years, at least 90 percent of the vegetation has survived. The Applicant shall maintain all fencing along the perimeter of the project in good repair for the term of the project and shall promptly repair any damage as needed. Lights shall be motion-activated and designed to narrowly focus light inward toward the facility, such as being downward-facing and/or fitted with side shields. The Applicant shall provide the plan to Staff for review and confirmation that it complies with this condition.

Related to views, we often hear concerns that solar will reduce the value of neighbors' property. While no one has a guarantee that their neighbor's legal land use won't somehow affect their property value, we also take this concern to heart as the value of our homes is often a key source of wealth and central to folks retirement plan.

The experts do not find that solar has adverse effects on land values. The American Society of Farm Managers and Rural Appraisers article from February 15, 2021 states the following in the article entitled "***The difference that experience makes when it comes to the perceived and actual impacts of solar on nearby property values.***":

In recent years, publicity surrounding solar farms has gained the attention of property owners and appraisers. As with any large-scale development, the change represented by utility-scale solar can be cause for concern. Naysayers express worries involving impacts to viewshed, drainage problems, the idea of replacing productive agricultural lands with an industrial use, and more. Much of this worry comes back to one thing: the potential impact on property values.

A recently completed study from the University of Rhode Island looked at 400,000 transactions in New England over the course of 15 years, finding that suburban residential property values suffered negative impacts when nearby solar farms replaced resources perceived as scarce, such as green space. On the other hand, this same study found no associated impact on property values for solar farms located in rural areas.

Meanwhile, a survey by the University of Texas at Austin asked 37 appraisers a series of questions about property value impacts based upon proximity to utility-scale solar projects. On average, the surveyed appraisers believed that there was a negative relationship between solar farms and nearby property values, though the appraisers with strong negative opinions also answered "No" when asked whether they had prior experience assessing property located near large solar installations. Dr. Varun Rai, who

led the study, stated that the results "suggest that experience assessing near a solar installation is associated with a much less negative estimate of impact." He also noted that "the median and mode of all estimates of impact was zero, suggesting negative estimates from a few respondents were pulling down the mean."

***Patricia McGarr**, who serves as the National Director of CohnReznick Advisory's Valuation Practice, has conducted a number of property value impact studies involving solar, and spoke on the subject at the ASFMRA Illinois Chapter's Annual Meeting in 2019. McGarr's studies found no consistent negative impact on residential property value that could be attributed to nearby solar farms. She also asserted that township and county assessors have tremendous amounts of data that point in the same direction.*

McGarr referenced the 1,000-acre "North Star" solar project located in Chisago County, Minnesota. There, the county assessor found no adverse impact on nearby property values, noting, "It seems conclusive valuation hasn't suffered."

McGarr has attended many public hearings on proposed solar developments and listened to residents taking issue with the idea of putting good farm land out of production and potential impacts to viewsheds and drainage tiles. "Owners of transitional ag lands, or lands that are in the path of development, are concerned about any changes that could have future impacts on sale values," she explained.

But McGarr believes solar developers are addressing these issues. It's now common practice for developers to include vegetative screening as a visual buffer between solar farms and adjacent properties to account for aesthetic concerns. In regards to drainage, developers are "conducting drainage tile studies and being vigilant […] so that they don't reroute the drainage."

"Solar is an interim use," McGarr added. "There are no contaminants and the land sits fallow, allowing the soil quality to improve. It's not like you're paving things over."

***Donald Fisher, ARA,** served six years as Chair of the ASFMRA's National Appraisal Review Committee and 19 years as Chair of the Editorial Committee. Donald is the Executive Vice President of CNY Pomeroy Appraisers, and has done several market studies examining the impact of solar on surrounding residential values.*

"Most of the locations were in either suburban or rural areas, and all of those studies found either a neutral impact or, ironically, a positive impact, where values on properties after the installation of solar farms went up higher than time trends," he explained.

According to Fisher, solar development has begun to compete with rural residential development and Concentrated Animal Feeding Operation (CAFO) farmers seeking new acreage. "In certain markets," he said, "the solar developers are paying as much as rural residential developers and CAFO farmers."

***Howard Halderman, AFM,** President and CEO of Halderman Real Estate and Farm*

Management, attended a recent solar talk hosted by the Indiana Chapter of the ASFMRA. Halderman's takeaway was that properties immediately adjacent to a solar farm may see a negative impact, but tactics to hide the solar farm from view could help offset those effects.

Halderman believes that other rural properties would likely see no impact, and farmers and landowners should even consider possible benefits. "In some cases, farmers who rent land to a solar company will insure the viability of their farming operation for a longer time period. This makes them better long-term tenants or land buyers so one can argue that higher rents and land values will follow due to the positive economic impact the solar leases offer," he explained.

***Rich Kirkland,** who owns Kirkland Appraisals in Raleigh, North Carolina, began exploring solar a little over a decade ago, or as he puts it, "right around the whole recession period, when solar really began to take off around here."*

Since then, Kirkland has prepared property value impact studies for solar developers in 19 states, performing nearly 100 matched-pair analyses along the way. In a large majority of those comparisons, he observed a -5% to 5% difference in square-foot sales prices, a range that he describes as statistically insignificant.

"If you take all of those matched-pairs and average them out, you'll find a difference of about 1%. That's not enough to make a claim on," he says.

Similar to Halderman, Kirkland believes that issues can arise if a solar development is situated too close to a property, or if nothing is done to conceal it from view. However, he concluded, "In rural and suburban areas, I'm not finding any consistent negative impact from solar farms as long as there's at least 100 feet between the [solar] farm and the property, and enough landscaping to hide the panels."

We appreciate that one of farmers' key assets is the subsurface tile they have installed to drain water from their fields and increase crop yields. We also appreciate that drain tile sometimes crosses property boundaries and so acts almost like a private utility, with the landowners having shared maintenance obligations. Solar projects don't want flooded ground either.

OPSB also realizes all this, which is why its rules expressly require that applicants for electric generation facilities explain how their proposed projects may affect drain tile. Those rules also require that applicants explain how they will avoid–or minimize "to the maximum extent practicable" –any damage to such systems.

A couple of weeks ago, you heard from a neighbor of one of our projects about her fear that the project would flood her land. The language included in the draft conditions for Alamo Solar is contained in Condition #16 which states.

The Applicant shall avoid, where possible, or minimize to the extent practicable, any damage to functioning surface and subsurface field tile drainage systems and soils resulting from the construction, operation, and/or maintenance of the facility

in agricultural areas, whether such drainage systems are publicly or privately maintained. Benchmark conditions of surface and subsurface drainage systems shall be documented prior to construction, including the location of mains and grassed waterways and efforts to contact the owners of all parcels adjacent to the project area to request drainage system information on those parcels. Such documentation shall be provided to the County Engineer. Any tile installation or repairs shall be performed in accordance with applicable provisions of Standard Practice for Subsurface Installation of Corrugated Polyethylene Pipe for Agricultural Drainage or Water Table Control, ASTM F499-02 (2008), to the extent practicable. If uncertainty arises concerning the proper procedures for tile repair, Applicant may consult with the local Soil & Water Conservation District or a USDA Natural Resources Conservation Service representative for privately maintained tile, and shall consult with the County Engineer for tile located in a county maintenance/repair ditch, as delineated in Document A, attached hereto. Damaged field tile systems shall be promptly repaired no later than 30 days after such damage is discovered, and be returned to at least original conditions or their modern equivalent at the Applicant's expense. When repairing tiles in a county maintenance/repair ditch, the Applicant shall give reasonable notice of such repairs to the County Engineer and Staff. The County Engineer or his/her representative shall have the right to visually inspect and approve the repair work performed prior to backfill. If the County Engineer does not approve the repair work in a timely manner, Staff shall have the right to visually inspect and approve the repair work performed prior to backfill. If the opinion of the County Engineer and the opinion of Staff on approval of the repair work differ, Staff shall have the final authority to approve the repair work. As stated in the Application, the Applicant will develop a Stormwater Pollution Prevention Plan that will require the utilization of silt fences during construction and the prompt removal of construction silt from drainage ditches when necessary for continued efficient drainage. The Applicant shall provide the Soil & Water Conservation District and the County Engineer with a single point of contact with the Applicant after construction is completed to address any resource concerns.

Another common misconception is that solar panels are made up of toxic materials and present dangers to people and the environment. They are not. Solar panels are mostly metal, glass and plastic, with an extremely thin layer of "solid state" semi-conducting material in the middle that is tightly encapsulated to keep moisture from affecting its function. (The semi-conducting layer in the solar panels of the leading U.S. manufacturer, which is based in Ohio, is 1/25th the thickness of a human hair.) There are no liquids that can spill. In fact, almost all of the leading solar panels qualify under EPA regulations as regular waste than can be disposed of in municipal landfills just like household garbage. The ***Appendix*** contains additional information on the topic.

This brings me to the last topic I'd like to cover in my testimony, which is how the OPSB process actually works and the implications of this bill. It generally takes 12-15 months and over $1 million to go through the OPSB process. That does not include the years of preparation, studies, surveys, community outreach, and revisions that precede the application. OPSB requires well over 10 types of analysis and studies and typically imposes around 25 to 30 permitting conditions. These conditions address the full range of possible impacts and ensure that the project's benefits are fully

realized while the impacts are minimized and mitigated. Further, these conditions are the result of "Serious Bargaining" as stated in the recent Alamo Solar Staff brief which states the following:

> *The Amended Stipulation is the product of an open process in which all intervenors were given an opportunity to participate. All parties were represented by experienced and competent counsel. While not all have participated in regulatory proceedings before the Board, all have extensive experience in regulatory matters and managing complex litigation. There were extensive negotiations among the parties. The original Joint Stipulation represented a comprehensive compromise of the issues raised by parties with diverse interests. After the record was closed and while awaiting a decision from the Board, settlement discussions were reopened. The Applicant provided additional information about details of the project, including agreements reached with public officials. "Serious bargaining" between the parties resulted in additional conditions being added, and greater detail and increased protections added to existing proposed conditions. All parties were invited to participate, and the signatory parties were active in crafting the amended conditions. The Amended Stipulation is undeniably a product of serious bargaining among capable, knowledgeable parties.*

In closing, there are three critical flaws with this bill.

1) It adds an unprecedented and potentially arbitrary "kill switch" to the end of a balanced and rigorous review process. Solar's modest impacts already are mitigated through the long, expensive and arduous OPSB regulatory process.

2) The bill is unfair because it singles out a passive energy source with mild impacts while having no effect on generation and transmission developments also subject to OPSB review that have much greater impacts.

3) The bill imposes a referendum subject to the kind of misinformation I have touched on in my testimony. This bill would replace a fact-based deliberative process that takes all state interests into account with a local veto highly susceptible to misinformation and the influence of an energized and vocal minority.

Conversely, while things can always be improved, Ohio's OPSB process stands as one of the most robust and thorough siting regimes in the nation. It currently is engaged in a 5-year rule review process and the solar industry has formally submitted thorough comments to support improvements to the process. I'd argue that any improvements to the OPSB process should be done through that 5-year rule review process. I've included the USSEC comments that we filed with OPSB Staff as part of the 5-year rule-review process in the ***Appendix.***

Ohio has a great legacy as an Energy Titan from the early coal days that powered the growth of the steel industry to the recent natural gas shale expansion to today's opportunity of harnessing the sun. It would be a shame to see Ohio's legacy as an Energy Titan tarnished if a bill like this is allowed to sabotage the state's solar industry while neighboring states like Indiana are exploring ways to streamline solar permitting at the state level to help diversify the grid and attract more solar investment.

In closing, if you hear from some constituents that they're concerned about a proposed solar project in your community, my sincere request is that you ask them what is being done to address their concerns, what is being done to mitigate the impacts, and how are they engaging with the project developer. The goal should not be to kill solar projects, but rather, to try and find outcomes that balance the interests in the community: the property rights of the participating landowners, the viewshed and drain tile concerns of the neighbors, and the interest everyone has in more tax dollars flowing to our schools.

Thank you for the opportunity to testify.

Sincerely,

Mike Volpe

Vice President
Open Road Renewables

APPENDIX

Utility Scale Solar Energy Coalition
USSEC
OF OHIO

Frequently Asked Questions & Debunking Myths About Solar

How does a solar farm impact nearby property values?

Numerous studies in states across the U.S. show no negative impacts to property values in proximity to a solar farm. In fact, a national leader in appraisals did extensive research on properties after the installation of solar farms—in both suburban and rural areas—and found either a neutral impact or a positive impact. The positive impact is likely driven by the disproportionately positive economic impact solar farms can have on a local economy, which can mean more local investments, better schools, and lower taxes.

Are solar farms safe? Do they impact the surrounding environment?

Solar farms are safe. There is no air pollution, no water pollution, and no chemical emissions. Solar panels sold today are considered non-toxic by the U.S. Environmental Protection Agency as they have passed stringent hazardous waste tests. According to the U.S. Department of Energy, few power-generating technologies have as little an environmental impact as solar. At the time of decommissioning, panels may be reused, recycled, or safely disposed. The project land can be restored to its original condition likely with improved soil quality given the ability for the nutrient content to improve versus continual cultivation.

Do solar farms impact wildlife?

When a project site is being considered, developers will conduct several environmental assessments, including wildlife studies to ensure there is minimal impact to the area. Once operational, there is very little activity at the solar project, so deer and other wildlife quickly return.

How will a solar farm impact my viewshed?

The Ohio Power Siting Board process is sensitive to the impacts of new power generation facilities to local community interests. Thus, the Siting Board Staff, other intervenors, and Applicants have agreed to engage landscape architects licensed by the Ohio Landscape Architects Board to develop plans that addresses the aesthetic impacts of solar farms with an emphasis on any locations where an adjacent non-participating parcel contains a residence with a direct line of sight to the project area. Specifically, the plan shall provide for the planting of vegetative screening designed by the landscape architect to enhance the view from the residence and be in harmony with the existing vegetation and viewshed in the area. Additionally the Siting Board Staff and Applicants have agreed that the vegative screening shall be maintained for the life of the project.

Will solar farms harm or overtake Ohio's agricultural land?

There are a limited number of viable sites to host solar across Ohio due to limited injection capacity on the overhead bulk transmission system, topography in the Eastern parts of the state, and other constraints. Developers have been actively screening candidate sites for the past 5+ years, and there are currently roughly 20,000 MW of solar or solar plus storage under development. If every single one of these projects were to move forward, the projects would temporarily sit on just over 1% of farmland in Ohio. The historic success rate of projects is roughly 1 in 4 or 1 in 5 move forward due to unforeseen fatal flaws, and thus, we expect solar projects to sit on far less than 1% of the tillable acreage across the state. Additionally, The majority of landowners in solar projects are farmers who see solar as a conservation tool and a long-term investment. They care about their land and want to do what is right for the family, business, and community.

Do solar projects require taxpayer-funded community services?

Solar projects require no water service, no sewer service, and no other taxpayer-supported services.

Do solar projects have the potential to flood neighbors' fields?

The Ohio Power Siting Board process is sensitive to the impacts of new power generation facilities to local community interests. Thus, the Siting Board Staff, other intervenors, and Applicants have agreed to ensure that drain tile management and stormwater management are two key considerations in the development, construction, and operation of solar farms. Specifically, Applicants have agreed to quickly repair or replace any drain tile that is damaged during the construction process and work with the Ohio EPA to obtain a "General Permit Authorization for Storm Water Discharges Construction Associated with Construction Activities". This Ohio EPA permit requires applicants to perform pre- and post-construction stormwater calculations to determine if post-construction best management practices are required, based on requirements contained in Ohio EPA's Construction General Permit.

Do solar farms have the potential to create chemical fires?

No, this is simply untrue. Solar panels and the equipment within a solar array do not contain any materials that could result in a chemical fire. The equipment that is used to connect the solar array to the overhead transmission system are the same components that are used at substations across the state. The most likely fire emergency, if any, would be the result of a brush fire in the grassland below of an array, similar to a brush fire in a farm field. To ensure that local EMS and fire service providers are trained in how to respond to emergency/fire situations that could occur at the project, Applicants have agreed to train local fire and EMS professionals as part of the Siting Board process.

