Times Herald

NEWS

Solar project may help Fort Gratiot farmers diversify income, keep land in the family

Jackie Smith
Port Huron Times Herald

Published 2:04 p.m. ET Nov. 7, 2023

Over the last several weeks, plenty of residents in Fort Gratiot have voiced concerns over a 900-acre solar development proposed in the township — their names etched in petitions, anti-solar signs placed on lawns, and crowds converging at local meetings.

But just a few days prior to a rescheduled planning commission meeting on Wednesday night, a few Fort Gratiot landowners who have opted to add their own property to the potential utility development, dubbed Portside Solar, said there are a few things they hope their neighbors will understand.

“We were full of questions, and at the beginning, we were very hesitant to sign up, and we did not sign up at the beginning,” Charlie Lewis said in an interview late last week.

Lewis is one of five property owners with 17 parcels listed to be included in the project from Chicago-based Ranger Power, whose plans also include Clyde Township. They’ve been in contact with the company over the last two or three years, and sometime after a Ranger representative stopped by to talk to them, he said they came to a new conclusion.

With 215 acres included, and in addition to supplementing their income, Lewis said it could potentially help maintain a historic homestead that’s been in the family since 1876 for decades.

“We originally agreed to let them run some underground wires through our farmland to connect up to different parts of the solar project, and then, as we got more comfortable with them, we decided that we would sign up some farmland with them to be able to build,” Lewis said.

“We decided that number one, they were going to pay a good rent, and number two, that it gave us a way to diversify the income that we were getting for the farm,” the 46-year-old added. “Because farming is a feast-or-famine-type industry. So, I would have some constant income coming from the ground that I could count on. Then, three, there was going to be nothing bad done to the ground. And in 40 years, when the lease is done, I’ll probably be dead, but my son and my daughter will be able to get the land back in pristine condition. They can farm it and do what they like with it.”

During Wednesday’s Fort Gratiot meeting, slated for 6 p.m. at the Blue Water Convention Center, 800 Harker St., in Port Huron, planning commissioners will consider a special land use request and site plans from Ranger Power.

In the township, Portside Solar’s plans encompass a large swatch off Brace, Carrigan, Cole, Metcalf, and State roads. Actual solar panels would be sited within a fenced-in area over roughly 527 acres of more than the 900 acres listed in Fort Gratiot, with four of the participating parcels containing proposed underground collection lines.

A collection of materials on the project have been posted under meetings and agendas at https://fortgratiot.us.

Another set of appendices have been submitted with special use and site plan applications to Clyde Township, where Ranger Power proposes locating a substation and other amenities for the project over another 275 acres. Clyde’s planning commission is slated to discuss plans Nov. 16.

The combined project would have a 100-megawatt capacity generated — 75 in Fort Gratiot and 25 in Clyde. This week, project manager Toby Valentino said, “The power that will be produced by Portside Solar is actively being marketed to Michigan utilities. The power produced by Portside will be sold to a Michigan power purchaser.”

Weighing the benefits of solar on historically family farms

For Ted and Cindy Furness, Ranger Power is the second renewable energy that’s approached them.

The first was out of California seven years ago. A church-going family, Cindy Furness said they prayed about it, and when nothing came to pass, “figured, ‘That’s it.’” Later on, they

were approached by another fellow from Ranger Power, and Cindy said she had a good feeling about him, later doing her own research on the company.

“We got a call from another guy, and he showed up at the door. A really nice young man. That’s important to us. A very strong Christian man,” she said by phone Monday. “We’ve dealt with different companies, with other types of things, like the road commission. We had some electrical (workers), you’ve got different contractors, and there’s some of them that can be on your property working and they’re cussing and they’re swearing, and they’re leaving cigarette butts all over your yard. And you just don’t want to deal with people like that. Well, this young fellow who stopped by, there was such a light about him.”

Now, nearing retirement age and looking for an exit plan, Cindy Furness said they, too, were interested in an income that mean they didn’t have to sell their property.

They have more than 250 acres listed in the Fort Gratiot portion of Portside Solar’s plans. Married for 41 years, Cindy said she’s lived there for decades, while the land itself has been in the Furness family since 1892.

“How far it’ll go, I don’t know. We’re at the point that we feel if it’s in God’s hands, it’ll happen, and if it’s not, we will look for other alternatives,” she said. “We’re not going to be farming that much longer. A lot of people are crying, ‘Oh, they’re going to lose the farmland.’ Well, we can’t sell to another farmer and try to make it for retirement. I have not worked outside the farm or outside the home since my kids were little. We’re a one-income family.”

Both Furness and Lewis, two of the three largest acreage holders slated to participate, said those long-term family ties were also a motivator. “My kids are in their late ‘30s. They could retire,” Furness said.

At Lewis’ property off North Road, on the edge of Fort Gratiot and Clyde, the family’s two kids are much younger, at ages 7 and 10.

Some of the sugar beet acreage in Clyde, Lewis said, would be impacted by the solar project, but plenty would be left available for them to farm.

Overall, they have 900 cattle — working with animals, Lewis said, is what he enjoys the most — as well as 1,500 acres of ground to farm sugar beets, corn, soybeans, and wheat with property in Fort Gratiot, Clyde, and Grant Township.

“It’s my property, and I should be able to do what I want with it. These people that are protesting, I fully believe that if they had a chance to subdivide or put up a bunch of houses

on their property, they would not ask me if I thought it was OK," Lewis said, adding, "I feel totally comfortable, and I think that my ancestors will be happy that we're doing this."

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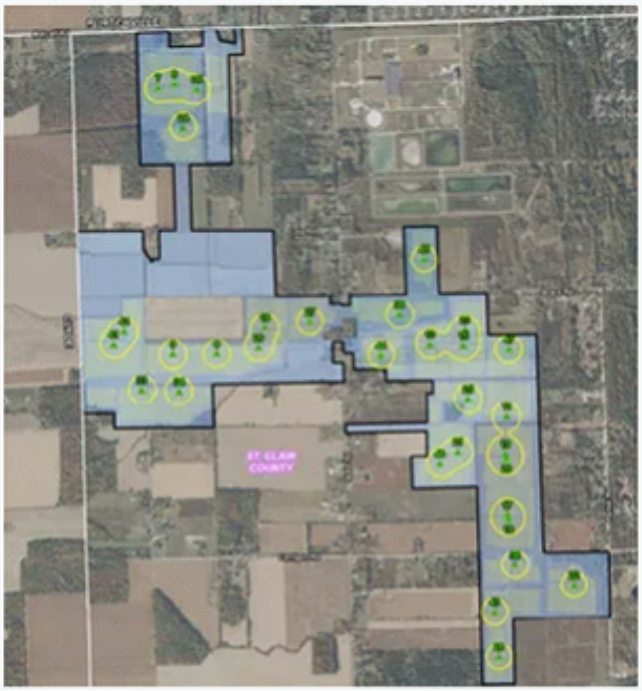
Charlie Lewis holds a sugar beet on Saturday, Nov. 4, 2023, on acreage in Clyde Township that Lewis Farms has listed to participate in a massive solar development between the township and Fort Gratiot. Included in the latter, Lewis Farms has over 200 acres. *Jackie Smith/Times Herald*

