Portside Solar Q&A

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Answering questions we have heard in the community!

1. **Do townships and counties actually see tax revenue from solar projects?**
    a. Yes! See Ranger Power's Assembly Solar tax projections sheet, showing real dollars received by the townships hosting our Assembly Solar project. This document includes real tax revenue with solar, as well as tax projections for the years 2020 – 2022.

2. **Do solar projects displace wildlife?**
    a. Absolutely not
    b. Solar projects create new habitat for wildlife through grasses and pollinators planted. A few examples from our Dressor Plains solar project in Illinois include **sheep grazing, apiaries, and families of foxes** traveling throughout the project. Please see the video and photo package I've shared!
    c. At our Assembly solar project, we have seen deer traveling throughout the site, we have seen an influx of birds and other critters. The fences **do not prevent travel** of wildlife, and they increase available habitat for wildlife to flourish!
    d. Additionally, stormwater runoff and soil erosion are reduced as a result of the vegetation planted throughout the project area.

3. **Do solar projects result in the loss of agricultural land?**
    a. No. Solar projects actually protect against the loss of agricultural land by preserving its use for future generations and ensuring that it will not be developed of another use, such as residential housing, which is the greatest threat contributing to the loss of agricultural land.
    b. According to the USDA's St. Clair County Agricultural Census included in this informational package, there are over 182,000 acres of agricultural land in St. Clair County alone. Since 2012, farmers in St. Clair County have seen a net income loss of 48%. Due to increasing crop market volatility as well as increasingly unpredictable weather, farming today has become extremely difficult. Solar is a way for farmers to stabilize their income, while continuing to farm. It is also a way to ensure agricultural land stays agricultural, and does not turn to subdivisions, or large commercial property. Projects will be decommissioned, per the township's ordinance, and PA116 requirements, as well as Ranger Power's leases with landowners. Leaseholders can choose to continue farming after the solar project life.
    c. According to the Michigan Department of Agriculture and Rural Development, Michigan has 4 million acres of agricultural land. Roughly 750,000 acres are

used in ethanol production in Michigan alone. For a full transition to wind and solar, it's estimated that 250,000 acres are needed in Michigan. [See testimony from Ed Rivet from the Conservative Energy Forum on this topic here.]

4. **"Michigan produces low amounts of sunlight, why build solar there?"**
    a. Solar projects have contractual obligations with utility power purchasers in Michigan that require certain capacity output levels for each project. If solar projects were not efficient enough to produce the required output for these contracts, they would not be built. We expect the Portside project to generate enough power for **25,000 homes in Michigan**.

5. **What types of pollinating plant mixes are planted and who oversees the selection?**
    a. Using Michigan State University Extensions' Pollinator Habitat Planning Scorecard for Solar Sites, we will plant native grasses and plants below the panels. Trees selected for the vegetative buffer will be based off of recommendation and consultation with local landscapers with area expertise in Michigan as we have done at our Assembly Solar project.
    b. See below for the scorecard!

Michigan Pollinator Habitat Planning Scorecard for Solar Sites

This form was developed by the MSU Department of Entomology to guide vegetation management at solar installations to make them more supportive for native pollinators. Check the boxes and add up the points to determine whether the plans meet or exceed the minimum requirements. For more local information on pollinators and habitat: www.pollinators.msu.edu

PROJECT DETAILS

Solar developer:_____

Vegetation consultant: _____

Project location: _____

Project size (acres):_____

SITE SCORES

1. SITE PLANNING AND MANAGEMENT
    - ☐ Detailed plant establishment and vegetation management plan developed +10 pts
    - ☐ Site plan developed with a vegetation management company + 5 pts
    - ☐ Signage legible at forty or more feet stating pollinator friendly solar habitat +3 pts
2. HABITAT SITE PREPARATION PRIOR TO IMPLEMENTATION
    - ☐ Measures taken to control weeds during season prior to seeding +10 pts
    - ☐ No weed control -20 pts
3. INSECTICIDE RISK
    - ☐ Planned on-site use of insecticide or pre-planting seed/plant treatment (excluding buildings/electrical boxes, etc) -40 pts
    - ☐ Communication with local chemical applicators and site registered on https://mi.driftwatch.org/map +20 pts
4. AVAILABLE HABITAT COMPONENTS WITHIN 0.25 MILES (check/add all that apply)
    - ☐ Native bunch grass for bee nesting +1 pt
    - ☐ Open sandy soil areas for bee nesting +1 pt
    - ☐ Trees/shrubs for bee nesting +1 pt
    - ☐ Clean, perennial water sources +1 pt

FLOWERING PLANT SCORES

5. FLOWERING PLANT SPECIES SEEDED IN PERIMETER AREA (species with more than 1% cover)
    - ☐ 5-10 species +1 pts
    - ☐ 10-15 species +3 pts
    - ☐ 16-20 species +8 pts
    - ☐ >20 species +10 pts