	Solar or Solar + Storage MWs in PJM Queue [1] *(Under Study, Engineering, or Construction)*	Annual PILOT Proceeds (Assuming $9k/MW)	Lifetime PILOT Proceeds (Assuming 40 yr life)	**Total Solar Acres** *(assuming 7 acres/MW and assuming 50% of Solar+Storage MWs are Solar)*	**Total Cropland** (Acres)[2]	**Solar as a % of Total Cropland**	**Harvested Cropland** (Acres)	**Solar as a % of Harvested Cropland**
State-Wide Data	19,893	$ 179,037,000	$7,161,480,000	129,665	10,960,704	**1.18%**	10,190,952	**1.27%**
County Breakout	1) Source: https://www.pjm.com			2) Source: https://www.nass.usda.gov/Quick_Stats/CDQT/chapter/1/table/1				
Adams	80	$ 720,000	$ 28,800,000	560	89,226	**0.63%**	74,414	**0.75%**
Allen	500	$ 4,500,000	$ 180,000,000	3,500	172,699	**2.03%**	166,454	**2.10%**
Auglaize	317	$ 2,853,000	$ 114,120,000	2,219	194,575	**1.14%**	184,671	**1.20%**
Brown	200	$ 1,800,000	$ 72,000,000	1,400	154,673	**0.91%**	141,997	**0.99%**
Butler	50	$ 450,000	$ 18,000,000	350	92,146	**0.38%**	86,233	**0.41%**
Champaign	417.2	$ 3,754,800	$ 150,192,000	2,920	168,701	**1.73%**	161,304	**1.81%**
Clark	234	$ 2,106,000	$ 84,240,000	1,638	151,402	**1.08%**	146,507	**1.12%**
Clermont	180	$ 1,620,000	$ 64,800,000	1,260	65,529	**1.92%**	59,471	**2.12%**
Clinton	350	$ 3,150,000	$ 126,000,000	2,450	190,717	**1.28%**	185,767	**1.32%**
Columbiana	145	$ 1,305,000	$ 52,200,000	1,015	95,927	**1.06%**	87,597	**1.16%**
Coshocton	58.9	$ 530,100	$ 21,204,000	412	97,155	**0.50%**	81,673	**0.50%**
Crawford	175	$ 1,575,000	$ 63,000,000	1,225	220,942	**0.55%**	214,627	**0.57%**
Darke	165	$ 1,485,000	$ 59,400,000	1,155	316,123	**0.37%**	306,343	**0.38%**
Defiance	317.9	$ 2,861,100	$ 114,444,000	2,225	205,771	**1.08%**	191,375	**1.16%**
Erie	125	$ 1,125,000	$ 45,000,000	875	77,112	**1.13%**	72,506	**1.21%**
Fairfield	596	$ 5,364,000	$ 214,560,000	4,172	153,607	**2.72%**	146,252	**2.85%**
Fayette	48	$ 432,000	$ 17,280,000	336	189,877	**0.18%**	179,923	**0.19%**
Franklin	400	$ 3,600,000	$ 144,000,000	2,800	45,000	**6.22%**	42,858	**6.53%**
Fulton	606	$ 5,454,000	$ 218,160,000	4,242	182,198	**2.33%**	175,537	**2.42%**
Greene	195	$ 1,755,000	$ 70,200,000	1,365	149,590	**0.91%**	144,814	**0.94%**
Guernsey	49.5	$ 445,500	$ 17,820,000	347	59,132	**0.59%**	50,041	**0.69%**
Hancock	454.6	$ 4,091,400	$ 163,656,000	3,182	226,730	**1.40%**	217,827	**1.46%**
Hardin	1139.9	$ 10,259,100	$ 410,364,000	7,979	243,997	**3.27%**	229,014	**3.48%**
Harrison	300	$ 2,700,000	$ 108,000,000	2,100	41,043	**5.12%**	33,461	**6.28%**
Henry	206	$ 1,854,000	$ 74,160,000	1,442	225,208	**0.64%**	219,936	**0.66%**
Highland	1097.5	$ 9,877,500	$ 395,100,000	7,683	224,722	**3.42%**	197,435	**3.89%**
Huron	40	$ 360,000	$ 14,400,000	280	213,866	**0.13%**	201,230	**0.14%**
Jackson	279.9	$ 2,519,100	$ 100,764,000	1,959	27,257	**7.19%**	20,550	**9.53%**
Jefferson	53.325	$ 479,925	$ 19,197,000	373	32,970	**1.13%**	26,927	**1.39%**
Knox	80	$ 720,000	$ 28,800,000	560	139,999	**0.40%**	128,884	**0.43%**
Licking	607.7	$ 5,469,300	$ 218,772,000	4,254	160,705	**2.65%**	150,390	**2.83%**
Logan	1140	$ 10,260,000	$ 410,400,000	7,980	183,851	**4.34%**	172,338	**4.63%**
Lorain	150	$ 1,350,000	$ 54,000,000	1,050	105,149	**1.00%**	90,936	**1.15%**
Madison	2076.9	$ 18,692,100	$ 747,684,000	14,538	235,321	**6.18%**	226,248	**6.43%**
Marion	159.96	$ 1,439,640	$ 57,585,600	1,120	190,282	**0.59%**	178,130	**0.63%**
Meigs	108	$ 972,000	$ 38,880,000	756	31,354	**2.41%**	26,175	**2.89%**
Miami	178	$ 1,602,000	$ 64,080,000	1,246	158,306	**0.79%**	150,623	**0.83%**
Montgomery	52.4	$ 471,600	$ 18,864,000	367	91,369	**0.40%**	88,636	**0.41%**
Morrow	245	$ 2,205,000	$ 88,200,000	1,715	139,079	**1.23%**	132,219	**1.30%**
Muskingum	150	$ 1,350,000	$ 54,000,000	1,050	88,133	**1.19%**	76,555	**1.37%**
Paulding	147.95	$ 1,331,550	$ 53,262,000	1,036	208,175	**0.50%**	199,982	**0.52%**
Pickaway	1179.6	$ 10,616,400	$ 424,656,000	8,257	274,958	**3.00%**	256,325	**3.22%**
Preble	307.9	$ 2,771,100	$ 110,844,000	2,155	188,287	**1.14%**	181,122	**1.19%**
Putnam	199.9	$ 1,799,100	$ 71,964,000	1,399	291,173	**0.48%**	283,644	**0.49%**
Ross	906	$ 8,154,000	$ 326,160,000	6,342	168,173	**3.77%**	133,320	**4.76%**
Shelby	98	$ 882,000	$ 35,280,000	686	197,251	**0.35%**	189,544	**0.36%**
Stark	219.2	$ 1,972,800	$ 78,912,000	1,534	101,697	**1.51%**	92,962	**1.65%**
Union	1734.4	$ 15,609,600	$ 624,384,000	12,141	196,063	**6.19%**	183,772	**6.61%**
Van Wert	571	$ 5,139,000	$ 205,560,000	3,997	240,762	**1.66%**	235,808	**1.70%**
Vinton	125	$ 1,125,000	$ 45,000,000	875	14,006	**6.25%**	10,585	**8.27%**
Warren	19.92	$ 179,280	$ 7,171,200	139	71,243	**0.20%**	66,299	**0.21%**
Wayne	130	$ 1,170,000	$ 46,800,000	910	204,037	**0.45%**	188,757	**0.48%**
Williams	251	$ 2,259,000	$ 90,360,000	1,757	189,883	**0.93%**	170,386	**1.03%**
Wood	101	$ 909,000	$ 36,360,000	707	253,839	**0.28%**	242,352	**0.29%**
Wyandot	120	$ 1,080,000	$ 43,200,000	840	205,093	**0.41%**	193,978	**0.43%**

This memorandum responds to concerns expressed by Ms. Jill Hall, Brown County Auditor, regarding elements of the Hillcrest Solar project. Ms. Hall's concerns were reported in the Columbus Dispatch article entitled "*Solar Energy's Boon To Some Is Nuisance To Others*" published on March 8, 2020.

The concerns expressed by Ms. Hall relate to three topics: 1) The Hillcrest Road Use Maintenance Agreement[1] (RUMA), 2) the tax benefits that the local community can expect from the Hillcrest Solar project, and 3) any gap in revenue between current tax revenue from the project parcels and new tax revenue from the Hillcrest project. Each concern is addressed in detail below:

Summary of Responses:

- The RUMA will cover expenses related to wear and tear on county and township roads during construction.

- The Qualified Energy Project (QEP) Payment in Lieu of Taxes (PILOT) ensures an approximately 15-20x increase in local tax revenue from the Hillcrest Solar Project vs. the current use of the project parcels.

- As clarified below, there will be no gap in revenue between the current tax revenue and the project PILOT payments.

Each topic is discussed in detail below:

RUMA

The Columbus Dispatch article quotes Ms. Hall's concern that construction of the Hillcrest project is "*degrading the roads, ditches and culverts going into driveways. It's a mess…I'm terribly concerned.*"

Publicly available information shows that the RUMA, which is an agreement between Hillcrest Solar and Brown County and was signed by the County Engineer and County Prosecutor on July 10, 2019, includes a performance bond[2] that financially guarantees performance under the RUMA, which addresses Hillcrest's obligation to repair damage to roads, bridges, and culverts. There is also a formal complaint resolution process[3] to address concerns that are surfaced by community members. The RUMA and complaint resolution process were conditions to construct the project and Hillcrest Solar has complied with these conditions as a prerequisite to begin construction. Additionally, there is a bonded decommissioning plan[4] that ensures the removal of all equipment at the end of the project's life.

In short, road damage as well as its repair at Hillcrest Solar's expense was contemplated and fully addressed in the RUMA between the Hillcrest Solar project and Brown County as a condition of the Hillcrest Solar permit.

Local Tax Revenue

Regarding the county's expectation of new tax revenue from construction and operation of the Hillcrest project, Ms. Hall is quoted as saying: "*At this point, I'm just hoping to break even*."

In fact, Hillcrest Solar has entered into a QEP PILOT Agreement that governs annual PILOT payments to the local government representing a 15-20 times increase in local tax revenue from the project vs. the current agricultural use. The PILOT will provide $9,000/MW/year which amounts to $1,800,000 in annual tax revenue to the local governments (based on the projects 200 MW capacity). This annual tax payment will

be split between the Brown County General Fund, which will receive $2,000/MW/year ($400,000/year) and the local township, school board, and library (and any other local taxing entities), which will share $1,400,000/year allocated according to the proportion of the millage rates of the various local taxing entities. These revenue splits are administered by the county treasurer as required in Ohio statute. Further there was a clarifying amendment made to the QEP PILOT statute in HB 166[5] in the 2019 general assembly session to remove any ambiguity relating to the QEP PILOT.

"Gap Year" Concern

The QEP exemption does not start until ODSA issues a certificate of verification under ODSA's administrative rules, and thus, there will be no gap in revenue between the current tax revenue and the project PILOT payments. (See OAC 122:23-1-05 at http://codes.ohio.gov/oac/122:23-1-05v1)

The certificate of verification is sent to the applicant as well as the county Commissioners, county Auditor and county Treasurer. Per statute, "The certificate shall identify the date the qualified energy project is placed into service, provide the Ohio-domiciled employee ratio, and describe the tangible personal property and real property to be exempt from taxation in sufficient detail that the commissioner and county auditor can determine the personal property subject to exemption and the boundaries of the real property including buildings, structures, and fixtures that are entitled to exemption from taxation." (See OAC 122:23-1-05(A))

The key language regarding the start date for the exemption appears at OAC 122:23-1-05(B), which provides:

"The tangible personal property tax exemption granted to a qualified energy project is effective as of the tax year immediately following the calendar year in which the property is placed into service, as identified on the certificate of verification. In accordance with division (G) of section 5727.75 of the Revised Code, the requirement to make a payment in lieu of taxes begins with the tax year in which the exemption is effective." (See OAC 122:23-1-05(B))

Under this administrative rule, the PILOT obligation and QEP exemption would both start at the same time, since the PILOT obligation "begins with the tax year in which the [QEP] exemption is effective."

Once the county Auditor receives the certificate of verification, the real property described in the certificate should be placed on the exempt list. (See OAC 122:23-1-05(C))

References:

1: http://dis.puc.state.oh.us/DocumentRecord.aspx?DocID=e3cb0b64-7651-4972-8065-f4ca841a8a1b
2: http://dis.puc.state.oh.us/TiffToPDf/A1001001A19K19C05719J03220.pdf
3: http://dis.puc.state.oh.us/DocumentRecord.aspx?DocID=406060f4-3173-44db-b842-1ec039e584bd
4: http://dis.puc.state.oh.us/DocumentRecord.aspx?DocID=781dc9e7-2cad-4774-8403-3df74533c828
5: https://www.legislature.ohio.gov/legislation/legislation-documents?id=GA133-HB-166

USSEC Responses to OPSB Stakeholder Questions[1]

The Utility Scale Solar Energy Coalition of Ohio ("USSEC") provides these responses to the document "OPSB 2020 Rule Review Stakeholder Meeting Questions." Each OPSB question is in italics, followed by USSEC's response. Additionally, an appendix provides an overview of the drivers of solar development and the scale of the economic opportunity across Ohio (See Appendix A).

The OPSB seeks comments regarding three main areas: (1) public awareness and participation in the evaluation of projects; (2) the application review and adjudication process; and, (3) certificate monitoring and enforcement.

USSEC Response:

Public Awareness and Participation in the Evaluation of Projects

We believe that OPSB's existing public information program in Chapter 4906 is comprehensive and rigorous. It requires sending three separate letters to adjacent and other potentially affected property owners, publication of four separate notices in the local newspaper, sending three separate notices to public township and county officials and libraries, placement of a copy of the application in the local library, hosting a pre-application information meeting in the locality, and holding a local public hearing in the locality. Members of the community also can attend or move to participate as parties

[1] These comments represent the position of USSEC as a collective group but may not represent the views of any particular member of USSEC.

(either through counsel or pro se) in the adjudicatory hearing. In response to the specific questions below, we have suggested some possible refinements to the process. In general, though, we believe that the public information program fully informs potentially affected members of the community of proposed projects and affords them meaningful opportunities to be heard and participate.

In addition, we would like to provide some thoughts with regard to community engagement at the very beginning of the solar project development process.

First, community engagement is the first step in the development process by way of landowner outreach. Landowners are identified who may be interested in partnering with the project via a long-term lease or option-to-buy agreement. This outreach generally includes landowner letters, meetings, and, at times, community gatherings. It is important to note that a binding site control agreement is a required prerequisite and must be obtained before a developer can file an application with PJM Interconnection, LLC (PJM), the regional transmission operator. Said another way, without landowner partnership, projects never take the first step in the PJM transmission interconnection process.

Second, the PJM interconnection study process unfolds over a series of three successive studies: The Feasibility Study, the System Impact Study, and the Facilities Study. It is important to note that it is often not until the System Impact Study point of the PJM process that the cost allocation information for previously existing conditions on the network upgrade side is revealed. These three successive studies generally take 18-24 months to complete and provide the needed information on the economic viability of the proposed project from a transmission interconnection perspective. Historically speaking, the majority of projects that enter the PJM interconnection study process do not get built. Anecdotally, four in five projects that enter the transmission study process never get built. Why? Costly transmission upgrades present a fatal flaw to the economic viability of power generation projects.

USSEC strongly believes in community engagement as an opportunity for the project developers to understand concerns, incorporate modifications and appropriate permitting conditions to the project design, educate landowners on the benign environmental impact of solar technology, and share the positive local fiscal impact of solar projects. We believe, though, that the sequencing of expanded community engagement should come after the project is comfortable that the initial steps of project development can be achieved.

Application Review and Adjudication Process

In their applications, utility-scale solar developers can provide information that captures the "maximum extent" of the impact of the proposed project, and this information is sufficient for the OPSB to decide whether the proposed project represents the minimum adverse environmental impact to allow issuance of the certificate. The information provided can take the form of a maximum impact area or a preliminary site plan. Conversely, requiring final design and engineering and a final site plan (which would

require the selection of specific models of key equipment) as part of the application is not economically or practically feasible given how quickly technology is changing and how the specific component models selected drive the final project design. Although USSEC believes the current rules provide the OPSB with sufficient information, the OPSB could refine its application requirements to provide for broader and more detailed information. Examples of additional information include: (1) preliminary perimeter landscaping plans (2) drain tile information if available (3) a preliminary vegetation management plan and (4) a preliminary decommissioning plan, including plans for returning agricultural land to cultivation. This information could help the OPSB to lessen the number of conditions imposed on certificates. Identifying the maximum extent of the impact, coupled with the submission of the additional application detail suggested by these comments, will allow OPSB staff and ultimately the OPSB to have continued confidence in their respective recommendations and findings that they have identified the "nature of the probable impact" presented by the proposed facility and that the proposed facility represents the "minimum adverse impact." Specific suggestions are provided below.

Certificate Monitoring and Enforcement

USSEC is not aware of any needed improvements in the process for monitoring and enforcing certificates. Staff plays a significant role in monitoring the pre-construction and construction phase while other agencies, pursuant to separately required permits and authorizations, typically play a significant role in monitoring operations. Nonetheless, USSEC has offered some recommendations for an enhanced role, tied specifically to the certificate itself, for the OPSB during operations and in particular during decommissioning.

In combination with general input regarding these issues, the OPSB seeks comments regarding:

1. *How can the Board better engage the public?*

    a. *How can the process provide meaningful participation in project reviews?*

        1. *Prior to the filing of applications by the applicant or the Board?*

        2. *During the period between the application filing and the finding of completeness?*

        3. *During the period of Staff review and development of its report (within the statutory deadline of 15 days prior to public hearing - R.C. 4906.07)?*

        4. *What methods of participation are most useful to the public (i.e. public testimony, verbal comments on the record, written comments, or other forms of participation)?*

USSEC Response: USSEC believes that there are two primary steps that the Board could take to enhance public engagement.

First, USSEC believes that a concise, stand-alone summary of certain community-focused aspects of an application accepted by the OPSB as complete would benefit the public. The summary would provide key information about the application of particular relevance to the local community in only a few pages, including a map of the project boundary set within the context of local public roads and other well-known features. The summary would be prepared by the applicant and conform to a format specified by Staff. It could accompany the first and second public notice letters sent to owners of property crossed and/or adjacent to the project, public officials, and libraries that are sent following the entry setting the procedural schedule in the case, as well as be added to the docket, posted on the applicant's website, and made available at the local public hearing.

Second, an applicant could volunteer to create a project-specific website or other online portal to host the following information as it becomes available: (1) a link to the docket on the OPSB's website (2) contact information for the applicant (3) a copy of the information sent in the pre-application notification letter and the three public notices (4) the application summary and (5) the staff report.

b. *How can Staff become better informed as to local knowledge and project concerns prior to completing its formal report?*

USSEC Response: We believe that the OPSB benefits from the comments submitted by citizens at the pre-application public information meeting and in the public docket of the individual cases. We would also recommend that the OPSB Staff hold a "listening session" in the local area after the completeness letter is issued by the Staff, but prior to the issuance of the Staff Report. The listening session would be informal and would allow citizens in the project area to provide oral and written comments to the OPSB Staff. Staff can then compile the comments and select some or all comments for the applicant to respond to in the form of a data request/response. The applicant's responses (and the request) can then be filed on the docket. This process is similar to the process used in other states and for the National Environmental Policy Act (NEPA) process at the federal level.

c. *Current rules require 4 public notices regarding a proposed project: (1) pre-application informational meeting; (2) the determination of application completeness; (3) the first public notice 15 days after the application is accepted; and, (4) the second public notice 7-21 days prior to public hearing. What additional public notices might be helpful during the evaluation of a project?*

USSEC Response: See response to 1(a).

d. How else should the Board modify or update the current processes, including the public information meeting, public hearing, and evidentiary hearing?