St. Clair County farmer Charlie Lewis points to his ancestor Charles Lewis, who though he is fifth-generation on their North Street-based property, he is not named after. Lewis said his family's homestead, and where they currently farm, was established in 1876. *Jackie Smith/Times Herald*



Site plans show Range Power's plans, under Portside Solar, LLC, to construct a 917-acre solar panel development across 17 properties along Metcalf, Cole, Carrigan, State, and Brace roads, in Fort Gratiot. *Provided By Fort Gratiot*

Charlie Lewis, wife Gwyn, 10-year-old daughter Lorelei, and 7-year-old son Edwyn stand beside the children's 4-H steers on Saturday, Nov. 4, 2023, at the family farm in North Street. This year marks the first time Lorelei and Edwyn are raising steer for 4-H. *Jackie Smith/Times Herald*

Lewis Farms has over 200 acres included in the Fort Gratiot 900-acre solar project that's up for consideration. However, the project, dubbed Portside Solar, also covers acreage in neighboring Clyde Township, as pictured on Saturday, Nov. 4, 2023, that farms sugar beets, as well. *Jackie Smith/Times Herald*

Where Do Solar Panels Go To Die?

By **Interlochen Public Radio**

This coverage is made possible through a partnership with IPR and Grist, a nonprofit independent media organization dedicated to telling stories of climate solutions and a just future.

(https://www.greatlakesnow.org/author/jpr/)

October 17, 2023

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This story was adapted from Points North (https://www.interlochenpublicradio.org/points-north-1)*, a podcast about the land, water, and inhabitants of the Great Lakes, from Interlochen Public Radio. Listen and subscribe wherever you find podcasts.*

In 2019, the nonprofit Michigan Energy Options had just put up a solar farm.

“We purposely located our East Lansing Community Solar Park on a former municipal dump,” said Executive Director John Kinch. “It’s a closed dump. There’s grass and some flowers and weeds growing there.”

As part of the project, Kinch and his colleagues restored the land around the newly installed panels.

“We took all the junky grasses and things that were not native, got rid of it all and planted all native prairie and wildflower species to Michigan,” he said. “It’s a beautiful sight right now.”

But one day, Kinch was out there admiring the work, when a thought entered his mind: “Holy cow, when we’re done with this project, am I going to remove a thousand solar panels from a landfill and go put them underground in a landfill somewhere else?”

The world is seeing a huge push for solar power. But what happens when those panels die?

Beginning end-of-life research

About 12 years ago, a woman named Annick Anctil was working at the Brookhaven National Laboratory in New York state. She was researching the environmental impact of solar, and she became interested in making this renewable energy more sustainable.

At her next job, she decided to go further: “The first thing I did when I started in academia after my postdoc was to write a proposal about looking at the end of life of solar modules and the need for recycling and sustainability.”

But, she said, other people weren’t on board.

“The response to that proposal was just, ‘Well, that’s not a problem. And it’s not going to be a problem for a long time. So we’re not going to fund that,’” she recalled.

Anctil submitted another proposal a few years later, and was rejected again.

Around that same time, interest in solar waste was starting to pick up. The country was installing panels (https://www.seia.org/news/us-solar-market-grows-95-2016-smashes-records) at record rates. And in 2016, the International Renewable Energy Agency released a big report (https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2016/IRENA_of-Life_Solar_PV_Panels_2016.pdf), saying that in the next few decades the world could see up to 78 million metric tonnes of solar waste. To put that in perspective, that’s about five million school buses.

That estimate has fluctuated over the years as solar has advanced. The National Renewable Energy Laboratory now estimates (https://www.nrel.gov/docs/fy24osti/87601.pdf) waste could reach between 54 and 160 million tonnes.

By 2021, Anctil’s research was finally funded. And she’s been working on that ever since as an associate professor of civil and environmental engineering at Michigan State University.

“Looking at the waste part, for me, that’s part of the full lifecycle of the solar panels,” she said. “As soon as we start thinking about a product, we should think about what’s going to happen to them when we’re done with it.”

The life of a panel

To understand solar recycling, it’s helpful to know where the panels begin.

Most solar panels are made in China. Those blue rectangles that convert sunlight to electricity are covered in big sheets of high-quality glass and plastic polymer. Those rectangles are usually made (https://www.energy.gov/eere/solar/solar-photovoltaic-cell-basics) of silicon, which is basically a pure form of sand. Panels can also contain copper, silver and other metals. An aluminum frame holds it together.

The solar lifecycle is intertwined with human rights. There have been charges of abuses in mining and manufacturing for solar that gets shipped to countries including the United States. Last year, Reuters reported (https://www.reuters.com/world/china/exclusive-us-blocks-more-than-1000-solar-shipments-over-chinese-slave-labor-2022-11-11/) that Customs and Border Patrol has seized solar equipment shipments because of concerns about ties to slave labor in Uyghur detention camps in Xinjiang. And a report (https://www.business-humanrights.org/en/from-us/transition-minerals-tracker/) by the U.K.-based Business and Human Rights Resource Centre said the U.S. is among the countries that have failed to provide environmental and labor safeguards, allegedly leading to a slew of violations, like polluting drinking water and not consulting communities on projects that affect them.

“There’s a lot of illegal mining,” said Anctil, who co-authored a Science Direct report (https://www.sciencedirect.com/science/article/abs/pii/S0921344922000192) on the carbon footprint of silicon production last year. “There’s also concern that some country might import high quality sand from another country using illegal mining.”

Most solar has been installed (https://www.seia.org/solar-industry-research-data) in the last decade, and that pace is expected to continue, as it becomes cheaper due to federal incentives, new technology and higher demand. Many of those panels are meant to last for at least 25 – 30 years, and could produce power for much longer. Eventually, that will pile up and we’ll need to dispose of them.

But there are no federal requirements for recycling solar panels, and states have different regulations (https://www.nrel.gov/docs/fy21osti/74124.pdf) for what to do with them. Panels can also contain small amounts of heavy metals like lead, which makes getting rid of them more complicated. The vast majority of panels are thrown away in landfills — only about 10% (https://e360.yale.edu/features/solar-energy-panels-recycling) are recycled. And people who are recycling are dealing with a patchwork system with a lot of organizations.

How recycling works

Solar recycling companies are part of that configuration. Some are in the Great Lakes region, but panels are also shipped to big facilities thousands of miles away.

Jesse Simons helped found the California recycling company Solarcycle last year, and is the company's chief commercial officer. He said the first step is sending out a team to determine whether panels can be reused instead of recycled at their facility in Texas.

Once the panels arrive at the facility, they're put on a machine.

"A robot, essentially, pops the frame off," Simons said.