    Exclude invasive plant species from total
6. PLANT DIVERSITY UNDER SOLAR ARRAY*
    - ☐ Grass only +2 pts
    - ☐ Clover/grass mix +8 pts
    - ☐ Low-growing wildflower mix +10 pts
7. PERCENT OF SITE PLANNED TO BE DOMINATED BY WILDFLOWERS**
    - ☐ 0 - 25% 0 pts
    - ☐ 26- 50 % +3 pts
    - ☐ 51-75 % +8 pts
    - ☐ More than 75% +15 pts

    Projects may have different species mixes under the solar array panels and in the perimeter. Flower cover should be averaged across the entire site.
8. SEEDS USED FOR WILDFLOWER AREAS
    - ☐ Mixes are seeded using at least 40 seeds/square foot +5 pts
    - ☐ All wildflower seeds are from a source within 150 miles of the site +5 pts
9. SEASONS WITH AT LEAST THREE BLOOMING FORB SPECIES PRESENT (check all that apply)
    - ☐ Spring (April-May) +5 pts
    - ☐ Summer (June-August) +5 pts
    - ☐ Fall (September-October) +5 pts

** For seeding in the panel array, these can be a short-stature wildflower mix or clovers and other non-native species beneficial to pollinators. If clovers are used, these should be seeded in locations separate from the native wildflowers in the perimeter locations.*

*** Wildflowers in Question 7 refer to forbs which are flowering plants that are not woody, and are not grasses, sedges, etc. Measurements of percent cover should be based on the percent of the ground surface covered by foliage as viewed from above.*

Refer to www.nativeplants.msu.edu or a local native wildflower supplier for advice on plants that are attractive to pollinators and will work in various Michigan settings.

For more on pollinator habitat: www.pollinators.msu.edu

Total points:	☐
Provides exceptional habitat	**90+ points**
Meets pollinator standards	**76 – 89 points**
Does not meet standards	**below 75 points**

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6. **What is the level of sound (in dB) from solar projects?**
    a. See the sound study provided in our application package. We are required to meet the sound requirements of the township's ordinance.
    b. The sound from the project is produced by the cooling fans from the project inverters and can only be heard during the day given that the solar facility operates when the sun is in the sky. This sound is likened to a hum and can only be heard nearby project inverters or substations. Portside Solar is required to meet sound requirements within Clyde Township and Fort Gratiot Township ordinances. We have shared a sound study to confirm our compliance with the ordinance requirements. We have committed to setbacks of at least 350 feet from inverters to residences.

7. **Who monitors the project to make sure it meets regulations? The state, county, town?**
    a. Our projects are monitored to ensure the project continues to meet regulations at all levels of government. Part of our job is to make sure the project follows all standards, ordinances, and regulations, which is a key focus during our developmental process. Following construction, the projects continue to be monitored 24/7. This includes both in-person and remote monitoring of the projects. Our operators can respond to any project components throughout the site very quickly.

8. **Is the demand for power in the area actually increasing?**
    a. With the retirement of many coal power plants across the country and in Michigan, the demand for new power generation is increasing. Solar power presents a unique opportunity for cheap, affordable power that has direct community benefits such as increasing tax revenue. In the Midwest, Michigan ranks in the bottom half of energy production across twelve states and third for energy consumption. More information about Michigan's energy portfolio can be found here. Corporations such as Ford and GM are investing in new renewable energy. From Ford's sustainability plan, "Ford's sustainability goals include becoming carbon neutral globally by 2050, using 100 percent locally-sourced renewable energy for all manufacturing plants globally by 2035." GM plans to "source 100 percent renewable energy to meet GM's global electricity needs. In the meantime, we plan to achieve 60 percent globally by 2025… For us, transforming the communities were the GM family works and lives is a key value" amongst other renewable energy related goals in their development forecast.

9. **Who funds the project?**
    a. Our projects are funded by D.E. Shaw Renewable Investments (DESRI). Making up one of the largest domestic investors in renewable energy, DESRI supports Ranger Power to ensure projects are developed, constructed, and operated with proper funding from initial development through decommissioning at the end of the project's life.

10. **Why would farmers and communities support solar development?**
    a. Tax revenue for community
        i. Not only do farmers see financial benefits from their participation in solar projects, but many community members will also see benefits through the generation of significant state and local tax revenue. See the Assembly solar tax numbers in the document I provided in this package.
    b. Wildlife benefits
        i. Solar power generation produces minimal sound, no pollution, and no chemical emissions that are dangerous to wildlife. Solar also emits no harmful byproducts during operation and requires no fuel for operations or transportation. Independent third-party sources confirm the benefit of solar facilities on the environment. Please take a look at the examples from our Dressor Plains project in Illinois.
    c. Cheaper energy prices
        i. Comparing utility scale solar energy to other renewable energy methods, we found that utility scale solar production is almost $100/MWh cheaper than rooftop solar. When compared to non-renewable energy sources such as coal, utility scale solar is approximately $40/MWh cheaper per the Lazard LCOE report.
    d. Farmers who voluntarily participate in leasing their land for solar projects receive annual land use payments that exceed the possible revenue from agricultural production per-acre from almost any crop. The long-term lease payments help supplement farm income, provide a stable source of revenue, and provide a hedge against changing prices for row crops and livestock.