USSEC Response: The local public hearing could be modified by providing attendees with more context at the onset of the hearing. Some attendees will not have had a chance to attend the public information meeting or read the application materials made available, or enough time may have passed that the information is not particularly fresh. A presentation about the application and Staff report prior to the start of the public hearing could provide useful context.

e. Staff currently consults with and engages subject matter experts from state and federal agencies to seek and provide information while reviewing projects for possible approval. Can this process be improved? And if so, what recommendations do you have?

USSEC Response: We are not aware of any need or opportunities to improve this engagement process.

f. How can the Staff improve the quality and timeliness of its review of transmission projects through coordination with regional planning authorities such as PJM Interconnect LLC?

USSEC Response: We are not aware of any need or opportunities to improve these reviews.

2. What modifications should occur as to application processing?

a. With regard to the findings that the Board must make pursuant to R.C. 4906.10, to what extent can any of the required determinations be deferred after a certificate is authorized to accommodate the receipt of information for which the provision may not be feasible until after the certificate is authorized?

USSEC Response: Although certain information may not be available until after the certificate is issued, such information has not been necessary for the OPSB to make its determinations under Section 4906.10 for a multitude of projects.

b. If any such determination is so deferred, should the Board consider unbundling a certificate to construct and operate, and permit construction to move forward while the operating authority is deferred until such time and any open items are addressed?

USSEC Response: USSEC is not aware of any statutory authority that would allow the OPSB to bifurcate its approval of an application into a construction approval and operation approval. Splitting the certificate into separate authorizations to construct and operate so as to allow construction to proceed while the operating authorization is pending is not feasible for the utility-scale solar industry (or for any industry). If the authorizations were "unbundled" in this way, then projects simply would not proceed with construction until after both authorizations had been granted. It would not be feasible to secure financing for or make the business decision to proceed with construction without the operation authorization having been granted. To do so would risk the total loss of the investment if the operation authorization were not granted. Even if a project were financed and constructed under a construction only certificate (which is highly unlikely), construction of a large utility project with no operational authority would create uncertainty and undue stress for the local community.

Should certain phases or components of the application be: (1) approved only upon submission of "final designs;" or, (2) approved pursuant to more fully developed project information if it is impractical or not feasible to provide final detailed studies/designs or plans?

USSEC Response: No. Section 4906-4-03 currently requires that an application include a "detailed description of the proposed facility." This description must include the "type, number of units, estimated net demonstrated capacity [and] . . . annual capacity factor." It also must include "in as much detail as is available at the time of the application" the materials, color and texture of surfaces and the dimensions of all facility components, including (1) electric power generation plant (2) associated electric transmission and distribution lines (3) electric collection lines (4) substations, switching stations, and transformers (5) meteorological towers (6) access roads (7) construction laydown areas and (8) other pertinent instillations. The application must include a map showing the proposed facility and all of the above components, as well as a "constraint map showing setbacks from residences, property lines, utility corridors, and public rights-of-way, and other constraints of the site design." Significantly, the "[p]reparation of the final design" is required to be included in a proposed project schedule of "major milestones" submitted with the application. Among these major milestones, preparation of the final design is listed following "[i]ssuance of the certificate" and prior to "construction of the facility."

For proposed utility-scale solar facilities, USSEC believes the current rules have provided the OPSB with sufficient information to approve projects (as well as other types of utility projects). If additional information is desired, then the rules could require the application to include a preliminary site plan that is based on all available preliminary design and engineering but that also represents the facility's maximum extent relative to the public and the environment. This preliminary/maximum extent site plan would establish the design envelope of the facility across all dimensions and describe all of the major components to be constructed within that envelope. It either could identify preliminary

model selections, or illustrate typical models, of all the major components of the facility: solar panels, racking, inverters and foundations, piles, collection lines, the project's substation, the utility's substation (which may already exist), equipment sheds, the Supervisory Control and Data Acquisition building, roads, pyranometers, and fencing.

Because all the components of a utility-scale solar facility (except possibly some collection lines) necessarily will be fenced, the fence lines shown in the preliminary/maximum extent site plan would represent the maximum boundary of the facility with respect to neighboring parcels and public roads. Although the fences and therefore the components within them, ultimately may be constructed *farther away* from neighbors and roads, they would not be closer. Likewise, apart from the substation(s) and any above-ground electrical lines, features which are ubiquitous in modern society, a maximum height for all the major components could be specified in the application. Although the height of the components ultimately may be *lower* than indicated, they would not be higher. Thus, the maximum extent of the proposed facility would be fully depicted in the application.

As part of the final site plan to be reviewed by Staff prior to construction start, the applicant could report the models of the components to be used, provide the final design and engineering, and identify the precise locations and heights of all the components behind the fence. Different models of solar panels, racking and inverters are virtually identical in function and highly similar in appearance. They are largely interchangeable commodities manufactured by scores of companies in highly competitive, global markets. Although subtle technical differences among models will have no effect on the public or the environment, however, such differences can significantly affect final design. For example, the electric generating capacity of individual solar panels currently ranges from 325 to 480 watts; the wattage selected will determine the number of solar panels and the specific model chosen will determine the available options for racking and inverters. To optimize a project from both an engineering and economic perspective, multiple combinations of models of solar panels, racking, and inverters must be evaluated at the time those models are selected.

It is important to note that, because of the length of the certification process and market realities for utility-scale solar facilities, it is not economically feasible—in the application—to identify the models to be used and give the precise location within the fence of the various components. Because of rapidly advancing technology (both as to cost and performance) and dynamic markets, the final model selections necessarily must occur close to construction start. Indeed, the financing for procurement and construction of a project will be attracted by, and based on, the final model choices and the final engineering and design based on those models. Only after the models have been selected and final design and engineering is completed can the precise locations of the key components within the fence be identified. Those locations, in turn, will drive those of the ancillary components, including the piles, collection lines, and roads. Requiring the submission of the final site plan with the application would result in procurement decisions and final design and engineering that are obsolete by the time of financing and construction start. In fact, they could easily be obsolete before a certificate is issued for the project.

The similarity of the key components (both as to function and appearance) and the presentation of their "maximum extent," however, means that the preliminary/maximum extent site plan provides a sound basis on which an application can be evaluated against the applicable statutory criteria for certification and the Board's substantive rules. That is, the preliminary/maximum extent site presents a reasonable, comprehensive scenario for Staff and the OPSB to assess the full range of relevant impacts of the proposal to the public and the environment per the OPSB's rules: air and water quality, solid waste generation, aviation, health and safety, ecological resources, land use, cultural and archeological resources, and agricultural districts and agricultural land. The model selections and final engineering and design in the final site plan are merely refinements of the preliminary/maximum extent site plan that do not affect those assessments. Accordingly, final project design information should not be required to be submitted before the certificate is issued, but continue to be submitted (if desired by Staff) only prior to construction start.

What should the Board consider when making this determination of feasibility?

1. *Landscape/lighting plans?*

USSEC Response: Section 4906-4-08(D)(4) of the OPSB's current rules require the applicant to retain a licensed land architect or similar professional to develop a visual impact assessment of the proposed facility within a ten-mile radius. This visual assessment must include photographic simulations or artist's pictorial sketches of the proposed facility from a range of vantage points presenting different viewers and types of resources. It must not incorporate any seasonal land cover, such as deciduous vegetation or agricultural crops, as viewing obstacles. The applicant must describe measures that will be taken to minimize any adverse visual impacts, including visual screening.

Although the current rules have been successful for years in providing the OPSB with sufficient information to act on applications for certificates, the OPSB may find that a "preliminary landscape plan" based on the visual impact assessment would be helpful if included in the application. The preliminary landscape plan could provide examples of vegetative landscaping and screening. It also could indicate where, if any, vegetative screening is proposed to be implemented and of what type and configuration.

Accompanying the final site plan submitted after the certificate is issued, but prior to construction start, would be a final landscape plan. The final landscape plan may show that the perimeter fence in a particular location—per the final site plan—is farther away from homes or public roads than in the preliminary landscape plan, and, therefore, the vegetative screening just outside the fence would likewise be farther way. The final landscape plan could also identify specific species of vegetation and provide a schedule for planting and establishment. Finally, the final landscape plan could include additional screening in locations where the applicant has responded to concerns from the neighboring landowners about visual impact of the facility.

In the case of utility-scale solar facilities, USSEC believes that a visual impact assessment of a two-mile radius around the proposed facility is more than sufficient. Utility-scale solar facilities have a very low visual profile. Except for the substation(s) and any above-ground electrical lines, both of which are ubiquitous in modern society, the equipment within the fence of a utility-scale solar facility will be quite low, usually in the range of 10 to 15 feet high. This is very low compared to all other types of electric generating facilities and below the apex of most one-story homes. In addition, the vast majority of utility-solar facilities in Ohio are and are expected to be constructed on relatively level land. In these circumstances, and even without intervening vegetation and buildings, viewers located more than two miles from a utility-scale solar facility will have difficulty discerning it from the surrounding environment.

Similarly, although adequately addressed by the OPSB's rules and through certificate conditions, a "preliminary lighting plan" could be submitted in the application as part of the preliminary/maximum extent site plan. Lighting for utility-scale solar facilities is minimal because those facilities do not generate energy at night and typically do not include any offices or other occupied structures. Lighting is primarily for safety and security at gates, inverters and the substation(s). The preliminary lighting plan could indicate a likely number of lights, the types of lights to be employed so as to minimize the effect off-site (for instance, motion-activated, downward-facing and/or shielded) and, with regard to the lights at entrances, the closest they would be to neighboring homes or public roads.

A part of the final site plan submitted after the certificate is issued, but prior to construction start, would be a final lighting plan. The final lighting plan could provide the exact number and specific types of lights. Entrances and the accompanying lights may be farther away from neighboring homes or public roads than in the preliminary lighting plan, but would not be closer. The specific location of lights within the fence, e.g., at inverters and the substation(s), could be provided.

2. *Solar glare studies?*

USSEC Response: We do not believe that the OPSB should require studies of "glare" from utility-scale solar farms. Solar panels are a dark color and are designed to absorb light, not reflect it, and any reflected light represents lost energy. Solar panels generally have less reflectivity than a variety of common features in the environment, including lakes and just harvested agricultural fields. The Federal Aviation Administration developed software for assessing the potential glare effects of utility-scale solar facilities proposed to be located on airport property. The results of using that software routinely demonstrates minimal glare for aviation purposes, and a number of utility-scale solar facilities now are located at major airports.

3. *Cultural resource studies?*

USSEC Response: Section 4906-4-08(D) of the OPSB's current rules require that an applicant provide information about the proposed facility's potential impact on recreation areas, trails, scenic rivers, scenic roads, and registered landmarks of historic, religious, archeological, scenic, natural or other cultural significance within ten miles of the project area, as well as plans to avoid or mitigate such impacts.

As with the Visual Impact Assessment for community purposes, the architectural and other cultural resources need not be more than a two-mile radius around the proposed facility. The experience of visitors enjoying historic buildings, recreation areas, trails, scenic rivers, scenic roads, and registered landmarks will not be adversely affected by low-lying solar panels and inverters more than two miles away.

Depending on the degree of subsurface investigation, a Phase I Archeological Survey for a utility-scale solar facility can be a very costly and time-consuming effort that is justified only if the applicant plans to proceed with construction. Again, while existing rules and Board practice on conditioning Phase I surveys have worked well, an application could include a proposed Phase I Archeological Survey Research Design and a proposed Historic Resource Survey Research Design that have been submitted for review to the Ohio Historic Preservation Office. Implementation of the approved plans, however, should not be required as part of the application, but a condition of the certificate. Given that utility-scale solar facilities occupy a considerable amount of land and the equipment is somewhat "modular," such a survey is also highly unlikely to identify resources of such an extent that the applicant could not "design around" any identified archeological resources. Similarly, the viewshed analysis and preliminary landscape plan submitted with the application can address any viewshed concerns regarding historical structures near the project area.

4. *Vegetation management and plant/animal impact action plans?*

USSEC Response: If desired by the OPSB, an application for a utility-scale solar facility could include a "preliminary vegetation management plan" for the area within the fence as shown on the preliminary/maximum extent site plan. Utility-scale solar facilities typically feature within the fence and below the solar panels a robust, low-growing turf grass that holds topsoil in place and provides stormwater management benefits. Increasingly, varieties with pollination and other ecological benefits are being incorporated in some areas. The preliminary vegetation management plan could set forth the planned program for ground vegetation within the fence, including regular maintenance, any planned use of herbicides, and control of any invasive species.

As with most power generation certificates issued today, a final vegetation management plan would accompany the final site plan submitted after the certificate is issued, but prior to construction start. The final vegetation management plan would apply within the final fence locations as indicated in the final site plan. It also would specify the varieties of grasses to be planted and finalize other details regarding maintenance.

5. *Final decommissioning plans?*

USSEC Response: Section 4906-4-06(F)(5) of the OPSB's rules currently require that an application for a utility-scale solar facility describe the plan for decommissioning the proposed facility and any financial arrangements necessary to assure the requisite financial resources.

USSEC believes that the current rule presents the OPSB with sufficient information on decommissioning and that formalizing that information into a written plan is not necessary (and to date has not been required) to be in an application. An applicant, however, could include in the application a "preliminary decommissioning plan" based on the preliminary/maximum extent site plan. It would specify that all components of the facility be removed to a depth of at least 36 inches (e.g., ample to resume cultivation) and be reused, recycled or disposed of in accordance with applicable law at the time of decommissioning, with recycling undertaken to the furthest extent practicable. The preliminary decommissioning plan also could specify the expected duration of decommissioning activities and that the plan would be updated every five years during operation to reflect current costs and removal methods.

Accompanying the final site plan submitted after the certificate is issued, but prior to construction start, would be a final decommissioning plan based on final design of the proposed facility. The final decommissioning plan would refine the cost estimates to match the final engineering and design captured by the final site plan, including the specific models of components selected and the precise number of each.

The preliminary decommissioning plan could also include steps to ensure that adequate financial resources are available to carry out the plan. These steps could include the identification of the options for financial instruments, e.g., a bond, letter of credit, or corporate guarantee. These steps also could include an estimate of the net cost of implementing the decommissioning plan calculated by an independent, registered professional engineer licensed to practice engineering in Ohio. The net cost of decommissioning would be the total cost of decommissioning less the value estimated to be realized by selling removed components or materials. To provide for a conservative approach, a 10% contingency factor could be added to the total cost and the amount of the financial instrument would increase as needed based on the five-year reviews, but not decrease.

USSEC notes that the OPSB's rules for wind farms in Section 4906-04-09 require the applicant to calculate the total cost of decommissioning without regard to the "salvage value" of the equipment and that the full amount be posted turbine-by-turbine during construction. USSEC does not believe that a similar approach is needed or justified for utility-scale solar facilities and that the total cost of decommissioning should be offset by the value of the solar panels and other project equipment.

For example, solar panels installed at these facilities typically are accompanied by a manufacturer's warranty that the equipment will produce at least 80% of its rated power after 25 years. (This robust level and precision of warranty is likely only to improve with continued technological advancements in a highly-competitive, global market.) Solar panels removed from a utility-scale solar facility, especially if still under warranty, are likely to be reused for many years, for instance in locations with a stronger solar resource. Thus, given the very low likelihood of their early decommissioning, to ignore the long-term value of the equipment would impose a significant financial burden on utility-scale solar facilities for very little public benefit.

Once producing energy, a utility-scale solar farm also is highly unlikely to be decommissioned prior to the end of its useful life, which is 30 to 40 years. Utility-scale solar facilities employ mature technology that is more than 50 years old. They are relatively expensive to build, but relatively inexpensive to operate. Solar panels themselves have no moving parts, and the other equipment has very few, primarily some parts inside the inverters and, for solar panels that "track" the sun over the course of the day, small electric motors on the racking. There is no fuel cost, a highly uncertain variable for many traditional types of electric generation. Utility-scale solar facilities also do not rely on any fuel delivery systems, such as natural gas pipelines, and they need not manage any waste streams, such as spent coal piles.

6. *Geotechnical and other testing results?*

USSEC Response: Section 4906-4-08(A)(5) of the OPSB's rules currently require that an applicant show the geological features of the proposed facility site, describe the suitability of the site geology (and plans to remedy any inadequacies), and describe plans for test borings to assess several factors, including static water level and depth to bedrock.

Although many projects have been constructed in Ohio under the current rule and with waivers to allow for delayed submittal of test borings, an applicant could submit the results of "preliminary geotechnical testing" to inform the preliminary/maximum extent site plan. The preliminary geotechnical testing would include only initial borings in a limited number of locations sufficient to confirm that the site is suitable for utility-scale solar energy. For example, the preliminary geotechnical testing would include limited tests to determine the site-wide depth to bedrock. This would be sufficient to confirm that the site will allow the cost-effective installation of the only subsurface components of a utility-scale solar facility, which are pilings for racking, buried collection lines and the foundation for the substation(s).

Final geotechnical investigations of the entire site to confirm a variety of factors that relate only to final design should not be required as part of the application. For instance, the final geotechnical investigations would include comprehensive "push-pull" tests to determine the precise length of specific pilings in different locations. In addition to being very costly, the results of tests such as these do not affect viability of the proposed facility, nor do they

affect the public or the environment. As such, they are appropriate only after the certificate has been issued and prior to construction start.

7. *Adaptive engineering plans (i.e. turbine modifications)?*

USSEC Response: USSEC does not believe that any changes to the OPSB's rules are needed with respect to this subject.

8. *Impacts to agricultural land?*

USSEC Response: Section 4906-4-08(E) of the OPSB's rules currently require that applicants submit a map of agricultural land, with different categories of current uses distinguished, and agricultural districts. The applicant must quantify the expected impact of the facility on field operations, irrigation, drain tile, agricultural structures, and agricultural districts. An applicant also is required to describe how the impacts to agricultural land, structures, and practices will be minimized. This includes avoiding or minimizing to the maximum extent practicable damage to drain tile and segregating, de-compacting, and restoring any excavated topsoil.