Panels are hard to take apart. They're fused together in a kind of sandwich (https://www.epa.gov/hw/solar-panel-recycling) of glass, silicon, and plastic polymer, built to withstand decades outdoors, and specialized recycling systems are needed to recover valuable materials.

Once the glass is removed, there's the laminate.

"It really does, at that point, roll up like a yoga mat," Simons said. "It's like a very thin piece. But that's where most of the value is currently. Something like 80% of the value of the panel is now in the 8% of the weight that is in that yoga mat-like laminate."

They put the laminate in a shredder, where it's ground down to the size of sand.

"Then we've got another machine that basically uses electromagnetic processes to separate the valuable metals from the remaining plastic and glass," he said.

At the end of the whole process, they're left with around five pounds of plastic, which they're trying to find a way to reuse.

A sustainable way forward

So why isn't everyone recycling?

Well, it's still expensive. The National Renewable Energy Laboratory estimates that it can cost (https://www.nrel.gov/docs/fy21osti/74124.pdf) between $15 – $45 to recycle a panel, but just a few dollars to throw it away.

Getting panels to recycling facilities is another factor. The company We Recycle Solar (https://werecyclesolar.com/about-us/) actually has regional warehouses in places like Chicago, where they store panels until there are enough to justify shipping them to their center in Arizona.

The solar recycling industry is expected (https://www.cnbc.com/2023/05/13/recycling-end-of-life-solar-panel-wind-turbine-is-big-waste-business.html) to grow (https://e360.yale.edu/features/solar-energy-panels-recycling) as technology improves, waste accumulates and demand for materials goes up. And people like John Gilkeson, from Minnesota's Pollution Control Agency, say this transition can't be left to the free market and industry alone.

"That's called wish-cycling," he said. "Because the market will drive to the cheapest option, which is going to be landfilling. We have had many conversations with larger energy providers who say, 'We'll do the right thing.' And we say, 'What is the right thing? And when it really happens, will you do it?' And then we get no response. Because people are not going to do anything that they do not have to do."

Gilkeson said policy is key to dealing with any kind of waste, including solar. He'd like to see reuse and recycling take-back programs that are funded ahead of time and supported by the industry, along with federal efforts. And he thinks we should start working on that now.

"Deliberate, intentional action is needed to make this happen," he said. "Otherwise, you've got thousands of actors all doing whatever they think is in their own self-interest. And it's not going to be a coordinated reuse and recycling system."

There are efforts out there to make reuse and recycling more feasible.

The U.S. Department of Energy announced $20 million (https://www.cnet.com/home/energy-and-utilities/energy-department-touts-20m-in-funding-for-solar-panel-recycling/) for solar sustainability this year. Washington State passed a law requiring (https://ecology.wa.gov/Waste-Toxics/Reducing-recycling-waste/Our-

recycling-programs/Solar-panels) company take-back and recycling programs that's set to take effect in 2025. Some states have included solar in their universal waste programs, which can help streamline collection and recycling. Illinois could ban panels (https://energynews.us/2023/08/10/illinois-wants-to-keep-old-solar-panels-from-piling-up-in-landfills/) from being thrown away. Some companies, like Michigan Energy Options, have started (https://michiganenergyoptions.org/second-life-solar/) collecting panels in the Great Lakes to test out reuse and recycling in the region.

Repair and reuse to reduce

One of the best ways to reduce waste is by developing panels that last longer and are more reliable, say researchers at the National Renewable Energy Laboratory (https://www.nrel.gov/docs/fy24osti/87601.pdf). They also said it's important to try reusing and repairing panels before recycling them.

Worry about the impact of so much solar power is influencing efforts to cut carbon emissions, according to a recent article (https://www.nature.com/articles/s41567-023-02230-0) in the journal Nature Physics. There, NREL researchers like Silvana Ovaitt said "unfounded" concerns about waste and toxicity are slowing solar installations.

"There is a need to grow recycling and management practices, but it's also not the most important thing to do right now," Ovaitt said. "We are really facing these decarbonization needs; right now what we should really focus on is quick deployment."

Over its lifetime, solar generally produces far fewer emissions than non-renewable energy — a 2021 NREL assessment (https://www.nrel.gov/docs/fy21osti/80580.pdf) found that solar emissions are about 4% of coal, 5% of oil, and 9% of natural gas. And although the projected amount of solar waste internationally may seem like a lot, it's still much less than the amount of trash we throw out globally every year.

Annick Anctil, the professor at Michigan State, thinks now is actually a great time to figure out how to move forward. She said the main reason to keep working on this is simple.

“We could do better,” she said. “Solar panels are great, but it could be even better if we were designing it for end-of-life. Or if we really had a solution, then instead of keep mining for new sand, we were able to use old solar panels and create new solar panels. That would be so much better than what we’re doing.”

At the end of the day, experts and advocates say, it’s critical to improve the solar life cycle, because we need way more solar to cut out fossil fuels. And recycling solar waste is just one part of the bigger challenge of fighting climate change.

So what can you do right now? If you have residential solar, a good first step is to contact the company that installed the panels and ask if they’ll repair or recycle them.

If you’re thinking about getting solar, you can ask the installers if they have any reuse or recycling policies.

The Environmental Protection Agency has additional information and resources (https://www.epa.gov/hw/solar-panel-recycling) *for recycling solar panels.*

Catch more news at Great Lakes Now:

Michigan Legislature tackles ambitious climate legislation. How far will it go? (https://www.greatlakesnow.org/2023/09/michigan-legislature-tackles-ambitious-climate-legislation/)

‘Solar grazing’ is a way for farmers and solar companies to use land. But there are challenges (https://www.greatlakesnow.org/2023/08/solar-grazingr-farmers-solar-companies-land-challenges/)

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Balancing Agricultural Productivity with Ground-Based Solar Photovoltaic (PV) Development

AUGUST 2017

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Introduction

For centuries North Carolina farmers have made a major contribution to the state's economy by working the land and providing billions of pounds of agricultural and forestry products to meet demands for food and fiber. This resource serves as a foundational economic building block for the state. North Carolina's farming and forestry community provides North Carolinians and people across the world with food and fiber. That said, the demands of our growing, modern society require renewable forms of energy to begin to replace finite non-renewable energy resources that have traditionally provided the means for transportation, electricity, and much more.

Given that land and climatic conditions suitable for agriculture are finite, solar development may compete with agricultural land use. One use converts sunlight and fertilizer into food and fiber, while the other converts sunlight into electricity. The purpose of this paper is to explore the extent to which solar photovoltaic facilities and agricultural production compete for land use, as well as the extent to which agricultural production is affected by solar development. The paper is divided into two sections:

(1) Understanding the Context of Solar Development and Agriculture in North Carolina.
- (1.1) Developing Renewable Energy,
- (1.2) Landowner Land Use Choice,
- (1.3) Solar Facility Construction,
- (1.4) Duration of Solar Use,

(2) Weighing the Impact of PV Development on Agriculture
- (2.1) Solar PV Land Use
- (2.2) Impact on Agricultural Productivity

1. Understanding the Context of Solar Development and Agriculture in North Carolina

This section provides some background on solar development in North Carolina. By illustrating the existing demand for renewable energy (1.1), touching on the state's political climate towards private land use (1.2), and highlighting two important considerations of PV development (1.3 and 1.4), the context surrounding the two competing land uses of solar development and agriculture can be better understood. As agriculture is and has been a dominant, established land

use in this state for generations, discussion in this section will primarily focus on the increasing demands of land to be used for solar development.