11. **"What does the housing market report show? Does it look at both the number of days on the market and the market values?"**
    a. Researching the effects of solar projects on adjacent neighboring homes, we consulted a third-party contractor to conduct a study on solar projects throughout Michigan and the Midwest to determine the project impacts on property values. This research included variables like the number of days on the market for adjacent properties and their market values. Please see our application package for the Cohn Reznick property values report for all the findings. **Noting market values, the report concludes no significant difference in the market value of properties adjacent to solar facilities compared to property values in the county.** The report also demonstrates no negative effects of days on the market and property value.

12. **Is large scale solar the cheapest form of energy?**
    a. Yes. See Lazard's unsubsidized analysis shared.

13. **How close are the technicians to the project? Who is responsible for the security of the project?**

a. Operators and maintenance professionals are located near the project and will monitor the project both on site and remotely 24/7. This allows maintenance teams to respond to any issues immediately, while always monitoring output from the project. The project is monitored 24/7 to ensure the project is safe and secure.
b. Our solar projects create local jobs by filling positions with community members during the construction process. These jobs will benefit local businesses, hotels, restaurants, shops, etc. Experience that is gained by local construction workers, in turn, benefits the use of local technicians who are familiar with the project and can ensure the project operates to the best of its ability.
c. The fence around the project will be a 7' tall woven wire agricultural fence that will help maintain the aesthetic of the area. In accordance with the Federal National Electrical Safety Code, the project substation is required to have a seven-foot wooden post woven wire. There will likely be security cameras placed to safeguard some areas of the project.

14. How much tree clearing?

a. We are taking an avoidance approach to developing the Portside project. From a developmental standpoint, we want to minimize our environmental impact while reducing project costs that are reflected in the price of the energy produced by the project. Cutting down trees is costly both to us and the environment. If we do need to clear trees, we would do so in the least impactful manner.

15. Is there any glare from the panels (e.g., when you drive by)

a. The goal of solar panel use is to capture the energy from the sun for electricity. Sunlight can be absorbed and reflected, and solar panels are made to absorb light, so glare is minimal. Solar modules are covered by anti-glare coatings and studies have shown that solar panels reflect little incoming light. Ranger Power has developed projects near airports in compliance with FAA regulations for glare. We have provided a glare study showing absolutely no glare from the project. We are required to meet requirements at the township level regarding glare.

16. What are the effects on heat? Is there extra heat load off down wind from panels?

a. There is no evidence that supports the idea of a "heat island" surrounding solar projects. The PV panels are elevated off the ground, surrounded by ambient air, set apart with spacing between racking, and underlain by vegetation which all act to circulate airflow and ensure no significant difference in heat around solar facilities compared to ambient air temperature. During the day, solar panels that are exposed to the sun generate a very small amount of heat that is not detrimental to human and environmental health and any small amount of heat dissipates during the evenings.

17. What are the details of the panel manufacturing origin, materials?

a. We have not committed to a specific panel manufacturer, but we fully anticipate major project components like panels and steel to be produced in the United States for the Portside Solar project. Recently, heightened demand for solar power has encouraged domestic production of solar power materials in the United States. We have used US made panels and steel at multiple projects that we have constructed.

18. Why build solar farms rather than smaller-scale installations like parking lots on or on top of buildings.

a. As coal-fire power plants are taken offline, energy demand will increase and new methods for electricity generation will be needed. Solar power technology and installation costs have been declining and the cost of power from large-scale solar facilities have been decreasing by 80% over the last decade. At this point, solar power is cheaper and cost-competitive with traditional coal and natural gas power plants.

b. The cost of generation for large solar projects is much lower than that of rooftop or smaller scale projects due to economies of scale. Investigating energy costs across various methods of production, Lazard's Levelized Cost of Energy Comparison found that utility rooftop solar has a floor cost $117/MWh compared to the utility-scale solar floor cost of $24/MWh.

19. "Are there effects on the soil and worms?"

a. By placing solar panels on agricultural land, our developments encourage nutrient absorption through the planting of vegetative cover crops, which benefits soil restoration and a natural return to productive nutrient levels. As for worms, following the construction phase of development, the land that solar panels are placed upon lays fallow and undisturbed which gives worms a chance to play their role in soil restoration, much more so than tilled land that is in a crop rotation. Leaving the land dormant over the course of the project lifespan is proven and effective.

Resources:

Solar for Soil, Water, Pollinators and Farmers

Henry Hieslmair PhD: How Big is the Solar Panel Waste Stream?

NREL Researcher: How Long Do Solar Panels Last?

Solar Panel Recycling - A Growth Industry

How Does Ethanol Compare to Solar Energy?

Clean Energy is a Property Rights Issue

Solar Saves Soil: Experts Explain

https://www.sun101.org