Because of their finite commercial life, utility-scale solar facilities typically must be decommissioned after 35 to 40 years. (Any repowering with new solar panels and perhaps other components would require an amendment to the certificate and, in most cases, the re-negotiation of long-term leases, which are the predominant land right used in the industry.) Compared to other forms of power generation, decommissioning utility-scale solar facilities is relatively straightforward. They have few poured foundations; typically, piles are simply driven and inverters are mounted on pre-cast concrete pads, gravel pads or metal skids. The depth of piles is relatively shallow, usually less than ten feet. Roads typically are aggregate or merely grassed driving isles, not paved. With the exception of the substation(s), the components of a utility scale solar facility can readily be removed.

Particularly in Ohio, land that hosts a utility-scale solar facility generally can be returned to substantially its original condition. Ohio enjoys an abundance of cleared, relatively level and dry land, much of which is devoted to agriculture and which also is ideal for utility-scale solar facilities. For solar, level land means that there is little need for cut-and-fill grading and that, except for minor grading and gravel road construction, topsoil largely remains in place as piles are simply driven through the topsoil. Topsoil that is displaced typically is kept on site and used to establish the turf grass for the facility. For these reasons, use of agricultural land for 35 to 40 years does not convert that land to a non-agricultural use, but rather preserves it for possible cultivation in the future. In this regard, a recent report issued by N.C. State University concluded as follows:

> "Modern solar facilities may be considered a temporary, albeit long-term, use of the land, in the sense that the systems can be readily removed from the site at the end of their productive life. At this point, the site can be

> returned to agricultural use, albeit with a potential for some short-term reduction in productivity due to loss of topsoil, compaction, change in pH, and change in available nutrients. Leasing farmland for solar PV use, particularly land that is not actively being farmed today, is a viable way to preserve land for potential future agricultural use. PV use is particularly valuable in this regard when compared to commercial or residential development, which require changes to the land that are very difficult to reverse. For landowners struggling to retain ownership of their land due to financial strains, solar leasing may provide a vital, stable income solution. It may also serve as a more appealing alternative to selling their land to buyers intending to use the land for other, more permanent non-agricultural uses."

N.C. Clean Energy Technology Center, N.C. State University, "Balancing Agricultural Productivity with Ground-based Solar Photovoltaic (PV) Development" (May 2019) pp. 5-6.

Importantly, even this long-term, temporary use would not, under any realistic build-out of utility-scale solar facilities in Ohio, occupy more than a very small fraction of Ohio's agricultural land. As shown in Appendix A, even if Ohio were to build all of the 13,000 MW of proposed solar projects currently in the PJM queue, they would occupy less than 1% of the harvested cropland in the State.

Although land in an agricultural district that hosts solar panels for 35 to 40 years would, under the current legal definition of "agricultural production," exit that district, USSEC does not believe that this should weigh against the solar use. As noted above, the solar use is long-term, but nonetheless temporary, and the land can be returned to "agricultural production" and the land again become part of (or fully comprise) the agricultural district. In this regard, we note that an agricultural district is created merely by the landowner's opting into the program with at least ten acres of land in agricultural production of any quality. It is more of a personal decision of the landowner to take advantage of "right-to-farm" protections than a policy decision that the particular land is prime agricultural land. By hosting a utility-scale solar facility, the landowner is making a similar personal decision to manage the land for a generation in a way that is best for his or her family. After the solar panels are removed, the landowner would be free again to enter the agricultural district program.

9. *Land use authority?*

USSEC Response: The OPSB's rules currently require that information about the applicant's land rights be provided in the application but do require 100% land control. (Likewise, there is no statutory requirement that an applicant demonstrate full land control.) Given that the current process has resulted in many successful projects in Ohio, USSEC does not believe that there is any need to require any level of land control in the

application. Doing so could slow development for all types of projects in Ohio, such as pipelines and transmission lines.

10. Transparent safety information, including access to non-proprietary safety manual information?

USSEC Response: Section 4906-4-08(A)(1)(c) requires the applicant to provide the "generation equipment manufacturer's safety standards" that must include the "manufacturer's safety manual or similar document and any recommended setbacks from the manufacturer." As noted above, the key components of a utility-scale solar facility are the solar panels, inverters and racking. Different models of this equipment are virtually identical in function and essentially interchangeable. All of it is fenced, and the public will have no access to it, and manufacturers generally do not specify setbacks other than that the components be fenced and access controlled. Given that the applicant can describe the nature of these components with ample specificity for the OPSB to judge their safety to the public, there is no need for specific safety documentation from any particular manufacturer to be provided in the application.

11. Interconnection information?

USSEC Response: USSEC believes that the current OPSB rules require the appropriate information regarding interconnection for an application. Section 4906-4-05 requires that applications set forth the relevant interconnection queue information, explain how the proposed facility will be connected to the electric grid, and provide copies of the feasibility study and system impact study. The results of these studies from the regional electric grid manager, PJM, will describe the physical attachment facilities that will connect the proposed electric generation facility to the electric transmission system and whether doing so would necessitate any "network upgrades" that may render the proposed facility economically infeasible. No additional information is needed for the OPSB to make its required statutory findings.

12. Land lease/use arrangements

USSEC Response: USSEC does not believe that copies of land leases or other land use arrangements need to be submitted to the OPSB. These documents are often voluminous, contain highly confidential business information, and are not needed by the OPSB to make any of its required statutory findings.

13. Other

USSEC Response: Please see above responses.

c. *What level of design and engineering drawings should be provided in the application? Should the final design be provided?*

USSEC Response: See the answer to the previous question. The final site plan based on final design should not be required to be provided in the application, but only after the certificate is issued and prior to construction start.

d. *To the extent the applicant submits supportive studies, should the studies be subject to a trustworthiness standard such as the evidentiary standard applicable to expert opinions? If so, what standard? If not, why not?*

USSEC Response: USSEC does not believe that supporting studies submitted in support of an application need to be or should be subjected to any particular trustworthiness standard. In all cases, both contested and uncontested, the OPSB, Staff and the Administrative Law Judge have been able to assess both the credibility of and weight to be given such studies. In contested cases, these factors are further subject to the stress of the adversary process.

e. *Does the application need to be expanded, including the required information in the filing?*

USSEC Response: The application requirements are comprehensive and typically result in voluminous applications. One of the common complaints USSEC members hear from the public is that too much, not too little, information is provided or that the information is challenging to navigate and digest.

For this reason, USSEC recommends that the application requirements be tailored more closely to the generation technology. For instance, a variety of subjects in Chapter 4906-4 relate only to fossil fuel and/or wind energy generation, not to utility-scale solar: air emissions, air pollution control equipment, water discharges (except for stormwater), radar systems, navigable airspace, and microwaves. Similarly, several rule requirements call for information relating to features as far as ten miles from the project area, however except for common electrical infrastructure such as a substation or transmission lines, a utility-scale solar facility could not be seen, or at least discerned on the landscape, farther than two miles from the equipment.

f. *Should multi-stage projects be required to be filed as one combined application (i.e., transmission line, substation, generating facility)? Why or why not?*

USSEC Response: Proposed utility-scale solar facilities generally consist of the generating equipment itself connected to a project-level substation to be built by the applicant and a short transmission line or "gen tie" connecting the project-level substation to the utility substation. (If the power is not being delivered to an existing utility substation, the utility will construct a new utility substation for that purpose.) Although typically the certificate authorizes both the generation equipment and the project-level substation while a separate "construction notice" authorizes the gen-tie, all three (i.e., the generation equipment, the project-level substation, and the gen-tie) usually are not built in phases, but as a single, integrated project. With that said, the rules currently give a developer flexibility on how and when to submit applications for certificates, for example, generation facility, transmission line, and substation. USSEC encourages the OPSB to continue to allow that flexibility.

1. *For multi-stage projects involving a generating plant and a dedicated transmission line, how should "need" for the transmission line be determined?*

USSEC Response: The need criteria for a dedicated transmission line for a utility-scale solar facility is self-evident as it conveys power to the regional transmission grid from the solar-powered generation facility. The OPSB has consistently made this type of finding for gen-tie lines from solar-power generation facilities.

g. *What criteria should determine the difference between a "modification" versus an "amendment?"*

USSEC Response: As described in detail above, applications for utility-scale solar facilities provide information that captures the "maximum extent" of the proposed project. This information provides a maximum impact area or a preliminary site plan. As used in Section 4906.07(B) of the Revised Code, an "amendment" refers to any change in the facility that "would result in any material increase in any environmental impact of the facility or a substantial change in the location of all or a portion of such facility other than as provided in the alternatives set forth in the application." Given how solar facilities utilize a "maximum extent" concept, USSEC believes that regulatory criteria attempting to formally define what constitutes an amendment versus a modification is not necessary for utility-scale solar facilities and should not be adopted. Rather, if there are any questions in this regard, they should continue to be evaluated by certificate holders on a case-by-case basis, in consultation with Staff, to determine whether a change modifies the maximum impact area or will affect the certificate condition. Provided that no certificate conditions are affected and the final design of the solar facility does not increase the "maximum extent" reflected in the application and approved by the OPSB, a modification should be presumed to not be an amendment.

h. What criteria should determine if a proposed change in the facility would result in any material increase in environmental impact or a substantial change in location for purposes of R.C. 4906.07?

USSEC Response: Section 4907.07(B) of the Revised Code provides that "[o]n an application for an amendment of a certificate, the board shall hold a hearing in the same manner as a hearing is held on an application for a certificate if the proposed change in the facility would result in any material increase in any environmental impact of the facility or a substantial change in the location of all or a portion of such facility other than as provided in the alternates set forth in the application." As noted above, USSEC does not believe that regulatory criteria for distinguishing between types or categories of changes should be adopted, but that each change should be evaluated pursuant to the statute on a case-by-case basis.

i. Where provision for decommissioning is appropriate, should the applicant be required to demonstrate project financial viability/adequate cash flow sufficient to accommodate estimated and actual decommissioning expense?

USSEC Response: Although the current rules have resulted in performance bond posting for many projects (most wind-powered generation), an applicant could, prior to construction start, (1) provide an engineering estimate of the net cost of decommissioning; and (2) when the net cost is positive, post to the OPSB financial security to cover that net cost. In light of the financial security, there should be no need for the applicant to demonstrate the financial ability or cash flow to decommission.

j. Should an applicant be required to submit manufacture safety manuals and other materials and to what extent should such information be available to the public?

USSEC Response: USSEC believes that the applicant could be required to submit such information to Staff prior to construction start and, less any redacted proprietary information, could be made available to the public. For example, after redacting proprietary information, such materials could be filed in the case docket for the project.

k. Should the applicant be required to address issues and concerns raised in public comments?

USSEC Response: USSEC believes that the process would be improved if an application addresses public comments submitted in writing to the applicant during the pre-application informational meeting or submitted in writing to the OPSB at any time prior to the issuance of the Staff Report. (The testimony provided during the local public hearing does not

constitute a "public comment" but is part of the record of the evidentiary hearing.) One challenge in addressing public comments is addressing oral comments, for instance comments made or discussions had at the pre-application informational meeting. This could be addressed by the applicant providing a prominent means of submitting written comments and making clear that only those will receive a response. The process proposed above, whereby the Staff documents all comments received during the "listening session," and then the applicant is required to respond to the comments in its response to a date request from Staff would be beneficial.

3. *How should the Board monitor and enforce the terms of its certificates?*

   a. *How should compliance with certificated conditions be documented both with regard to the determination of when construction may commence and through the life of the certificate/facility?*

USSEC Response: With regard to documentation of when construction may commence, USSEC believes that the existing rules are adequate. Section 4906-3-13(C) provides that a continuous course of construction must commence within five years of the date of the issuance of the certificate. Section 4906-3-13(A) requires that the applicant notify the OPSB of the date on which construction will commence and the date on which it was completed. Any failure of an applicant to comply with these obligations would be subject to enforcement pursuant to Section 4906-07-02.

With regard to compliance with certificated conditions during the operation of the facility, it has not been the OPSB's general practice to include in certificates detailed provisions regarding documentation of certificate compliance. Once the specific siting of the facility is approved and construction is complete in accordance with the certificate, oversight of operations generally falls to federal and state permits that address operations more directly. For instance, Ohio EPA monitors and enforces compliance with air emission permits and wastewater discharge permits for fossil fuel generation facilities. Given that compliance oversight and the OPSB's available complaint process, no changes to the OPSB's current rules on compliance are necessary.

   b. *To the extent that permits, licenses or other consents must be obtained from federal, state or local authorities before the project can move forward, how should the applicant document satisfaction of these requirements and update the Staff and Board as a result of changes in circumstances that may affect the authority provided by such permits, licenses or other consents.*

USSEC Response: It has been the OPSB's general practice to include in certificates a requirement that the applicant provide a schedule of permit acquisition for the pre-construction conference and, prior to construction, provide Staff copies of all other permits

or authorizations required for construction by federal or state laws or regulations. This approach could be supplemented by requiring that the applicant also provide any such permit or authorizations required for operations not already provided with respect to construction. Regarding compliance with operational requirements, please see the response to 3(a), above.

c. More generally, what post-construction monitoring and enforcement procedures should apply, including during the operation and decommissioning phase?

USSEC Response: With regard to operations, see our response to question 3(a), above. With regard to decommissioning, it has been the OPSB's general practice to include in the certificate a requirement that a decommissioning plan be in place prior to construction start and be updated periodically during operations. To enhance its monitoring of decommissioning when the work is actually to be undertaken, the OPSB could consider adding two steps to the process. First, a certificate could require that the decommissioning plan be updated just prior to the beginning of decommissioning. Second, a certificate could require that the applicant participate in a pre-decommissioning conference with Staff modeled on the pre-construction conference.

d. What additional procedures should apply, if any, to certificate transfers beyond the transferee agreeing to comply with the terms, conditions, and modifications imposed upon the certificate by the Board? What enforcement mechanisms should exist to ensure compliance with certificated conditions, board orders, rules, or laws (i.e. suspension of certificate or operating authority in the event of a violation of 4906.98)?

USSEC Response: USSEC does not believe that any additional procedures should apply to certificate transfers other than those required by Section 4906.04 of the Revised Code.

e. By what process should decommissioning costs be revisited and evaluated for purposes of establishing the bond level?

USSEC Response: It has been the OPSB's general practice with respect to utility-scale solar facilities to include a requirement in the certificate that the net cost of decommissioning for purposes of establishing the level of financial security be calculated by an independent and registered professional engineer and that it be periodically recalculated, such as every five years. USSEC believes that this process is more than adequate to ensure that funds are available to decommission the facility.

We thank you for the opportunity to participate in this stakeholder process.

Sincerely,

The Utility Scale Solar Energy Coalition of Ohio

UTILITY SCALE SOLAR ENERGY COALITION
USSEC
OF OHIO

AVANGRID
First Solar.
EDF
geenex
Hecate Energy
INNERGEX
innogy
Invenergy
LEEWARD
Renewable Energy, LLC
lendlease
OPEN ROAD
RENEWABLES
Pattern
RWE
SAVION
A RENEWABLE ENERGY COMPANY
S·POWER
An AES and AIMCo Company
7X.energy™

Appendix A

Solar Development in Ohio

I. Drivers of Solar Development Activity in Ohio

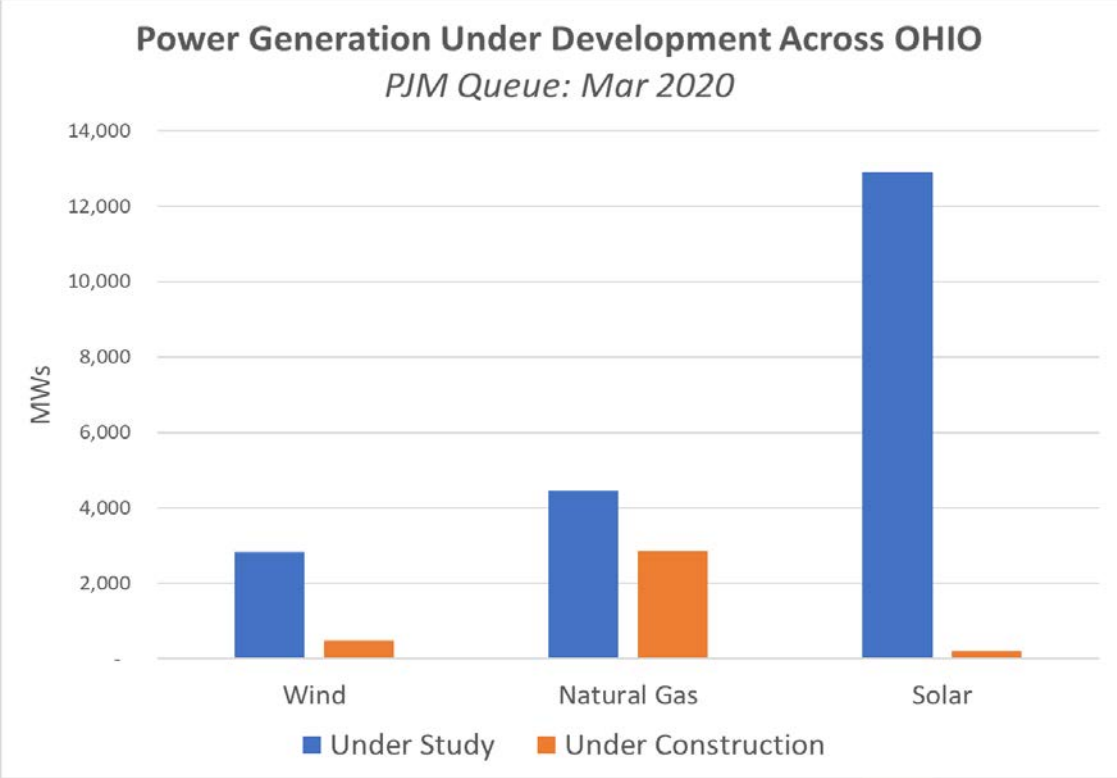
Utility-scale solar development across Ohio has accelerated significantly due to three key developments: (1) the declining cost of solar energy, (2) the increasing demand of Fortune 500 companies for clean energy, and (3) the robust and growing demand of environmental attributes to meet PJM-wide Renewable Portfolio Standards and Alternative Energy Portfolio Standards ("RPS/AEPS").