1.1 Developing Renewable Energy

Currently, almost all of North Carolina's electricity is generated from fuels, such as coal, natural gas, and uranium, which are produced outside the state. Some coal plants in North Carolina are reaching the end of their useful lives and being retired.[1,2] Alternative sources of energy, such as solar and wind, have become much more economically attractive in the last several years, making it possible to economically replace some nuclear, coal, and gas electricity generation with these sources.[3]

More than three hundred privately financed utility-scale solar facilities operate in North Carolina under current electricity prices, regulations, and policies, with more planned for the future. As with any new technology, price drops and performance improvements may be expected over time as production volumes increase and experience is gained. Since 2009, the total cost to develop and build a utility-scale solar facility in North Carolina has dropped from over $5 per watt to about $1 per watt. This rapid cost reduction in utility-scale solar facilities has greatly improved the financial viability of solar projects; many solar projects are now being planned even without the North Carolina renewable energy tax credit that expired at the end of 2015.[4,5]

In addition to the increasingly attractive economics, some of the shift towards solar energy has been driven by policy choices. Solar and other types of renewable energy have many benefits that have motivated support from policymakers. For instance, they do not use imported fuel, reducing our exposure to fuel price volatility. Solar energy also does not produce the air pollution and greenhouse gases emitted by fossil fuel-powered electricity generation, and it avoids some other environmental risks associated with fossil and nuclear fuels such as coal ash and radioactive waste disposal. Reduction of air pollution has been part of state and national policy for decades, and the U.S. has seen steadily improving air quality as a result[6] Solar and other clean energy sources assist in this ongoing reduction in air pollution.

Solar energy offers many benefits to North Carolina. However, while solar development provides a source of clean in-state energy, it requires land to do so. This means that solar energy projects will sometimes compete with other potential land uses.

1.2 Landowner Land Use Choice

North Carolina policy generally leaves land use decisions in the hands of landowners. That said, the state, local, and federal governments can encourage or discourage specific landowner choices through the incentives or disincentives that they provide for particular uses, as well as through various forms of regulation, such as zoning rules and environmental restrictions. The balance of state-provided incentives for agricultural or solar energy production can, in some cases, be the determining factor in the decision to invest in solar or agriculture development. Also, the current grid infrastructure limits the sites feasible for solar development; it is only feasible to connect solar to certain locations in the grid and only to a limited density.

North Carolina has granted local governments the power to regulate land use in their jurisdictions, although state and federal rules apply in many circumstances. This means that local governments can manage land development with the needs of the community in mind, while also safeguarding natural resources. These land-use regulations can put limits on the allowed uses for some land and thus limit landowners' options, in some cases affecting the viability of solar development. Some agricultural land has been exempted from certain regulations due to "grandfathering," and changing the land use to solar may remove these exemptions, which can affect the ability to return the land to agricultural use in the future.[7]

Land use regulations that may be relevant to solar development, depending on the location, can include (but are not limited to):[8]

- Local zoning and land use rules (fencing, buffer zones between buildings and roads, border shrubs/trees, etc.)
- Floodplain development rules
- Erosion and sedimentation rules
- Permitting regarding military and air traffic impact
- Water quality rules (i.e. Neuse nutrient strategy rules, Coastal Area Management Act rules)
- USDA wetlands impact rules

To determine whether these and other rules are relevant for a potential solar development, landowners and solar developers should consult their local government planning departments, the Soil and Water Conservation Division of the N.C. Department of Agriculture and Consumer Services, the USDA Natural Resources Conservation Service office, and the USDA Farm Services Agency.

1.3 Solar Facility Construction

Solar panels are supported by steel or aluminum racks. The racks are attached to galvanized steel posts driven 6-8 feet into the ground without concrete, although very occasionally, site conditions require the use of cement grout in the pile hole. The only concrete is generally at the inverter/transformer pads which are typically about 10' by 20' each. There is usually no more than one such pad per MW of AC capacity. At some sites these pads are precast concrete or steel skids that sit above grade on helical steel piers. Much of the wiring at the site is above-ground attached to the racking under the rows of panels. The rest of the wiring is 2 to 3 feet underground either as direct-bury cables or in 2"-6" PVC conduit. Most sites involve minimal grading of the land.

Every site provides access for vehicles, which requires roads, or "access aisles," to be constructed. These roads are sometimes improved with gravel, but they do not require application of concrete or asphalt. Many sites only use gravel close to the entry to the public Right of Way, as required by NCDOT regulation, with the rest of the access aisles as simply compacted native soil. Some developers use reusable wooden logging mats to provide temporary stabilization during construction to avoid the need for the addition of gravel. A best practice when building a gravel access aisle is to strip the organic topsoil, place a geotextile fabric under the aggregate and redistribute the topsoil on site to assist in soil stabilization. This will provide stability for the aggregate, allow for more efficient removal of the gravel at the end of the project's life cycle by

providing separation between aggregate and subgrade, while preserving the valuable topsoil on site for future agricultural use.[9] Well-drafted leases will specify allowable construction techniques and locations of roads and other infrastructure. The NC Department of Environmental Quality (DEQ) requires soil erosion and sedimentation control plans and permits and inspects implemented measures on the site until vegetative groundcover is established.

1.4 Duration of Solar Use

Currently in North Carolina most utility-scale solar projects have a 15-year Power Purchase Agreement (PPA) with the local electric utility. Some developers prefer to purchase the land, while others prefer to lease, depending on the project's business model and financing arrangements. Typical land leases have a term of 15 to 30 years, often with several optional 5-year extensions.[10] While specific lease rates are generally undisclosed, in our understanding lease rates often range between $500 and $1,000 per acre per year. Most solar PV panel manufacturers include a 25-year power warranty on their panels, which cover the panels to produce at least 80% of their original power output at the expiration of the warranty period.

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.

While it is very difficult to predict the state of electricity, agriculture, and real estate markets 25 or more years into the future, existing circumstances can provide some insight into the likelihood of today's solar facilities continuing as solar facilities at the end of the initial PV modules' useful lifetime. The he economics of existing solar facilities are such that many of the projects built today are likely to update some of their equipment after 20 or more years and continue to operate as a solar electricity facility for many more years. The ability to facilitate interconnection to the electric grid provides great value to a landowner. A parcel of land featuring this capability in today's market will likely also appeal to solar developers in the future due to the infrastructure cost savings.