According to the Lawrence Berkeley National Laboratory, the levelized cost of solar energy has fallen by more than 80% over the past decade due to technology improvements and global economies of scale.[1] According to industry experts, the levelized cost of electricity for utility-scale solar in Ohio ranges from $0.035/kWh to $0.04/kWh. Utility-scale solar levelized cost economics make it a modest premium to wholesale energy prices and is one of the least cost new build resources in the State.

The demand for clean energy from Fortune 500 companies continues to grow with 86% of Fortune 500s having published sustainability goals.[2] These industry leaders are procuring clean energy to address shareholder, customer, and employee interests while also hedging against rising energy costs. Of particular note, each of the Fortune 500 technology companies leading the data center expansion in New Albany (i.e., Google, Facebook, and Amazon) have a 100% clean energy goal. It is expected that the data center additions over the next decade will drive significant clean energy demand from new Ohio-based renewable energy facilities.

Finally, state RPS/AEPS are driving additions across the region. A bottoms-up analysis of the PJM-wide demand for "Tier I" Renewables Energy Credits ("REC") concludes that Tier I REC demand will grow from roughly 50,000 GWh/y in 2020 to 100,000 GWh/y by 2030. This growth in Tier I REC demand will be met by new utility-scale wind and solar both in Ohio and across PJM. Converting REC demand to installed capacity, at a 40% capacity factor, yields roughly 14,000 MW of wind additions across PJM over the next decade to meet the increased PJM Tier I REC demand. Alternatively, if all of the Tier I REC demand is met by solar, at a 25% capacity factor, roughly 23,000 MW of new utility-scale solar would be needed across the PJM states over the next decade. Although it is impossible to forecast the precise mix of wind and solar that will be built across PJM and Ohio, we note that there is currently three times more solar than land-based wind development activity across PJM per the interconnection queue.

Driven both by falling costs and corporate clean energy demand and Tier I REC demand, there now is significant utility-scale solar development activity in Ohio. As shown in the table below, solar development activity currently is outpacing any other generating technology.

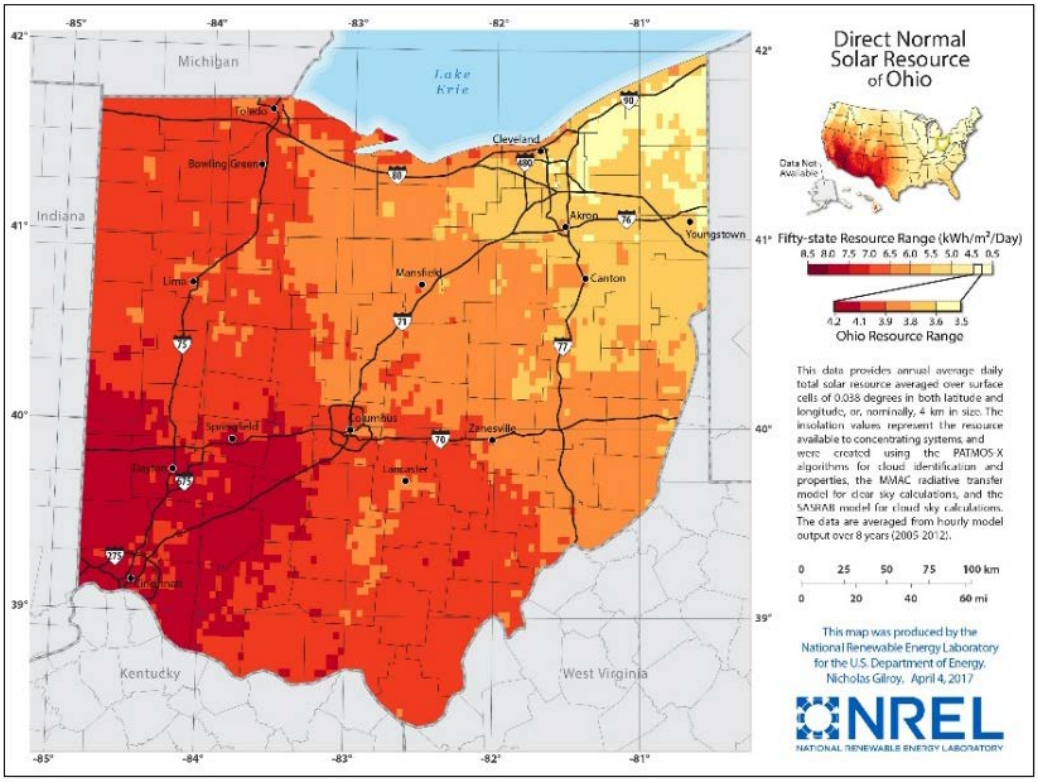


The 200-MW Hillcrest Solar Project, which is located in Brown County just east of Cincinnati, is currently under construction. That project will feature more than 500,000 solar panels manufactured by Perrysburg-based First Solar. It is expected that several other utility-scale solar projects will start construction later in 2020 or early 2021, and the growth will continue as projects mature through the interconnection and siting process.

II. Considerations in Siting Solar Across Ohio

Although there are many considerations that drive site selection for new solar facilities, a key factor is the developer's effort to minimize the facility's levelized cost of electricity. Levelized cost of electricity is driven by (1) the strength of the solar resource (2) construction costs (3) transmission interconnection costs and (4) operating costs such as lease payments to landowners, taxes, and O&M costs, and other financial proforma drivers.

The map below, produced by the U.S. Department of Energy's National Renewable Energy Laboratory, shows that solar resource is strongest in the southwestern part of the State. All else being equal, the greater the solar resource, the lower the levelized cost of electricity from a solar facility. As a result, the majority of the early solar development in Ohio has taken place in the southern and western parts of the State. It is expected that development will continue in these regions with a more robust solar resource.



Solar developers also select sites based upon a variety of constraints on utility-scale solar construction in a particular area or location. These constraints include the availability of existing transmission infrastructure, floodplains, wetlands, wildlife habitat, geology, cultural resources, population density, and local community interest. Assessments of these constraints are performed using desktop resources, on-site surveys and in-person meetings with landowners and local officials.

The utility-scale solar industry also is keenly aware of the potential for incurring transmission upgrade costs and their impact on solar economics. Ideal sites are those where new power can be injected into the transmission system without triggering the need to upgrade the system and bear the associate cost. One of the key advantages of utility-scale solar development is the flexibility to locate and size new generation efficiently within the existing transmission system.

The map below shows the solar projects that are currently active at the OPSB. Each of these projects was selected based upon many considerations including (1) solar resource (2) viability within the local community and (3) transmission interconnection cost profile.

The final map below depicts all of the solar development activity across Ohio tracked in the PJM transmission interconnection queue and sums to more than 13,000 MW.[3] Many of the sites extending into the northern parts of the State likely feature low-cost transmission injection capacity, advantageous land costs, or communities supportive of economic development.

III. Local Benefits and Collaboration with the Agricultural Industry

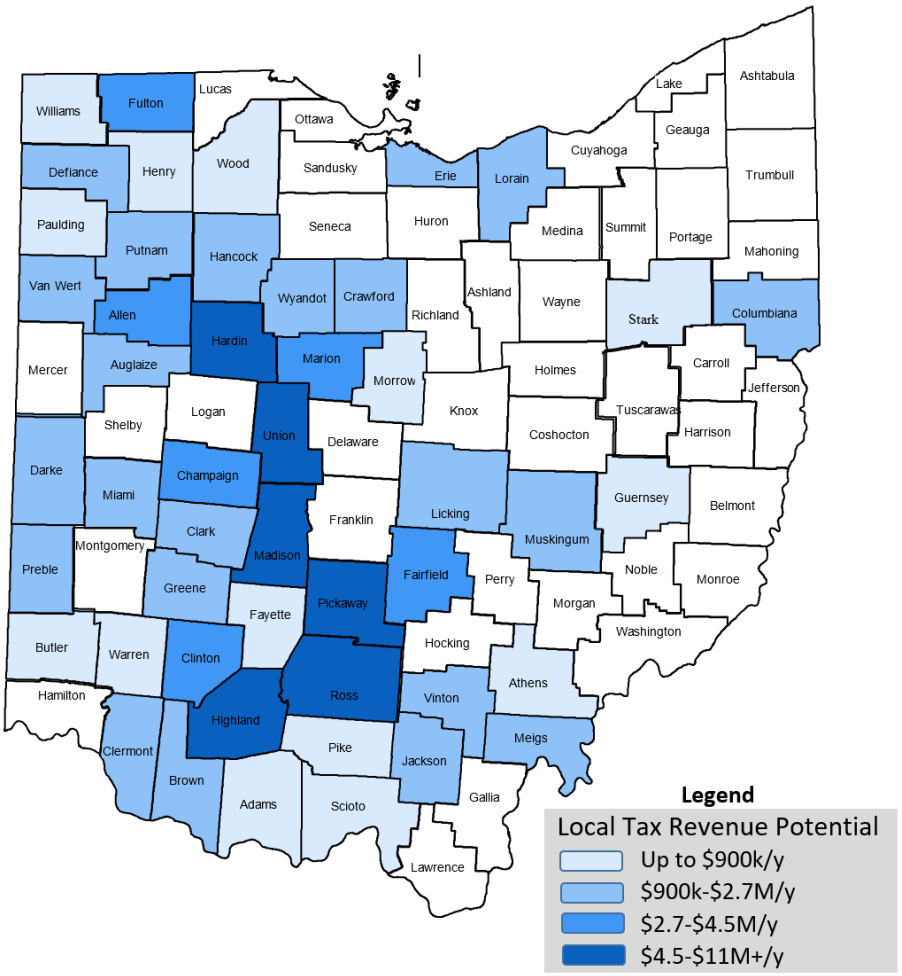
Utility-scale solar additions result in significant local benefits with the key benefits as follows: First, the participating landowners benefit from a stable, long-term rent stream that usually is two to three times greater than the revenue earned from traditional row crops. Second, construction of a utility-scale solar facility typically creates on the order of 300 to 400 construction jobs for a full year, and many more indirect jobs. The solar industry currently employs more than 7,200 Ohioans[4] and this figure is likely to grow as more utility-scale solar projects begin construction. Finally, and most importantly for the community as a whole, local governments benefit from Ohio's Payment In Lieu of Taxes ("PILOT") tax program. The PILOT revenue generated by utility-scale solar projects is generally 15 to 20 times greater than the tax revenue generated by traditional agricultural uses.

To highlight the PILOT revenue opportunity, the table below shows the projected local tax revenue that 12 late-stage solar projects in Ohio will generate once they come online. Over the

40-year life of these projects, they will generate an aggregate total of $720 million in local tax revenue for the rural localities that host them.

Project Name	**Size (MW)**	**County**	**Annual Local Tax Revenue***	**40-year Tax Revenue***
Hillcrest	200	Brown	$1,800,000	$72,000,000
Willowbrook	150	Highland Brown	$1,350,000	$54,000,000
Hecate	400	Highland	$3,600,000	$144,000,000
Vinton	125	Vinton	$1,125,000	$45,000,000
Alamo	70	Preble	$630,000	$25,200,000
Angelina	80	Preble	$720,000	$28,800,000
Nestlewood	80	Brown Clermont	$720,000	$28,800,000
Atlanta	200	Pickaway	$1,800,000	$72,000,000
Madison Solar Farm	196	Madison	$1,764,000	$70,560,000
Madison Fields Solar	180	Madison	$1,620,000	$64,800,000
Hardin I	150	Hardin	$1,350,000	$54,000,000
Hardin II	170	Hardin	$1,530,000	$61,200,000
**assuming $9k/MW/yr PILOT*		**Total**	**$17,109,000**	**$720,360,000**

The map below shows the solar projects currently under development across Ohio and the local tax revenue potential as a result.



The utility-scale solar industry also is working collaboratively with agricultural interests to find "win-wins" as solar comes to many agricultural communities in Ohio. The solar industry has been focused on ensuring that continued viability of agriculture on solar lands following decommissioning and the ongoing viability of non-participating neighboring land. These goals are being accomplished through (1) robust decommissioning plans that ensure continued viability of agricultural land (2) attention to drain tile and appropriate conditions that will ensure the remedying of any damage that impacts field drainage and (3) vegetation plans that include native species and pollinator-friendly habitat.

The solar industry appreciates that ***Section 141, Energy*** of the Ohio Farm Bureau's Policy Book "recognizes the rights of landowners to enter into effective partnerships and agreements with developers to responsibly use land and resources to develop energy transportation, generation and distribution projects" and that the Ohio Farm Bureau supports the "[r]ecognition of on-farm energy production as an agricultural product."

Additionally, as shown in the table below, Ohio is blessed with more than 10 million acres of harvested cropland across the State. Although it is unlikely to occur, the build-out of every

utility-scale project that currently is under study for possible development in the PJM queue would occupy less than 1% of the harvested cropland in Ohio (of course, with significant variation among counties). It should be noted, again, that utility-scale solar facilities are a temporary use, and the long-term viability of any agricultural land will not be negatively impacted by the solar deployment.

Solar Buildout as a Percentage of Harvested Cropland in Ohio

	MWs in PJM Queue *(Under Study, Engineering, or Construction)*	**Total Solar Acres** *(assuming 7 acres/MW and 100% project success rate)*	**Harvested Cropland**[6] *(Acres)*	**Solar as a % of Harvested Cropland**
State-Wide Data	13,104	91,728	10,190,952	**0.90%**

Finally, recent data suggests that converting from coal generation to natural gas and zero emissions generators like wind and solar will increase local crop yields. A recent article[5] addresses the questions as follows: "But how does less pollution actually amount to more crops? Electric coal plants emit large amounts of nitrogen oxides, a group of gases that, when exposed to sunlight, react with compounds in the air to produce an ingredient called ozone. Ozone has what could be likened to a choking effect on plants: once it enters the stomata, it slows photosynthesis and reduces plant growth. It also limits plants' defenses to disease, insects, and severe weather. When there's less ozone in the air, however, it follows that a resulting boost in photosynthesis will cause a comparative increase in yields."

Although we are encouraged by the balanced approach recommended by the Ohio Farm Bureau, USSEC recognizes that there is considerably more work to be done by the solar industry to engage with local agricultural communities to address concerns, develop best practices, and find "win-wins." As is often heard in the development community, "Local engagement is a tonic that cures many ills."

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July 13, 2020

Theresa White
Executive Director
Ohio Public Siting Board (OPSB)
180 E Broad St.
Columbus, OH 43215

Ms. White and OPSB Staff,

As an industry with significant interest in the state of Ohio, the Utility Scale Solar Energy Coalition of Ohio (USSEC) values our engagement in the OPSB's rulemaking process. As such, we have worked with the group's 17 members, representing the majority of the utility-scale solar interconnection filings in Ohio, to offer initial comments and proposed edits to Chapter 4906-4 of the Ohio Administrative Code for consideration.

Our members discussed these rules at length and we would welcome the opportunity to do the same with OPSB Staff. We look forward to working together through the rulemaking process.

Sincerely,

Jason Rafeld
USSEC Executive Director
jason@ohiosolarcoalition.com
(614) 582-3101

Chapter 4906-4 Certificate Applications for Electric Generation Facilities

4906-4-01 Purpose and scope.

(A) This chapter sets forth the rules governing standard certificate applications for electric generation facilities.

(B) The board may, upon an application or motion filed by a party, waive any requirement of this chapter other than a requirement mandated by statute.

4906-4-02 Project summary and applicant information.

(A) The applicant shall provide a summary of the proposed project. The summary should be suitable as a reference for state and local governments and for the public. The summary shall include the following:

(1) A statement explaining the general purpose of the facility.

(2) A description of the general location, size, and operating characteristics of the proposed facility.

(3) A discussion of the suitability of the site for the proposed facility.

(4) An explanation of the project schedule (a Gantt chart is acceptable).

(B) The applicant shall provide information regarding its future plans for additional generation units or facilities in the region, if any.

(1) The applicant shall provide a description of any plans for future additions of electric power generation units for the site (including the type and timing) and the maximum electric power generation capacity anticipated for the site.

(2) The applicant shall provide a brief description of the applicant's history, affiliate relationships and current operations, and a description of the company that will construct and operate the facility, if different from the applicant.

4906-4-03 Project description in detail and project schedule in detail.

(A) The applicant shall provide a description of the project area's geography, topography, population centers, major industries, and landmarks.

(1) The applicant shall provide a map of at least 1:24,000 scale containing a two-mile radius from the project area and showing the following features:

(a) The proposed facility.

(b) Population centers and administrative boundaries.

(c) Transportation routes and gas and electric transmission corridors.

(d) Named rivers, streams, lakes, and reservoirs.

(e) Major institutions, parks, and recreational areas.

(2) The applicant shall provide the area, in acres, of all owned and leased properties that will be used for construction and/or operation of the project, and the number of properties.

(B) The applicant shall provide a detailed description of the proposed generation facility.

(1) The applicant shall submit the following for each generation equipment alternative, where applicable:

(a) Type, number of units, estimated net demonstrated capacity, heat rate, annual capacity factor, and hours of annual generation.

(b) For wind farms, the turbine hub height, tip height, rotor diameter, and blade length for each model under consideration.

(c) Fuel quantity and quality (i.e., ash, sulfur, and British thermal unit value).

(d) A list of types of pollutant emissions and estimated quantities.

(e) Water volume requirement, source of water, treatment, quantity of any discharge and names of receiving streams.