2. Weighing the Impact of PV Development on Agriculture

The purpose of this section is to explore how the competing land uses of solar development and agriculture interact and can coexist with each other. Subsection 2.1 provides analysis of data and metrics that quantify the current and potential amount of solar development on agricultural land in North Carolina. Subsection 2.2 explores the impacts that solar development could have on future agricultural production on the developed site and neighboring properties. Taken together,

Section 2 of this factsheet provides several factors to consider when weighing the impact of PV development on agriculture.

2.1 Solar PV Land-Use

The NC Sustainable Energy Association (NCSEA) with the North Carolina Department of Agriculture and Consumer Services (NCDA&CS) used GIS software to quantify the amount of solar land use. As of December 2016, solar installations occupied 0.2 percent (9,074 acres) of North Carolina's 4.75 million acres of cropland.[11] NCDA&CS has provided an updated estimate; they estimate that 14,864 acres of cropland, or 0.31 percent of the total, were occupied by solar development at the end of the first quarter of 2017.[12] NCSEA and NCDA&CS were able to locate and quantify solar use for 318 of 341 currently-installed utility-scale facilities in North Carolina. A map of the solar installations in the state prepared by NCSEA is available at: http://energyncmaps.org/gis/solar/index.html. [13] The researchers extrapolated the per-MW findings of the 318 sites found in aerial photos to generate an estimate for the remaining 23 projects not yet visible in the latest aerial photography. Across all projects, 79% of solar project area was formerly farmland, defined as land identified from aerial photography to have been used for crops, hay, or pasture before solar development. On average, the solar projects occupied 5.78 acres per MW_{AC}.

N.C. has been losing farmland to various forms of development for many years. Over the last decade, North Carolina has lost about one million acres of cropland to development and housing. Since 1940, total cropland in N.C. has fallen from 8.42 million acres to 4.75 million acres (as of 2012). The North Carolina Department of Agriculture has identified farmland preservation as one of its top priorities since 2005.

As of the end of 2016, solar PV installations added 2,300 MW_{AC} of solar generating capacity to North Carolina's electricity grid, making NC second in the nation for installed solar PV capacity. These installations generate enough electricity to power approximately 256,000 average N.C. homes, equaling 6.2% of all households in the state.[14] NCSEA and NCDA&CS published the summary of their land-use analysis in February of 2017 and NCSEA released a report on this research in April of this year.[15]

If the current siting and production trends were to continue until ground-mounted solar produced, on average, an amount of electricity equal to *100%* of N.C.'s current electricity use, solar facilities would cover about 8% of current N.C. cropland.[16] This is an unrealistic extreme to illustrate the limited possible magnitude of land usage for solar even at very high solar generation levels, yet even this scenario would occupy only about half of the N.C. cropland acreage lost to development in the last 10 years. Even if solar were to provide all of our electricity, ground-mounted utility-scale solar will almost certainly not be the only source of electricity. As PV prices continue to decline it is likely that North Carolina will see more and more rooftop and parking lot canopies, reducing the need for green field development. A recent Department of Energy study found that rooftop systems have the technical capability to meet 23.5% of North Carolina's electricity demand.[17]

A more likely scenario, even assuming that fossil fuel and nuclear based electricity is entirely phased out, is that other sources of renewable electricity and technologies will meet a large portion of our electricity needs. A Stanford University study of the optimal mix of renewable energy sources for each state to achieve 100% renewable energy found that North Carolina would get only 26.5% of its electricity from utility-scale solar plants.[18] At this still highly expanded level of solar development, based off of the 8.3% land use for 100% solar figure calculated earlier, the amount of NC cropland used for solar would be around 2.2%.

More realistically, in the next decade or two, solar electricity may grow to provide around 5 – 20% of North Carolina's electricity, which would allow solar to meet, or nearly meet, the full requirements of the North Carolina Renewable Energy and Energy Efficiency Portfolio Standard. At the 12.5% REPS requirement, this is about 13 GW_{AC} of PV, which will require about 75,000 acres of land at the average historic density found in the NCCETC/NCDA study. This is not an insignificant amount of land, but if split between agricultural and non-agricultural land at the same ratio as the first 2.3 GW installed in NC this represents about 1.1% of cropland in the state. NCSEA projects that by 2030, utility-scale solar will provide 5.03% of North Carolina's electricity and use 0.57% of available cropland.[19]

Solar energy's land use requirements are comparable to those of existing energy sources. According to an MIT study, supplying 100% of U.S. electricity demand in 2050 with solar would require us of about 0.4% of the country's land area; this is only half the amount of land currently used to grow corn for ethanol fuel production, and about the same amount of land as has been disturbed by surface coal mining.[20]

For landowners interested in solar development, it is important to understand the agricultural value of the land before entering into a solar lease agreement. Careful due diligence in the siting phase can help mitigate the use of the most valuable farmland. Landowners can contact their county tax office for property value information. The following online resources can assist landowners and developers in assessing the agricultural value of land before selecting the final footprint for solar development:

- www.nrcs.usda.gov/wps/portal/nrcs/main/national/technical/nra/dma/
  The USDA Natural Resources Conservation Service provides several tools in this link to identify soil types on property.
- www.ncmhtd.com/rye/ The North Carolina Realistic Yields Database provides landowners with a useful mapping and soil analysis tool that produces realistic productivity yields for expected crops given the landowner's property location and soil type.

2.2 Impact on Agricultural Productivity

This subsection provides an overview of impacts that solar development may have on agricultural land. The discussion of these impacts is divided into the following subtopics: construction grading and soil preservation, compaction, erosion, weed control, toxicity, and pollinators, followed by a brief discussion of decommissioning. The subtopic discussions illustrate that solar development, with proper planning and implementation, results in a small but manageable impact on the future agricultural productivity of the land on which it is sited. Further, these discussions also illustrate that solar development is unlikely to significantly affect the agricultural productivity of neighboring properties now or in the future.

Construction Grading and Soil Preservation

The amount of grading necessary to prepare a parcel for a utility-scale solar facility is dependent on the slope of land and the type of solar mounting used. In much of N.C., fixed-tilt mounting of PV requires little to no grading for installation of the PV system. Single-axis tracking systems that slowly rotate each row of panels to track the sun's path across the sky generally require flatter land (typically less than 8% grading) and thus more often require grading of the site, particularly for projects in the Piedmont region or farther west.[21] Typical construction practices require that topsoil be stripped and stockpiled prior to cut/fill operations. The stockpiled topsoil will be redistributed across graded areas, to assist in growing adequate ground cover as quickly as possible to provide ground stabilization. The stripping, stockpiling and redistribution of topsoil in this manner will have some impact on the amount of organics and nutrients that remain in the soil immediately after placement. However, proper ground stabilization practices include soil testing to determine the appropriate levels of lime, fertilizer and seed to be applied to establish ground cover. Proper installation practices require these additives to be tilled into the soil, which effectively reduces the compaction of the upper soil stratum, typically to a depth of 8"-12". Typical solar projects will not remove any topsoil from the project site, partly due to financial implications, but more importantly due to its value in establishing ground cover as quickly as possible[22] (removing soil also requires a mining permit).[23] Most landowners steer solar projects to their least productive soils on a given piece of property to the extent practical.[24]