(2) The applicant shall describe, in as much detail as is available at the time of submission of the application, the construction method, site preparation and reclamation method, and preliminary design as shown on a preliminary site plan that depicts the maximum spatial extent of the facility and describes all major types of components that will comprise the facility and includes materials, color and texture of surfaces, and dimensions of all facility components, including the following:

(a) Electric power generation plant or wind-powered electric generation turbines, including towers and foundations.

(b) Fuel, waste, water, and other storage facilities.

(c) Fuel, waste, water, and other processing facilities.

(d) Water supply, effluent, and sewage lines.

(e) Associated electric transmission and distribution lines and gas pipelines.

(f) Electric collection lines.

(g) Substations, switching substations, and transformers.

(h) Temporary and permanent meteorological towers.

(i) Transportation facilities, access roads, and crane paths.

(j) Construction laydown areas.

(k) Security, operations, and maintenance facilities or buildings.

(l) Other pertinent installations.

(3) The applicant shall submit a brief description of the need for new electric transmission line(s) or gas pipelines associated with the proposed facility.

(4) The applicant shall supply a map of at least 1:12,000 scale of the project area, showing the following features:

(a) An aerial photograph.

(b) The proposed facility, including all components listed in paragraph (B)(2) of this rule.

(c) Road names.

(d) Property lines.

(C) The applicant shall provide a detailed project schedule.

(1) The applicant shall provide a proposed project schedule in Gantt chart format covering all major activities and milestones, including:

(a) Acquisition of land and land rights.

(b) Wildlife and environmental surveys/studies.

(c) Receipt of grid interconnection studies and other critical path milestones for project construction.

(d) Preparation of the application.

(e) Submittal of the application for certificate.

(f) Issuance of the certificate.

(g) Preparation of the final design.

(h) Construction of the facility.

(i) Placement of the facility in service.

(2) The applicant shall describe the proposed construction sequence.

(3) The applicant shall describe the potential impact of critical delays on the in-service date.

4906-4-04 Project area selection and site design.

(A) The applicant shall describe the selection of the project area.

(1) The applicant shall provide a description of the study area or the geographic boundaries of the area considered for development of the project, including the rationale for the selection.

(2) The applicant shall provide a map of suitable scale that depicts the boundary of the study area and the general sites which were evaluated.

(3) The applicant shall provide a comprehensive list and description of all qualitative and quantitative siting criteria utilized by the applicant, including any weighting values assigned to each.

(4) The applicant shall provide a description of the process by which the applicant utilized the siting criteria to determine the proposed project area and any alternative area(s).

(5) The applicant shall provide a description of the project area(s) selected for evaluation, and the factors and rationale used by the applicant for selecting the proposed project area and any alternative area(s).

(B) The applicant shall describe the process of designing the facility layout.

(1) The applicant shall provide a constraint map showing setbacks from residences, property lines, utility corridors, and public rights-of-way, and any other constraints of the site design.

(2) The applicant shall provide a description of the criteria used to determine the facility layout and site design, and a comparison of any site design alternatives considered, including equipment alternatives where the use of such alternatives influenced the site design.

(3) The applicant shall provide a description of how many and what types of comments were received and how those comments were addressed in designing the preliminary layout.

4906-4-05 Electric grid interconnection.

(A) The applicant shall describe how the facility will be connected to the regional electric grid.

(B) The applicant shall provide information on interconnection of the facility to the regional electric power grid.

(1) The applicant shall provide information relating to their generation interconnection request, including interconnection queue name, number, date, and website.

(2) The applicant shall provide system studies on their generation interconnection request. The studies shall include, but are not limited to, the feasibility study and system impact study.

4906-4-06 Economic impact and public interaction.

(A) The applicant shall state the current and proposed ownership status of the proposed facility, including leased and purchased land, rights-of-way, structures, and equipment.

(B) The applicant shall provide information regarding capital and intangible costs.

(1) The applicant shall provide estimates of applicable capital and intangible costs for the various alternatives. The data submitted shall be classified according to federal energy regulatory commission uniform system of accounts prescribed by the public utilities commission of Ohio for utility companies, unless the applicant is not an electric light company, a gas company or a natural gas company as defined in Chapter 4905. of the Revised Code (in which case, the applicant shall file the capital and intangible costs classified in the accounting format ordinarily used by the applicant in its normal course of business).

(2) The applicant shall provide a comparison of the total costs per kilowatt with the applicant's similar facilities, and explain any substantial differences.

(3) The applicant shall provide a tabulation of the present worth and annualized cost for capital costs and any additional cost details as required to compare capital cost of alternates (using the start of construction date as reference date), and describe techniques and all factors used in calculating present worth and annualized costs.

(C) The applicant shall provide information regarding operation and maintenance expenses.

(1) The applicant shall provide applicable estimated annual operation and maintenance expenses for the first two years of commercial operation. The data submitted shall be classified according to federal energy regulatory commission uniform system of accounts prescribed by the public utilities commission of Ohio for utility companies, unless the applicant is not an electric light company, a gas company or a natural gas company as defined in Chapter 4905. of the Revised Code (in which case, the applicant shall file the operation and maintenance expenses classified in the accounting format ordinarily used by the applicant in its normal course of business).

(2) The applicant shall provide a comparison of the total operation and maintenance cost per kilowatt with applicant's similar facilities and explain any substantial differences.

(3) The applicant shall provide a tabulation of the present worth and annualized expenditures for operating and maintenance costs as well as any additional cost breakdowns as required to compare alternatives, and describe techniques and factors used in calculating present worth and annualized costs.

(D) The applicant shall submit an estimate of the cost for a delay prorated to a monthly basis beyond the projected in-service date.

(E) The applicant shall provide information regarding the economic impact of the project.

(1) The applicant shall provide an estimate of the annual total and present worth of construction and operation payroll.

(2) The applicant shall provide an estimate of the construction and operation employment and estimate the number that will be employed from the region.

(3) The applicant shall provide an estimate of the increase in county, township, and municipal tax revenue accruing from the facility.

(4) The applicant shall provide an estimate of the economic impact of the proposed facility on local commercial and industrial activities.

(F) The applicant shall provide information regarding public responsibility.

(1) The applicant shall describe the applicant's program for public interaction during the siting, construction, and operation of the proposed facility. This description shall include detailed information regarding the applicant's public information and complaint resolution programs as well as how the applicant will notify affected property owners and tenants about these programs at least seven days prior to the start of construction.

(2) The applicant shall describe any insurance or other corporate programs for providing liability compensation for damages to the public resulting from construction, operation, or decommissioning of the proposed facility.

(3) The applicant shall evaluate and describe the anticipated impact to roads and bridges associated with construction vehicles and equipment delivery. Describe measures that will be taken to improve inadequate roads and repair roads and bridges to at least the condition present prior to the project.

(4) The applicant shall list all transportation permits required for construction and operation of the project, and describe any necessary coordination with appropriate authorities for temporary or permanent road closures, lane closures, road access restrictions, and traffic control necessary for construction and operation of the proposed facility.

(5) The applicant shall describe and set forth a preliminary ~~the~~ plan for decommissioning the proposed facility prepared by an independent, registered professional engineer licensed to practice in Ohio, including a discussion of any financial arrangements designed to assure the requisite financial resources, the proposed frequency for updating the decommissioning plan, and plans to incorporate the reuse and recycling of removed components and materials.

4906-4-07 Compliance with air, water, solid waste, and aviation regulations.

(A) The information requested in this rule shall be used to determine whether the facility will comply with regulations for air and water pollution, solid and hazardous wastes, and aviation. Where appropriate, the applicant may substitute all or portions of documents filed to meet federal, state, or local regulations. Existing data may be substituted for physical measurements.

(B) The applicant shall provide information on compliance with air quality regulations.

(1) The applicant shall submit information regarding preconstruction air quality and permits.

(a) Provide available information concerning the ambient air quality of the proposed project area and any proposed alternative project area(s).

(b) Describe the air pollution control equipment for the proposed facility.

Stack gas parameters including temperature and all air pollutants regulated by the federal or state environmental protection agency shall be described for each proposed fuel. These parameters shall be included for each electric power generation unit proposed for the facility. Include tabulations of

expected efficiency, power consumption, and operating costs for supplies and maintenance. Describe the reliability of the equipment and the reduction in efficiency for partial failure.

(c) Describe applicable federal and/or Ohio new source performance standards (NSPS), applicable air quality limitations, applicable national ambient air quality standards (NAAQS), and applicable prevention of significant deterioration (PSD) increments.

(d) Provide a list of all required permits to install and operate air pollution sources. If any such permit(s) have been issued more than thirty days prior to the submittal of the certificate application, the applicant shall provide a list of all special conditions or concerns attached to the permit(s).

(e) Except for wind farms and photovoltaic facilities, provide a map of at least 1:100,000 scale containing:

(i) The location and elevation (ground and sea level) of Ohio environmental protection agency primary and secondary air monitoring stations or mobile vans which supplied data used by the applicant in assessing air pollution potential.

(ii) The location of major present and anticipated air pollution point sources.

(f) Describe how the proposed facility will achieve compliance with the requirements identified in paragraphs (B)(1)(c) and (B)(1)(d) of this rule.

(2) The applicant shall describe plans to control emissions and fugitive dust during the site clearing and construction phase.

(3) Except for wind farms and photovoltaic facilities, the applicant shall provide information regarding air quality for the operation of the proposed facility.

(a) Describe ambient air quality monitoring plans for air pollutants regulated by the federal or state environmental protection agency.

(b) On a map of at least 1:24,000 scale, show three is opleths of estimated concentrations that would be in excess of the U.S. environmental protection agency-defined "significant emission rates" when the facility is operating at its maximum rated output. The intervals between the is opleths shall depict the concentrations within a five-mile radius of the proposed facility. A screening analysis may be used to estimate the concentrations.

(c) Describe procedures to be followed in the event of failure of air pollution control equipment, including consideration of the probability of occurrence, expected duration and resultant emissions.

(C) The applicant shall provide information on compliance with water quality regulations.

(1) The applicant shall provide information regarding preconstruction water quality and permits.

(a) Provide a list of all permits required to install and operate the facility, including water pollution control equipment and treatment processes.

(b) On a map of at least 1:24,000 scale, show the location and sampling depths of all water monitoring and gauging stations used in collecting preconstruction survey data. Samples shall be collected by standard sampling techniques and only in bodies of water likely to be affected by the proposed facility.

Information from U.S. geological survey (USGS), Ohio environmental protection agency, and similar agencies may be used where available, but the applicant shall identify all such sources of data.

(c) Describe the ownership, equipment, capability, and sampling and reporting procedures of each station.

(d) Describe the existing water quality of the receiving stream based on at least one year of monitoring data, using appropriate Ohio environmental protection agency reporting requirements.

(e) Provide available data necessary for completion of any application required for a water discharge permit from any state or federal agency for this project. Comparable information shall be provided for the proposed site and any proposed alternative site(s).

(2) The applicant shall provide information regarding water quality during construction.

(a) Indicate, on a map of at least 1:24,000 scale, the location of the water monitoring and gauging stations to be utilized during construction.

(b) Provide an estimate of the quality and quantity of aquatic discharges from the site clearing and construction operations, including runoff and siltation from dredging, filling, and construction of shoreside facilities.

(c) Describe any plans to mitigate the above effects in accordance with current federal and Ohio regulations.

(d) Describe any changes in flow patterns and erosion due to site clearing and grading operations.

(e) Describe the equipment proposed for control of effluents discharged into bodies of water and receiving streams.

(3) The applicant shall provide information on water quality during operation of the facility.

(a) Indicate, on a map of at least 1:24,000 scale, the location of the water quality monitoring and gauging stations to be utilized during operation.

(b) Describe the water pollution control equipment and treatment processes planned for the proposed facility.

(c) Describe the schedule for receipt of the national pollution discharge elimination system permit.

(d) Provide a quantitative flow diagram or description for water and water-borne wastes through the proposed facility, showing the following potential sources of pollution, including:

(i) Sewage.

(ii) Blow-down.

(iii) Chemical and additive processing.

(iv) Waste water processing.

(v) Run-off and leachates from fuels and solid wastes.

(vi) Oil/water separators.

(vii) Run-off from soil and other surfaces.

(e) Describe how the proposed facility incorporates maximum feasible water conservation practices considering available technology and the nature and economics of the various alternatives.

(D) The applicant shall provide information on compliance with solid waste regulations.

(1) The applicant shall provide information regarding preconstruction solid waste.

(a) Describe the nature and amount of debris and solid waste in the project area.

(b) Describe any plans to deal with such wastes.

(2) The applicant shall provide information regarding solid waste during construction.

(a) Provide an estimate of the nature and amounts of debris and other solid waste generated during construction.

(b) Describe the proposed method of storage and disposal of these wastes.

(3) The applicant shall provide information regarding solid waste during operation of the facility.

(a) Provide an estimate of the amount, nature, and composition of solid wastes generated during the operation of the proposed facility.

(b) Describe proposed methods for storage, treatment, transport, and disposal of these wastes.

(4) The applicant shall describe its plans and activities leading toward acquisition of waste generation, storage, treatment, transportation and/or disposal permits. If any such permit(s) have been issued more than thirty days prior to the submittal of the certificate application, the applicant shall provide a list of all special conditions or concerns attached to the permit(s).

(E) The applicant shall provide information on compliance with aviation regulations.

(1) List all public use airports, helicopter pads, and landing strips within five miles (two miles for photovoltaic facilities) of the project area and all known private use airports, helicopter pads, and landing strips or property within or adjacent to the project area, and show these facilities on a map(s) of at least 1:24,000 scale. Provide confirmation that the owners of these airports have been notified of the proposed facility and any impacts it will have on airport operations.

(2) Provide the FAA filing status of each airport and describe any potential conflicts with air navigation or air traffic communications that may be caused by the proposed facility.

4906-4-08 Health and safety, land use and ecological information.

(A) The applicant shall provide information on health and safety.

(1) Equipment safety. The applicant shall provide information on the safety and reliability of all equipment.

(a) Describe all proposed major public safety equipment.

(b) Describe the reliability of the equipment.

(c) Describe the types of generation equipment that will comprise the facility and any setbacks typically recommended by manufacturers of such equipment, to be supplemented, ~~Provide~~ at least sixty days prior to the preconstruction conference, by copies of the generation equipment manufacturer's safety standards, ~~.~~ ~~I~~including ~~e~~ a complete copy of the manufacturer's safety manual or similar document and any recommended setbacks from the manufacturer.

(d) Describe the measures that will be taken to restrict public access to the facility.

(e) Describe the fire protection, safety, and medical emergency plan(s) to be used during construction and operation of the facility, and how such plan(s) will be developed in consultation with local emergency responders.

(2) Air pollution control. Except for wind farms and photovoltaic facilities, the applicant shall describe in conceptual terms the probable impact to the population due to failures of air pollution control equipment.

(3) Noise. The applicant shall provide information on noise from the construction and operation of the facility.

(a) Describe the construction noise levels expected at the nearest property boundary. The description shall address:

(i) Blasting activities.

(ii) Operation of earth moving equipment.

(iii) Driving of piles, rock breaking or hammering, and horizontal directional drilling.

(iv) Erection of structures.

(v) Truck traffic.

(vi) Installation of equipment.

(b) Describe the operational noise levels expected at the nearest property boundary. The description shall address:

(i) Operational noise from generation equipment. In addition, for a wind farm, cumulative operational noise levels at the property boundary for each property adjacent to or within the project area, under both day and nighttime operations. The applicant shall use generally accepted computer modeling software (developed for wind turbine noise measurement) or similar wind turbine noise methodology, including consideration of broadband, tonal, and low-frequency noise levels.

(ii) Processing equipment.

(iii) Associated road traffic

(c) Indicate the location of any noise-sensitive areas within one mile of the facility, and the operational noise level at each habitable residence, school, church, and other noise-sensitive receptors, under both day and nighttime operations. Sensitive receptor, for the purposes of this rule, refers to any occupied building.

(d) Describe equipment and procedures to mitigate the effects of noise emissions from the proposed facility during construction and operation, including limits on the time of day at which construction activities may occur.

(e) Submit a preconstruction background noise study of the project area that includes measurements taken under both day and nighttime conditions.

(4) Water impacts. The applicant shall provide information regarding water impacts

(a) Provide an evaluation of the impact to public and private water supplies due to construction and operation of the proposed facility.

(b) Provide an evaluation of the impact to public and private water supplies due to pollution control equipment failures.

(c) Provide existing maps of aquifers, water wells, and drinking water source protection areas that may be directly affected by the proposed facility.

(d) Describe how construction and operation of the facility will comply with any drinking water source protection plans near the project area.

(e) Provide an analysis of the prospects of floods for the area, including the probability of occurrences and likely consequences of various flood stages, and describe plans to mitigate any likely adverse consequences.

(5) Geological features. The applicant shall provide a map of suitable scale showing the proposed facility, geological features of the proposed facility site, topographic contours, existing gas and oil wells, and injection wells. The applicant shall also:

(a) Describe the suitability of the site geology and plans to remedy any inadequacies.

(b) Describe the suitability of soil for grading, compaction, and drainage, and describe plans to remedy any inadequacies and restore the soils during post-construction reclamation.

(c) Submit the results of preliminary geotechnical testing sufficient to confirm the suitability of the site for the facility, and d~~D~~escribe plans for ~~the~~ test borings, including closure plans for such borings, to support final design that includes~~. Plans for the test borings shall contain~~ a timeline for providing the test boring logs and the following information to the board at least sixty days prior to the pre-construction conference:

(i) Subsurface soil properties.

(ii) Static water level.

(iii) Rock quality description.

(iv) Per cent recovery.

(v) Depth and description of bedrock contact.

(6) Wind Velocity. The applicant shall provide an analysis of high wind velocities for the area, including the probability of occurrences and likely consequences of various wind velocities, and describe plans to mitigate any likely adverse consequences.

(7) Blade shear. For a wind farm, the applicant shall evaluate and describe the potential impact from blade shear at the nearest property boundary and public road .