Soil Quality

Modern agriculture relies on regular additions of lime and fertilizer to maintain soil pH and fertility. Solar facilities maintain vegetative ground covers that can help build soil quality over time, which may require lime and fertilizer to be applied. When the vegetation is cut, the organic matter is left in place to decompose which adds valuable organic matter to the soil. A facility operation and maintenance schedule should include a plan for maintenance of sufficient plant groundcover to protect soil from erosion. Maintaining healthy plant cover will require monitoring of soil fertility and may call for the addition of fertilizer or lime to ensure sufficient nutrients are available for plant growth and that soil pH is adequate. Vegetation mixes may help balance soil nutrient needs, but will need to be managed. Species composition will change over time.[25] NREL and others are researching and using vegetation mixes that include many native grasses with deep root systems; many include some nitrogen fixing plants as well. According to a study published in July 2016 that measured soil and air microclimate, vegetation and greenhouse gas emissions for twelve months under photovoltaic (PV) arrays, in gaps between PV arrays and in control areas at a UK solar sited on species-rich grassland, UK scientists found no change in soil properties among the three locations.[26]After a solar project is removed, a routine soil test (available from the North Carolina Department of Agriculture) should be obtained to determine fertility requirements, including lime, for optimum crop production.

Compaction

Soil compaction can negatively impact soil productivity and will occur to some degree on every solar site. Soil compaction can also limit water infiltration into the soil environment, and

lead to greater surface water runoff during rain events.[27] In addition to the roads built in and around solar project sites, the construction of the facility itself as well as regular use of lawn mowers compacts the soil, decreasing the ability of plant roots to grow. However, use of land as a solar site will avoid agriculture-related activities that can induce compaction, such as tillage. There are no data available on the degree of compaction common at solar facilities, but it is possible that some sites could experience heavy compaction in frequently used areas. In cases of heavy compaction, hard pans in the soil will form that can take decades to naturally free up; however, tractor implements such as chisels and vibrators designed to break up hard pan can often remove enough compaction to restore productivity. To prevent damage to soil due to compaction, landowners can negotiate for practices that will result in the least amount of compaction and for roads to be constructed on less productive land. Additionally, maintaining healthy groundcover, especially varieties with deep root systems, can serve to keep the soil arable for potential future agricultural use. The appropriate use of alternative vegetative maintenance strategies, such as grazing with sheep, can reduce the use of mowing equipment onsite and therefore the compaction that may result from using this equipment.[28] Furthermore, livestock grazing works to cycle nutrients in the pasture ecosystem onsite and improve the soil.

Erosion

According to its current Stormwater Design Manual, the N.C. Department of Environmental Quality allows solar panels associated with ground-mounted solar farms to be considered *pervious* if configured such that they promote sheet flow of stormwater from the panels and allow natural infiltration of stormwater into the ground beneath the panels.[29] For solar development, an erosion control and sedimentation permit is required, which involves on-site inspections and approval by the North Carolina Department of Environmental Quality. The permit requires establishment of permanent vegetative ground cover sufficient to restrain erosion; according to DEQ staff, the site must be "completely stabilized," although this does not require a specific percentage of ground cover.[30] In-depth information on erosion control and sedimentation laws, rules, principles, and practices is available at the NC DEQ's website, at http://deq.nc.gov/about/divisions/energy-mineral-land-resources/energy-mineral-land-permit-guidance/erosion-sediment-control-planning-design-manual. Once permanent vegetation is established it will be necessary to maintain soil pH and fertility as mentioned above in order to ensure sufficient, healthy, and continuous ground cover for erosion control.

Weed and Vegetation Control

Maintenance of vegetation on site can be accomplished using several options, including but not limited to the following: mowing, weed eaters, herbicides, and sheep. Reductions in fertilizer use on the site will slow growth of vegetation and weeds. Mowing allows the landowner to have the option of laying cut grass or vegetation on grounds of site to decompose and improve long-term soil fertility. In some cases, landowners have used grazing animals, normally sheep, to frequent the solar site grounds and control the vegetation and weeds, which also returns organic matter to the soil on site

Like most lawns and parks, many utility-scale solar facilities in N.C. use a combination of mowing and herbicides to maintain the vegetation. When using herbicides, applicators are advised

to be mindful of label instructions and local conditions. Herbicide persistence is affected by the organic matter content and moisture level of the soil. The importance of complying with legal responsibilities in using the treatments cannot be stressed enough, especially for land located near surface water, land where the surface is near the water table, or where application might carry over to other neighboring lands.

Herbicide use at solar facilities is typically similar to that in agriculture, and the types of herbicides used are similar between the two uses. As such, the impact of herbicides used at solar facilities on neighboring land and the environment is likely to be no more than that of conventional agriculture. Herbicide use differs widely among different crops and farming techniques, so the change in herbicide appliance between agricultural and solar use will vary in individual cases, but in the aggregate, there is no reason to believe that solar facilities will result in more herbicide impacts on neighboring lands than do current agricultural uses.[31] Herbicide use can be discontinued 1-2 years before decommissioning of a site, minimizing any residual impact on crop production at former solar sites.[32]

A number of sites use sheep at low densities to maintain vegetation during the growing season, although the sheep do not fully replace the need for mowing and/or herbicide use. The sheep are leased from sheep farmers, and the demand for sheep at solar facilities has been beneficial for North Carolina's sheep industry.[33] The grazing of sheep at solar facilities incorporates local farmers into the management of the sites, engaging the local community with solar development. The growth of solar farms represents a huge opportunity for the North Carolina sheep industry, with thousands of acres that are fenced well for sheep, and allow North Carolina farmers to diversify into new agricultural products for which there is increasing demand.[34]

Toxicity

There is no significant cause for concern about leaking and leaching of toxic materials from solar site infrastructure.[35] Naturally occurring rain is adequate to generally keep the panels clean enough for good electricity production. If panels do need to be washed, the washing process requires nothing more than soap and water. Additionally, the materials used to build each panel provide negligible risk of toxic exposure to the soil, environment, or people in the community. Details about toxicity for aluminum and zinc are described below, and more information on the potential for human toxicity can be found in the NCSU Health and Safety Impacts of Solar Photovoltaics white paper.

Aluminum

Aluminum is very common in soils around the world, including those common in North Carolina. In fact, the earth's crust is about 7% aluminum, and most soils are over 1% aluminum![36] The aluminum is generally unavailable to plants as long as the soil pH is above about 5.5. In acidic soils many forms of aluminum become more bio-available to plants; this can be toxic to many plant species.[37] This effect is one of the major reason many plants do not tolerate very acidic soils. The use of aluminum building materials releases negligible amounts of aluminum during their useful life because the material is

so corrosion resistant. [38] The aluminum frames of PV modules are anodized which adds a very thin hard coating of aluminum oxide to the exterior of the aluminum that greatly improves aluminum's already-high resistance to corrosion. Therefore, any minute amount of aluminum that could be released by corrosion from aluminum construction materials during the life of a solar project will not materially add to the thousands or millions of pounds of aluminum naturally present in the soil of a typical N.C. solar facility. The common practice of liming soils to maintain appropriate soil pH for crop systems alleviates most, if not all, concerns about aluminum impacting crop growth in the future.