(8) Ice throw. For a wind farm, the applicant shall evaluate and describe, by providing a site-specific ice throw risk analysis and assessment study, the potential impact from ice throw at the nearest property boundary and public road .

(9) Shadow flicker, For a wind farm, the applicant shall evaluate and describe the potential cumulative impact from shadow flicker at the property boundary and sensitive receptors within a distance of ten rotor diameters or at least one-half mile, whichever is greater, of a turbine, including its plans to minimize potential impacts.

(10) Radio and TV reception. The applicant shall evaluate and describe the potential for the facility to interfere with radio and TV reception and describe measures that will be taken to minimize interference.

(11) Radar interference. The applicant shall evaluate and describe the potential for the facility to interfere with military and civilian radar systems and describe measures that will be taken to minimize interference.

(12) Navigable airspace interference. The applicant shall evaluate and describe the potential for the facility to interfere with navigable airspace and describe measures that will be taken to minimize interference. The applicant shall coordinate such efforts with appropriate state and federal agencies.

(13) Communication interference. The applicant shall evaluate and describe the potential for the facility to interfere with microwave communication paths and systems and describe measures that will be taken to minimize interference. Include all licensed systems and those used by electric service providers and emergency personnel that operate in the project area.

(B) The applicant shall provide information on ecological resources.

(1) Ecological information. The applicant shall provide information regarding ecological resources in the project area.

(a) Provide a map of at least 1:24,000 scale containing a one half-mile radius from the project area, showing the following:

(i) The proposed facility and project area boundary.

(ii) Undeveloped or abandoned land such as wood lots or vacant tracts of land subject to past or present surface mining activities, not used as a registered game preserve or in agricultural production.

(iii) Wildlife areas, nature preserves, and other conservation areas.

(iv) Surface bodies of water, including wetlands, ditches, streams, lakes, reservoirs, and ponds.

(v) Highly-erodible soils and slopes of twelve percent or greater.

(b) Provide the results of a field survey of the vegetation and surface waters within one-hundred feet of the potential construction impact area of the facility. The survey should include a description of the vegetative communities, and delineations of wetlands and streams. Provide a map of at least 1:12,000 scale showing all delineated resources.

(c) Provide the results of a literature survey of the plant and animal life within at least one-fourth mile of the project area boundary. The literature survey shall include aquatic and terrestrial plant and animal species that are of commercial or recreational value, or species designated as endangered or threatened.

(d) Conduct and provide the results of field surveys of the plant and animal species identified in the literature survey.

(e) Provide a summary of any additional studies which have been made by or for the applicant addressing the ecological impact of the proposed facility

(2) Ecological impacts. The applicant shall provide information regarding potential impacts to ecological resources during construction.

(a) Provide an evaluation of the impact of construction on the resources surveyed in response to paragraph (B)(1) of this rule. Include the linear feet and acreage impacted, and the proposed crossing methodology of each stream and wetland that would be crossed by or within the footprint of any part of the facility or construction equipment. Specify the extent of vegetation clearing, and describe how such clearing work will be done so as to minimize removal of woody vegetation. Describe potential impacts to wildlife and their habitat.

(b) Describe the mitigation procedures to be utilized to minimize both the short-term and long-term impacts due to construction, including the following:

(i) Plans for post-construction site restoration and stabilization of disturbed soils, especially in riparian areas and near wetlands. Restoration plans should include details on the removal and disposal of materials used for temporary access roads and construction staging areas, including gravel.

(ii) A detailed frac out contingency plan for stream and wetland crossings that are expected to be completed via horizontal directional drilling.

(iii) Methods to demarcate surface waters and wetlands and to protect them from entry of construction equipment and material storage or disposal.

(iv) Procedures for inspection and repair of erosion control measures, especially after rainfall events.

(v) Methods to protect vegetation in proximity to any project facilities from damage, particularly mature trees, wetland vegetation, and woody vegetation in riparian areas.

(vi) Options for disposing of downed trees, brush, and other vegetation during initial clearing for the project, and clearing methods that minimize the movement of heavy equipment and other vehicles within the project area that would otherwise be required for removing all trees and other woody debris off site.

(vii) Avoidance measures for state of federally listed and protected species and their habitat, in accordance with paragraph (D) of rule 4906-4-09 of the Administrative Code.

(3) Operational ecological impacts. The applicant shall provide information regarding potential impacts to ecological resources during operation and maintenance of the facility.

(a) Provide an evaluation of the impact of operation and maintenance on the undeveloped areas shown in response to paragraph (B)(1) of this rule.

(b) Describe the procedures to be utilized to avoid, minimize, and mitigate both the short- and long-term impacts of operation and maintenance. Describe methods for protecting streams, wetlands, and vegetation, particularly mature trees, wetland vegetation, and woody vegetation in riparian areas. Include a description of any expected use of herbicides for maintenance.

(c) Describe any plans for post-construction monitoring of wildlife impacts.

(C) The applicant shall provide information on land use and community development.

(1) Existing land use. The applicant shall provide information regarding land use in the region and potential impacts of the facility through the following maps and related information.

(a) Provide a map of at least 1:24,000 scale showing the following within one-mile of the project area boundary:

(i) The proposed facility.

(ii) Land use, depicted as areas on the map. Land use, for the purposes of paragraph (C) of this rule, refers to the current economic use of each parcel. Categories should include residential, commercial, industrial, institutional, recreational, agricultural, and vacant, or as classified by the local land use authority.

(iii) Structures, depicted as points on the map. Identified structures should include residences, commercial centers or buildings, industrial buildings and installations, schools, hospitals, churches, civic buildings, and other occupied places.

(iv) Incorporated areas and population centers.

(b) Provide, for the types of structures identified on the map in paragraph (C)(1)(a) of this rule, a table showing the following:

(i) For all structures and property lines within one thousand five hundred feet of the generation equipment or wind turbine, the distance between both the structure or property line and the equipment or nearest wind turbine.

(ii) For all structures and property lines within two hundred fifty feet of a collection line, access road, or other associated facility, the distance between both the structure or property line and the associated facility.

(iii) For each structure and property in the table, whether the property is being leased by the applicant for the proposed facility.

(c) Provide an evaluation of the impact of the proposed facility on the above land uses identified on the map in paragraph (C)(1)(a) of this rule. Include, for each land use type, the construction impact area and the permanent impact area in acres, in total and for each project component (e.g., turbines, collection lines, access roads), and the explanation of how such estimate was calculated.

(d) Identify structures that will be removed or relocated.

(2) Wind farm maps. For wind farms only, the applicant shall provide a map(s) of at least 1:24,000 scale showing the proposed facility, habitable residences, and parcel boundaries of all parcels within a half-mile of the project area. Indicate on the map, for each parcel, the parcel number and whether the parcel is being leased by the applicant for the proposed facility, as of no more than thirty days prior to the submission of the application. Include on the map the setbacks for wind turbine structures in relation to property lines, habitable residential structures, electric transmission lines, gas pipelines, gas distribution lines, hazardous liquid(s) pipelines, and state and federal highways, consistent with no less than the following minimum requirements:

(a) The distance from a wind turbine base to the property line of the wind farm property shall be at least one and one-tenth times the total height of the turbine structure as measured from its tower's base (excluding the subsurface foundation) to the tip of a blade at its highest point.

(b) The wind turbine shall be at least one thousand, one hundred, twenty-five feet in horizontal distance from the tip of the turbine's nearest blade at ninety degrees to the property line of the nearest adjacent property, including a state or federal highway, at the time of the certification application.

(c) The distance from a wind turbine base to any electric transmission line, gas pipeline, gas distribution line, hazardous liquid(s) pipeline, or public road shall be at least one and one-tenth times the total height of the turbine structure as measured from its tower's base (excluding the subsurface foundation) to the tip of a blade at its highest point.

(d) Minimum setbacks from property lines and residences may be waived pursuant to the procedures set forth in paragraph (C)(3) of this rule.

(3) Setback waivers. The setback shall apply in all cases except those in which all owner(s) of property adjacent to the wind farm property waive application of the setback to that property. The waiver(s) must meet the following requirements:

(a) Content of waiver. The waiver shall:

(i) Be in writing;

(ii) Provide a brief description of the facility;

(iii) Notify the applicable property owner(s) of the statutory minimum setback requirements;

(iv) Describe the adjacent property subject to the waiver through a-legal description;

(v) Describe how the adjacent property is subject to the statutory minimum setback requirements; and

(vi) Advise all subsequent purchasers of the adjacent property subject to the waiver that the waiver of the minimum setback requirements shall run with the land.

(b) Required signature. The waiver shall be signed by the applicant and the applicable property owner(s), indicating consent to construction activities without compliance with the minimum setback requirements.

(c) Recordation of waiver. The waiver shall be recorded in the county recorder's office where the property that is the subject of the waiver is located.

(4) Land use plans. The applicant shall provide information regarding land use plans.

(a) Describe formally adopted plans for future use of the project area and surrounding lands for anything other than the proposed facility.

(b) Describe the applicant's plans for concurrent or secondary uses of the site.

(c) Describe the impact of the proposed facility on regional development, including housing, commercial and industrial development, schools, transportation system development, and other public services and facilities.

(d) Assess the compatibility of the proposed facility and the anticipated resultant regional development with current regional plans.

(e) Provide current population counts or estimates, current population density, and ten-year population projections for counties and populated places within five miles of the project area.

(D) The applicant shall provide information on cultural and archaeological resources

(1) Landmark mapping. The applicant shall indicate, on a map of at least 1:24,000 scale, any formally adopted land and water recreation areas, recreational trails, scenic rivers, scenic routes or byways, and registered landmarks of historic, religious, archaeological, scenic, natural, or other cultural significance within ten miles (two miles for photovoltaic facilities) of the project area. Landmarks to be considered for purposes of paragraph (D) of this rule are those districts, sites, buildings, structures, and objects that are recognized by, registered with, or identified as eligible for registration by the national registry of natural landmarks, the state historical preservation office, or the Ohio department of natural resources.

(2) Impacts on landmarks. The applicant shall provide an evaluation of the impact of the proposed facility on the preservation and continued meaningfulness of these landmarks and describe plans to avoid or mitigate any adverse impact, including a proposed Historic Resource Survey Research Design and a proposed Phase I Archeological Survey Research Design submitted for review to the Ohio Historic Preservation Office.

(3) Recreation and scenic areas. The applicant shall describe the identified recreation and scenic areas within ten miles (two miles for photovoltaic facilities) of the project area in terms of their proximity to population centers, uniqueness, topography, vegetation, hydrology, and wildlife. Provide an evaluation

of the impact of the proposed facility on identified recreational and scenic areas within ten miles (two miles for photovoltaic facilities) of the project area and describe plans to mitigate any adverse impact.

(4) Visual impact of facility. The applicant shall evaluate the visual impact of the proposed facility within at least a ten-mile radius (two-mile radius for photovoltaic facilities) from the project area. The evaluation shall be conducted or reviewed by a licensed landscape architect of other professional with experience in developing a visual impact assessment. The applicant shall:

(a) Describe the visibility of the project, including a viewshed analysis and area of visual effect, shown on a corresponding map of the study area. The viewshed analysis shall not incorporate deciduous vegetation, agricultural crops, or other seasonal land cover as viewing obstacles. If the viewshed analysis includes atmospheric conditions, it shall incorporate the atmospheric conditions under which the facility would be most visible.

(b) Describe the existing landscape and evaluate its scenic quality. This description shall include documentation of a review of existing plans, policies, and regulations of the communities within the study area, and list all references to identified visual resources or other indications of the visual preferences of the community.

(c) Describe the alterations to the landscape caused by the facility, including a description and illustration of the scale, form, and materials of all facility structures, and evaluate the impact of those alterations to the scenic quality of the landscape.

(d) Evaluate the visual impacts to the resources identified in paragraph (D) of this rule, and any such resources within ten miles (two miles for photovoltaic facilities) of the project area that are valued specifically for their scenic quality.

(e) Provide photographic simulations or artist's pictorial sketches of the proposed facility from public vantage points that cover the range of landscapes, viewer groups, and types of scenic resources found within the study area. The applicant should explain its selection of vantage points, including any coordination with local residents, public officials, and historic preservation groups in selecting these vantage points.

(f) Describe measures that will be taken to minimize any adverse visual impacts created by the facility, including, but not limited to, project area location, lighting (including a preliminary lighting plan relative to homes and public roads), turbine layout, visual screening, and facility coloration, and including a preliminary landscaping plan that depicts the proposed perimeter locations and types of vegetation, with examples. In no event shall these measures conflict with relevant safety requirements.

(E) The applicant shall provide information regarding agricultural districts and potential impacts, both temporary and permanent, to agricultural land.

(1) Mapping of agricultural land. The applicant shall identify on a map of at least 1:24,000 scale the proposed facility, all agricultural land, and separately all agricultural district land existing at least sixty days prior to submission of the application located within the project area boundaries. Where available, distinguish between agricultural uses such as cultivated lands, permanent pasture land, managed woodlots, orchards, nurseries, livestock and poultry confinement areas, and agriculturally related structures.

(2) Agricultural information. The applicant shall provide, for all agricultural land, and separately for agricultural uses and agricultural districts identified under paragraph (E)(1) of this rule, the following:

(a) A quantification of the acreage impacted.

(b) An evaluation of the impact of the construction, operation, and maintenance of the proposed facility on the land and the following agricultural facilities and practices within the project area:

(i) Field operations such as plowing, planting, cultivating, spraying, aerial applications, harvesting.

(ii) Irrigation.

(iii) Field drainage systems.

(iv) Structures used for agricultural operations.

(v) The viability as agricultural district land of any land so identified, including the feasibility of the land being re-enrolled into the agricultural district program following ~~-~~decommissioning.

(c) A description of mitigation procedures to be utilized by the applicant during construction, operation, and maintenance to reduce impacts to agricultural land, structures, and practices, including a preliminary vegetation management plan for operational areas that addresses type of ground cover, methods of maintenance, planned use of herbicides and pesticides, and control of invasive species. The description shall illustrate how avoidance and mitigation procedures will achieve the following:

(i) Avoidance or minimization to the maximum extent practicable of any damage to field tile drainage systems and soils in agricultural areas or plans, during decommissioning, to restore such field tile drainage systems or implement functionally equivalent drainage systems.

(ii) Timely repair or, during decommissioning, restoration of damaged field tile systems to at least original conditions or implementation of functionally equivalent drainage systems, at the applicant's expense.

(iii) Segregation of excavated topsoil, and decompaction and restoration of all topsoil to original conditions unless otherwise agreed to by the landowner.

4906-4-09 Regulations associated with wind farms.

For both an economically significant wind farm and a major utility facility consisting of wind-powered electric generating units, the application shall state the applicant's commitment to comply with the following regulations and the board shall require that each of the following requirements be satisfied.

(A) Construction, location, use, maintenance, and change.

(1) Adherence to other regulations. Construction and operation of all proposed wind farms shall be consistent with all applicable state and federal requirements, including all applicable safety, construction, environmental, electrical, communications, and federal aviation administration requirements.

(2) Construction, operations, and maintenance safety.

(a) Equipment safety

(i) The applicant shall comply with the manufacturer's most current safety manual, unless such safety manual conflicts with paragraph (C)(2) of rule 4906-4-08 of the Administrative Code.

(ii) The applicant shall maintain a copy of this safety manual in the operations and management building of the facility.

(b) Geological features

(i) Sixty days prior to the preconstruction conference, the applicant shall provide a fully detailed geotechnical exploration and evaluation to confirm that there are no issues to preclude development of the facility.

(ii) The geotechnical exploration and evaluation shall include borings at each turbine location to provide subsurface soil properties, static water level, rock quality description, per cent recovery, and depth and description of the bedrock contact and recommendations needed for the final design and construction of each wind turbine foundation, as well as the final location of the transformer substation and interconnection substation.

(iii) The applicant must fill all boreholes and borehole abandonment must comply with state and local regulations.

(iv) The applicant shall provide copies of all geotechnical boring logs to board staff and to the Ohio department of natural resources division of geological survey prior to construction.

(c) Blasting. Should site-specific conditions warrant blasting, the applicant shall submit a blasting plan to the board, at least thirty days prior to blasting.

(i) The applicant shall submit the following information as part of its blasting plan:

(a) The name, address, and telephone number of the drilling and blasting company.

(b) A detailed blasting plan for dry and/or wet holes for a typical shot. The blasting plan shall address blasting times, blasting signs, warnings, access control, control of adverse effects, and blast records.

(c) A plan for liability protection and complaint resolution.

(ii) Prior to the use of explosives, the applicant or explosive contractor shall obtain all required licenses and permits. The applicant shall submit a copy of the license or permit to the board within seven days of obtaining it from the local authority.

(iii) The blasting contractor shall utilize two blasting seismographs that measure ground vibration and air blast for each blast. One seismograph shall be placed beside the nearest dwelling, or at least at the nearest accessible property line to the dwelling, and the other placed at the discretion of the blasting contractor.

(iv) At least thirty days prior to the initiation of blasting operations, the applicant must notify, in writing, all residents or owners of dwellings or other structures within one thousand feet of the blasting site. The

applicant or explosive contractor shall offer and conduct a pre-blast survey of each dwelling or structure within one thousand feet of each blasting site, unless waived by the resident or property owner. The survey must be completed and submitted to the board at least ten days before blasting begins.

(3) Location. Wind farms shall be sited in locations that comply with paragraph (C) (2) of rule 4906-4-08 of the Administrative Code and applicable provisions of this rule.

(4) Maintenance and use.

(a) The applicant shall maintain the wind farm equipment in good condition. Maintenance shall include, but not be limited to, painting, structural repairs, and security measures.

(b) The applicant shall have a construction and maintenance access plan based on final plans for the facility, access roads, and types of equipment to be used. The plan shall consider the location of sensitive resources, as identified by the Ohio department of natural resources, and explain how impacts to all sensitive resources will be avoided or minimized during construction, operation, and maintenance. The plan shall include locations of erosion control measures. The plan shall provide specific details on all wetlands, streams, and/or ditches to be impacted by the facility, including those where construction or maintenance vehicles and/ or facility components such as access roads cannot avoid crossing the waterbody. In such cases, specific discussion of the proposed crossing methodology for each wetland and stream crossing, and post-construction site restoration, must be included. The plan shall include the measures to be used for restoring the area around all temporary access points, and a description of any long-term stabilization required along permanent access routes.

(c) The applicant shall have a vegetation management plan. The plan must identify all areas of proposed vegetation clearing for the project, specifying the extent of the clearing, and describing how such clearing work will be done so as to minimize removal of woody vegetation. The plan must also describe how trees and shrubs around structures, along access routes, at construction staging areas, during maintenance operations, and in proximity to any other project facilities will be protected from damage. Priority should be given to protecting mature trees throughout the project area, and all woody vegetation in wetlands and riparian areas, both during construction and during subsequent operation and maintenance of all facilities; low-growing trees and shrubs in particular should be protected wherever possible within the proposed right-of-way. The vegetation management plan should also explore various options for disposing of downed trees, brush, and other vegetation during initial clearing for the project, and recommend methods that minimize the movement of heavy equipment and other vehicles within the right-of-way that would otherwise be required for removing all trees and other woody debris off site.

(d) For both construction and future right-of-way maintenance, the applicant shall limit, to the greatest extent possible, the use of herbicides in proximity to surface waters, including wetlands along the right-of-way. Individual treatment of tall-growing woody plant species is preferred, while general, widespread use of herbicides during initial clearing or future right-of-way maintenance should only be used where no other options exist, and with prior approval from the Ohio environmental protection agency. Prior to commencement of construction, the applicant shall describe the planned herbicide use for all areas in or near any surface waters during initial project construction and/or future right-of-way maintenance.

(e) Within its plans for post-construction site restoration and stabilization of disturbed soils, such restoration plans shall include:

(i) The applicant shall remove all temporary gravel and other construction staging area and access road materials after completion of construction activities, as weather permits, unless otherwise directed by the landowner.

(ii) The applicant shall not dispose of gravel or any other construction material during or following construction of the facility by spreading such material on agricultural land. All construction debris and all contaminated soil shall be promptly removed and properly disposed of in accordance with Ohio environmental protection agency regulations.

(5) Change, reconstruction, alteration, or enlargement.

(a) Any amendment to a wind farm certificate shall be proposed by the applicant to the board as an amendment application, as provided in rule 4906-3-11 of the Administrative Code.

(b) Unless otherwise ordered by the board or administrative law judge, modification(s) shall not be considered amendments under this rule if such modification(s) would be minimal in nature, and would be adequately addressed by the conditions of a certificate.

(c) An applicant may seek review of a proposed modification(s) sought under paragraph (A)(5)(b) of this rule by filing the proposed modification(s) in the public docket of the certificate case and shall provide written notification of such filing to staff and all landowners immediately adjacent to the site of the proposed modification(s). The notification shall reference, and include a copy of, paragraph (A)(5) of this rule. In the filing submitted in the public docket, the applicant shall present its rationale as to why the applicant is seeking the proposed modification(s) and must demonstrate that the proposed modification(s) satisfies paragraph (A)(5) (b) of this rule. Staff or any interested person may file objections to the applicant's proposal within twenty-one days. If no objections are filed within the twenty-one day period, the applicant may proceed with the proposed modification(s). If objections are filed within the twenty-one day period, board staff may subsequently docket its recommendation on the matter. The board will process proposed modification(s) under the suspension process set forth for accelerated applications as outlined in rule 4906-6-09 of the Administrative Code.

(B) Erosion control. Within its procedures for inspection and repair of erosion control measures, the applicant shall employ the following erosion and sedimentation control measures, construction methods, and best management practices when working near environmentally-sensitive areas or when in close proximity to any watercourses:

(1) During construction of the facility, seed all disturbed soil, except within actively cultivated agricultural fields, within seven days of final grading. Denuded areas, including spoils piles, shall be seeded and stabilized in accordance with the applicant's approved stormwater pollution prevention plan, if they will be undisturbed for more than twenty-one days. Re-seeding shall be conducted in accordance with the applicant's approved stormwater pollution prevention plan as necessary until sufficient vegetation in all areas has been established.

(2) Inspect and repair all erosion control measures after each rainfall event of one half of an inch or greater over a twenty-four-hour period, and maintain controls until permanent vegetative cover has been established on disturbed areas.

(3) Delineate all watercourses, including wetlands, by fencing, flagging, or other prominent means.

(4) Avoid entry of construction equipment into watercourses, including wetlands, except at specific locations where construction has been approved.

(5) Prohibit storage, stockpiling, and/or disposal of equipment and materials in these sensitive areas.

(6) Locate structures outside of identified watercourses, including wetlands, except at specific locations where construction has been approved.

(7) Divert all storm water runoff away from fill slopes and other exposed surfaces to the greatest extent possible, and direct instead to appropriate catchment structures, sediment ponds, etc., using diversion berms, temporary ditches, check dams, or similar measures.

(C) Aesthetics and recreational land use.

(1) In the event of vandalism on any generating facility, the applicant shall immediately remove or abate the damage to preserve the aesthetics of the project to pre-vandalism condition.

(2) No commercial signage or advertisements may be displayed on any turbine, tower, or related infrastructure, except for reasonable identification of the manufacturer or operator of the wind farm.

(3) All structures that require lighting by the federal aviation administration, including construction equipment, shall be lit with the minimum lighting required by the federal aviation administration. Lighting of other parts of the wind farm, such as associated structures and access roads, shall be limited to that required for safety and operational purposes, and shall be reasonably shielded from adjacent properties.

(4) The visible surfaces of wind farm structures shall be a non-reflective, matte finished, non-obtrusive, and neutral color such as white, off-white, gray, or beige.

(5) The applicant shall provide a plan to avoid adverse impacts of the proposed facility on landmarks in the surrounding area. Landmarks, for the purpose of this rule, refer to those districts, sites, buildings, structures, and objects that are recognized by, registered with, or identified as eligible for registration by the national registry of natural landmarks, the state historic preservation office, or the Ohio department of natural resources. If avoidance measures are not feasible, the applicant shall describe why impacts cannot be avoided and shall provide an evaluation of the impact of the proposed facility on the preservation and continued meaningfulness of registered or potentially eligible landmarks of historic, religious, archaeological, scenic, natural, or other cultural significance and describe plans to mitigate any adverse impact. The mitigation plan shall contain measures to be taken should previously-unidentified archaeological deposits or artifacts be discovered during construction of a project.

(6) The applicant shall provide photographic simulations or artist's pictorial sketches of the proposed facility from at least one vantage point in each area of three square miles within the project area, showing views to the north, south, east, and west. The photographic simulations or artist's pictorial

sketches shall incorporate the environmental and atmospheric conditions under which the facility would be most visible.

(D) Wildlife protection. The applicant shall satisfy the following requirements to avoid or mitigate impacts to federal or state listed and protected species.

(1) The applicant shall coordinate with the United States fish and wildlife service, the Ohio department of natural resources division of wildlife, and board staff to determine if any actions are necessary to avoid impacts to federal or state listed and protected species or other species which may be impacted. The applicant shall provide coordination letters received from the United States fish and wildlife service and the Ohio department of natural resources division of wildlife. If the United States fish and wildlife service, the Ohio department of natural resources division of wildlife, or board staff identify any recommendations for the avoidance of impacts to specific species, the applicant shall describe how it shall address all recommendations.

(2) The applicant shall contact board staff within twenty-four hours if federal or state listed species are encountered during construction activities. Construction activities that could adversely impact the identified plants or animals shall be halted until an appropriate course of action has been agreed upon by the applicant, board staff, and other applicable administrative agencies.

(3) The applicant shall avoid construction in federal or state listed and protected species' habitats during seasonally restricted dates, or at restricted habitat types, as provided by the Ohio department of natural resources and the United States fish and wildlife service, unless coordination efforts with the Ohio department of natural resources and the United States fish and wildlife service allows a different course of action.

(4) The applicant shall submit a post-construction avian and bat monitoring plan to the board. During operation of the facility, if significant mortality occurs to birds or bats, the applicant will develop a mitigation plan.

(5) At least sixty days prior to the first turbine becoming operational, the applicant shall describe plans for maintaining turbine blades in a stationary or nearly stationary stance during low wind speed conditions at night during bird and bat migratory seasons.

(6) If construction activities result in significant adverse impact to federal or state listed and protected species, the applicant will develop a mitigation plan or adaptive management strategy.

(E) Ice throw.

(1) The ice throw analysis shall, at a minimum, include the probability of ice throw impacts at the nearest property boundary and public road.

(2) The applicant's plans to minimize potential impacts shall include:

(a) Restricting public access to the facility with appropriately placed warning signs or other necessary measures,

(b) Instructing workers on the potential hazards of ice conditions on wind turbines, and

(c) Installing and utilizing an ice warning system to include an ice detector installed on the roof of the nacelle, ice detection software, warranted by the manufacturer to detect ice, for the wind turbine controller, or an ice sensor alarm that triggers an automatic shutdown.

(3) In addition to the use of the safety measures enumerated in paragraph (E)(2) of this rule, the potential impact from ice throw shall be presumptively deemed to satisfy safety considerations if the probability of one kilogram of ice landing beyond the statutory property line setback for each turbine location is less than one per cent per year.

(F) Noise.

(1) General construction activities shall be limited to the hours of seven a.m. to seven p.m., or until dusk when sunset occurs after seven p.m. Impact pile driving, hoe ram, and blasting operations, if required, shall be limited to the hours between ten a.m. to five p.m., Monday through Friday. Construction activities that do not involve noise increases above ambient levels at sensitive receptors are permitted outside of daylight hours when necessary. Sensitive receptor, for purposes of this rule, refers to any occupied building. The applicant shall notify property owners or affected tenants within the meaning of paragraph (B)(2) of rule 4906-3-03 of the Administrative Code of upcoming construction activities including potential for nighttime construction activities.

(2) The facility shall be operated so that the facility noise contribution does not result in noise levels at any non-participating sensitive receptor within one mile of the project boundary that exceed the project area ambient nighttime average sound level (Leq) by five A-weighted decibels (dBA). During daytime operation only (seven a.m. to ten p.m.), the facility may operate at the greater of: the project area ambient nighttime Leq plus five dBA; or the validly measured ambient Leq plus five dBA at the location of the sensitive receptor. After measured ambient Leq plus five dBA at the location of the sensitive receptor. After commencement of commercial operation, the applicant shall conduct further review of the impact and possible mitigation of all project-related noise complaints through its complaint resolution process. Non-participating, as used in this context, refers to a property for which the owner has not signed a waiver or otherwise agreed to be subject to a higher noise level.

(G) Blade shear. The applicant shall provide its plans to minimize potential impacts from blade shear. These plans shall include restricting public access to the facility with appropriately placed warning signs or other necessary measures, and instructing workers on the potential hazards.

(1) To minimize the possibility of blade shear, all wind turbine generators must be equipped with:

(a) Two independent braking systems, which may include aerodynamic overspeed controls and mechanical brakes operated in a fail-safe mode, but shall not include stall regulation;

(b) A pitch control system;

(c) A lightning protection system; and

(d) Turbine shutoffs in the event of excessive wind speeds, uncontrolled rotation, excessive blade vibration, stress, or pressure on the tower structure, rotor blades, and turbine components.

(2) Bypass or override of wind turbine safety features or equipment is prohibited.

(3) At a minimum, the design of the wind turbine generators shall conform to industry standards, as effective at the time the applicant submits its application, including those of the American national standards institute, the international electrotechnical commission, or an equivalent industry standard. The applicant shall submit certificates of design compliance obtained by the equipment manufacturers from underwriters laboratories, det Norske veritas, Germanischer Llloyd wind energies, or other similar certifying organizations.

(H) Shadow flicker.

(1) The facility shall be designed to avoid unreasonable adverse shadow flicker effect at any non-participating sensitive receptor within one thousand meters of any turbine. At a minimum, the facility shall be operated so that shadow flicker levels do not exceed thirty hours per year at any such receptor. Non-participating, as used in this context, refers to a property for which the owner has not signed a waiver or otherwise agreed to be subject to a higher shadow flicker level.

(2) After commencement of commercial operation, the applicant shall conduct further review of the impact and possible mitigation of all project-related shadow flicker complaints through its complaint resolution process.

(I) Decommissioning and removal.

(1) The applicant shall provide the final decommissioning plan to the board and the applicable county engineer(s) at least thirty days prior to the preconstruction conference. The plan shall:

(a) Indicate the intended future use of the land following reclamation.

(b) Describe the engineering techniques and major equipment to be used in decommissioning and reclamation; a surface water drainage plan and any proposed impacts that would occur to surface and ground water resources and wetlands; and a plan for backfilling, soil stabilization, compacting, and grading.

(c) Provide a detailed timetable for the accomplishment of each major step in the decommissioning plan, including the steps to be taken to comply with applicable air, water, and solid waste laws and regulations and any applicable health and safety standards in effect as of the date of submittal.

(2) The applicant shall file a revised decommissioning plan to the board and the applicable county engineer(s) every five years from the commencement of construction. The revised plan shall include advancements in engineering techniques and reclamation equipment and standards. The revised plan shall be applied to each five-year decommissioning cost estimate.

(3) The applicant shall, at its expense, complete decommissioning of the facility, or individual wind turbines, within twelve months after the end of the useful life of the facility or individual wind turbines. If no electricity is generated for a continuous period of twelve months, or if the board deems the facility or turbine to be in a state of disrepair warranting decommissioning, the wind farm or individual wind turbines will be presumed to have reached the end of its useful life. The board may extend the useful life period for the wind farm or individual turbines for good cause as shown by the applicant. The board may also require decommissioning of individual wind turbines due to health, safety, wildlife impact, or other concerns that prevent the turbine from operating within the terms of the certificate.

(4) Decommissioning shall include the removal and transportation of the wind turbines and towers off site. Decommissioning shall also include the removal of buildings, cabling, electrical components, access roads, and any other associated facilities, unless otherwise mutually agreed upon by the facility owner and/or facility operator and the landowner. All physical material pertaining to the facility and associated equipment shall be removed to a depth of at least thirty-six inches beneath the soil surface and transported off site. The disturbed area shall be restored to the same physical condition that existed before construction of the facility. Damaged field tile systems shall be repaired to the satisfaction of the property owner.

(5) During decommissioning, all recyclable materials, salvaged and non-salvaged, shall be recycled to the furthest extent practicable. All other non-recyclable waste materials shall be disposed of in accordance with state and federal law.

(6) The facility owner and/or facility operator shall not remove any improvements made to the electrical infrastructure if doing so would disrupt the electric grid, unless otherwise approved by the applicable regional transmission organization and interconnection utility.

(7) At least seven days prior to the preconstruction conference, the applicant shall retain an independent, registered professional engineer, licensed to practice engineering in the state of Ohio to estimate the total cost of decommissioning in current dollars, without regard to salvage value of the equipment. Said estimate will be converted to a per-turbine basis calculated as the total cost of decommissioning of all facilities divided by the number of turbines in the most recent facility engineering drawings. This estimate shall be conducted every five years. Said estimate shall include:

(a) An identification and analysis of the activities necessary to implement the most recent approved decommissioning plan including, but not limited to, physical construction and demolition costs assuming good industry practice and based on publication or guidelines approved by staff;

(b) The cost to perform each of the activities; and

(c) An amount to cover contingency costs, not to exceed ten per cent of the above calculated reclamation cost.

(8) The applicant, facility owner, and/or facility operator shall post and maintain for decommissioning a performance bond in an amount equal to the per-turbine decommissioning costs multiplied by the sum of the number of turbines constructed and under construction. For purposes of this condition, a turbine is considered to be under construction at the commencement of excavation for the turbine foundation. The form of the performance bond shall be mutually agreed upon by the board and the applicant, the facility owner, and/or the facility operator. The performance bond shall ensure the faithful performance of all requirements and reclamation conditions of the most recently filed and approved decommissioning and reclamation plan. At least thirty days prior to the preconstruction conference, the applicant, the facility owner, and/or the facility operator shall provide an estimated timeline for the posting of decommissioning funds based on the construction schedule for each turbine. Prior to commencement of construction, the applicant, the facility owner, and/or the facility operator shall provide a statement from the holder of the performance bond demonstrating that adequate funds have been posted for the scheduled construction. Once the performance bond is provided, the applicant, facility owner and/or facility operator shall maintain such funds or assurance throughout the remainder

of the applicable term. The applicant, facility owner, and/or facility operator shall obtain a new performance bond every five years with an updated decommissioning cost estimate from its engineer and revised decommissioning plan.

(9) The facility owner and/or facility operator shall repair damage to government-maintained (public) roads and bridges caused by decommissioning activity. Any damaged public roads and bridges shall be repaired promptly to their pre-decommissioning state by the facility owner and/or facility operator under the guidance of the appropriate regulatory agency. The applicant shall provide financial assurance to the counties that it will restore the public roads and bridges it uses to their pre-decommissioning condition. These terms shall be defined in a road use agreement between the applicant and the county engineer(s) prior to construction. The road use agreement shall contain provisions for the following:

(a) A pre-decommissioning survey of the condition of public roads and bridges conducted within a reasonable time prior to decommissioning activities.

(b) A post-decommissioning survey of the condition of public roads and bridges conducted within a reasonable time after decommissioning activities.

(c) An objective standard of repair that obligates the facility owner and/or facility operator to restore the public roads and bridges to the same or better condition as they were prior to decommissioning.

(d) A timetable for posting of the decommissioning road and bridge bond prior to the use or transport of heavy equipment on public roads or bridges.

(10) The performance bond shall be released by the holder of the bond when the facility owner and/or facility operator has demonstrated, and the board concurs, that decommissioning has been satisfactorily completed, or upon written approval of the board, in order to implement the decommissioning plan.