Zinc

Zinc from galvanized components, including support posts for solar panels, can move into the soil.[39] Zinc from building material stockpiles has been previously noted as a localized problem for peanut production in some North Carolina fields.[40] While it is difficult to predict in advance the degree to which this will occur, it is relatively simple to collect soil samples and monitor this situation in existing installations. Analysis of zinc is included in routine soil testing procedures used by the NC Department of Agriculture & Consumer Services Agronomic Services Division Laboratory. Awareness of zinc concentrations in the soil, and any spatial patterns noted with depth and distance from structures, should allow producers to determine if the field is adequate for desired crops as is. If zinc limitations exist, awareness of concentrations and spatial distribution patterns may indicate the potential for deep tillage, liming, or crop selection alternatives required for successful agricultural use. Of the agronomic crops grown in NC, peanuts are the most sensitive crop to zinc toxicity. Based on information from the N.C. Department of Agriculture and Consumer Services, there is risk of toxicity to peanuts when the zinc availability index (Zn-AI) is 250 or higher, particularly in low-pH situations. Risk increases with increasing soil test levels, especially if pH management through a liming program is not followed. For most other crops, zinc toxicity does not become problematic until the Zn-AI index reaches 2,000-3,000.[41]

Pollinators

Solar projects with appropriate vegetation can provide habitat for pollinators, as well as other wildlife.[42] Rather than planting common turf grasses, some solar facilities are starting to use seed mixes of native grasses and pollinator-friendly flowering plants as ground cover in solar facilities.[43,44] This provides habitat for pollinators, which can be beneficial to neighboring farms. Minnesota passed the country's first statewide standards for "pollinator friendly solar" in 2016. According to Fresh Energy, a clean energy nonprofit in St. Paul, more than 2,300 acres of these plants took root near solar panels last year, according to Fresh Energy.[45] Solar facilities can also cooperate with commercial beekeepers to facilitate honey production, although this may conflict with providing habitat for wild pollinators.[46,47] Pollinators provide benefits for agricultural production at nearby farms where insect-pollinated crops are grown[48]

Decommissioning

If land used for a solar facility is to be returned to agricultural use in the future, it will be necessary to remove the solar equipment from the land. This process is known as decommissioning. Decommissioning is basically the construction process in reverse; it involves removal of the solar panels, breakup of support pads, removal of access roads, replacement of any displaced soil, and revegetation.

Solar development often takes place on leased land, although it also occurs on land owned by solar companies. When leased land is involved, it must be determined whether the landowner or the solar developer bears responsibility for decommissioning. Responsibilities for decommissioning are lease-specific in North Carolina. It is important for landowners to consider decommissioning when setting lease terms, although landowners may choose in some cases to accept decommissioning responsibility themselves. Although state rules on solar decommissioning do not currently exist in North Carolina, local jurisdictions can choose to adopt regulations pertaining to decommissioning.

The materials recovered in the decommissioning process have significant economic value, which can help pay for the costs of decommissioning. Some engineering analyses have indicated that the salvage value of recovered materials is more than enough to pay for the removal of all the materials and to return the site to its pre-construction state.[49,50,51,52]

NCSU has produced several resources that provide more information on decommissioning. They include:

- Health and Safety Impacts of Solar Photovoltaics[53]
- Template Ordinance for Solar Energy Development in North Carolina[54]
- Working Paper: State Regulation of Solar Decommissioning[55]
- Landowner Solar Leasing: Contract Terms Explained[56]

Summary

The purpose of this paper is to explore the extent to which competition exists between solar development and agriculture and the extent to which the agricultural productivity of land is affected by solar development. Discussion on this topic was divided into two sections: (1) Understanding the Context of Solar Development and Agriculture in North Carolina and (2) Weighing the Impact of PV Development on Agriculture. In these sections, information and tools were provided to aid in understanding the impact of solar development on agricultural land. Equipped with the information and tools provided by this paper, landowners may be able to better evaluate the viability of solar development on their land.

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Published by the N.C. Clean Energy Technology Center at N.C. State University

Board fi□elds questions over solar project

Jackie Smith

Port Huron Times Herald USA TODAY NETWORK – MICHIGAN

The Chicago-based developer proposing a 917-acre solar project in Fort Gratiot fi□elded questions from St. Clair County commissioners and residents late Thursday — more than two weeks ahead of a township-level meeting rescheduled for local permit and site plan approval.

Residents with concerns about the potential development from Ranger Power spoke for much of the hourlong public comment session before the county's board of commissioners.

Early on, many disagreed with County Board Chairman Jeff□ Bohm's assertion that some concerns about ordinances and individual projects are decisions left up to local township-level boards versus being a county-controlled issue. However, multiple county board members, too, asked questions about the toxicity of materials used in utilityscale renewable energy developments, how solar panels are decommissioned following their decadeslong lifecycles, and if or how the county- owned landfi□ll will manage those materials.

The project itself, dubbed Portside Solar, proposes a setup producing up to 100-megawatts on 17 large parcels along agricultural and wooded property off□ of Metcalf, Cole, Carrigan, State, and Brace roads in Fort Gratiot.

County Board Vice Chairperson Jorja Baldwin, whose district includes Fort Gratiot and who consults with the township on zoning development, said on Thursday that four parcels within the total acreage weren't proposed to host panels at all, adding commissioners were "starting to get into the weeds" of what local planning commissioners at the township level will decide.

Plans have been submitted to both Fort Gratiot and Clyde townships, as a

substation is proposed nearby in the latter.

Fort Gratiot's planning commission is set to consider a special use permit and site plans for the larger portion of the project at 6 p.m. on Wednesday, Nov. 8, at the Blue Water Convention Center, 800 Harker St., in Port Huron. That was rescheduled from an Oct. 10 meeting unable to accommodate the massive crowd in attendance over Ranger Power's plans.

On Thursday, project manager Toby Valentino addressed many of the questions from commissioners and residents, adding they wanted to be a resource and answer questions about applications submitted to both townships "to show we have a commitment to being part of this community."

More information could be found under board and commissions at https:// fortgratiot.us or https://portsidesolar.com.

Are Portside Solar's materials toxic?

"There are no toxic materials in the panels that we're proposing," Valentino told county commissioners. "They're steel I-beams in the ground. There's no concrete at the bottom of those. There's racking that goes on top of that and panels made of glass, aluminum, polysilicate, et cetera. That's the short answer."

Commissioner Dave Rushing, whose own district around Riley and Wales townships has experienced concerns about renewable energy developments, pushed back on whether those materials at any stage included heavy metals, which he considered hazardous.

“I’m not aware in the ones that we’re proposing, no,” Valentino said.

Rushing replied, “I’m concerned about St. Clair County and the potential hazardous waste, and if there’s heavy metals involved in any of the manufacturing, no matter how minor it is, that will not be allowed in our landfill. We are a closed county, which means everything that is in this county has to go to our landfill.”

Bohm asked Matt Williams, who manages the county’s landfill, whether hazardous materials could even be accepted, despite St. Clair County’s closed status.

There are plenty of regulations that go into identifying materials as hazardous or non-hazardous, Williams said, though his bigger question was about capacity.

“It probably bears additional consideration because in Fort Gratiot and Burtchville, there are continually more and more permits for residential solar panels on their rooftops,” Baldwin said. “I think we’d run into the same thing.”

“I’m not an expert in solar panels. I’m not well-versed. My understanding was they’re generally classified as hazardous waste. However, the technologies are constantly changing, so they’re getting cheaper. They may very well be getting better,” Williams replied. “With respect to residential versus commercial, residential units are typically exempt from hazardous materials. So, a homeowner’s (materials), whether they’re hazardous or not, we would take them in because it’s a smaller volume.”

Could the county landfill handle commerical solar waste?

Rushing also pushed on the volume of Portside Solar’s waste materials once panels were decommissioned in 20 to 25 years.

Some residents asked the impact long-term on wildlife, agricultural land, and the water supply, particularly for those on well water. Valentino said their panels would be “very easily” decommissioned and that their plans included details to help maintain the environment, pollinator habitats as to not overly impact wildlife, and addressing water runoff.

“And just to be clear, these panels are not hazardous waste by any means. And that’s well-documented,” he reiterated.

“There are comparisons to housing. There are comparisons to natural gas plants,' Valentino said. “No house or natural gas plant is going leave that land fallow, regenerating, being able to go back to an agricultural use where you could do a crop rotation.”

Once solar panels are decommissioned, Valentino said it was “hard to say” how much scrap there would be.

Their impact is less, officials said, compared to coal plants. Bohm cited the “mountain”-high coal ash piles surrounding old DTE Energy power plants, adding they’re bigger than the county’s landfill.

Still, Williams said the question about volume from old solar projects was a valid one.

“I think that’s kind of hard for them to define. We do have a lot of room left. But 25 years from now, we’re going to have less room left,” he said. “So, that’s what I look at. Can I accept it and can I not? If I’m able to accept it by regulatory (standards), we’ll take it and we’ll manage it. … We’re talking about likely 25, 30 years in the future and would potentially getting pretty close to our end-of-site life by that time.”

“I still cannot believe that you would not recycle things like that with the metals,” Bohm said.

Citing a source outside Ranger Power and another solar site, Baldwin chimed in, “The panels that they’ve been using are glass, copper, and aluminum. So, there is scrap and salvage in the copper and aluminum. … The glass is what is tougher to recycle because there’s not a market for it.”

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Residents watch on during a St. Clair County Board of Commissioners meeting on Thursday. Many of them spoke about solar project concerns in an hour-long public comment session. JACKIE SMITH/TIMES HERALD.

PROPOSED SOLAR PROJECT

Resident Sarah Beebe looks over her backyard off Carrigan Road in Fort Gratiot on Thursday. She move there four years ago to enjoy the quiet nature in the northern end of the township. Like many others, she had concerns about a nearby proposed solar project. PHOTOS BY JACKIE SMITH/TIMES HERALD

Questions raised

Ahead of Nov. 8, Fort Gratiot, residents seek answers about a 900-acre solar project

Jackie Smith
Port Huron Times Herald
USA TODAY NETWORK – MICHIGAN

Driving a four-wheeler along a grassy green, manicured path early Thursday night, Fort Gratiot resident Dick West said his family uses much of the acreage behind their home on State Road for recreation.

His wife Angie's grandparents picked up 53 acres there in the early 1960s, leaving Port Huron when the city put fluoride in the water, and they've long-maintained two generational residences there.

They have a fishpond once installed outback by the state that's still stocked, and just this past summer, a few of the remaining trees from a small orchard were taken out by the wind in a storm. Then, next door, with no perimeter trees or fencing separating it from sight, a church and farm property at the edge of a field sometimes glows when it catches light at sunset.

"Your picture won't do it justice — you see right there. Just look at that. The farm, the silos," West told the Times Herald early Thursday evening, stopping the four-wheeler briefly along the property line. "I've come back here and had the sun shining on it in the evening, and when the trees are all colorful, and I go home and I look at it, I'm like, 'Wow, that's not what it looked like' (in person)."

But the Wests aren't sure how their picturesque surroundings will be impacted by an industrial solar development proposed by Chicago-based Ranger Power.

Several ducks and a steer named Johnny Cash hang out in the small field behind Sarah Beebe's home on Carrigan Road in Fort Gratiot on Thursday.

Site plans submitted to Fort Gratiot's township office earlier this year encompass a massive 900-acre footprint along 17 parcels off Brace,

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Carrigan, Cole, Metcalf, and State roads, including immediately north of Dick and Angie West's family property.

The project, dubbed Portside Solar, proposed a setup producing up to 100 megawatts, 75 of which would be in Fort Gratiot and 25 in Clyde Township.

Now, ahead of a rescheduled Fort Gratiot Planning Commission meeting on Nov. 8, residents have raised a host of concerns — often over long-term unknowns they fear could negatively impact their community.

"We have two children. We have six grandchildren. That is what my grandmother wanted this property for was to stay the way it was for family," Angie West said Thursday, while seated inside at their dining room table. "So, I'm worried about what's going to happen in 20 years, however long they've commissioned this for. Then, what? ... What's going to happen with all those panels?"

Project manager looks to clear up 'misconceptions'

A special use permit for Ranger Power and site plans will be considered at Fort Gratiot's next planning commission meeting, slated for 6 p.m. Nov. 8 at the Blue Water Convention Center, 800 Harker St., in Port Huron.

Petitions in opposition of solar have been submitted to the township this fall.

But Toby Valentino, project manager for the Portside Solar development, has said they want to be available to residents with questions, and in an email Friday, he looked to clear up what he called "common misconceptions" about their proposal.

The first was that not every parcel within the 900 acres will be impacted by solar panels.

Those have been sited within a fenced-in area of only roughly 527 acres, Valentino said, with four of the participating parcels contained in the proposal slated to contain a proposed underground collection line.

Five of the landowners participating in Fort Gratiot are still active farmers in St. Clair County, he said.

The project manager additionally said the solar ordinances Ranger Power must work around in both Fort Gratiot and Clyde Township, where a substation is proposed, entailed "stringent requirements" that address "many concerns including glare, sound, setbacks, screening, aesthetics, decommissioning, and more."

For more information, visit https://portsidesolar.com or the planning commission's minutes and agendas at https://fortgratiot.us. Documents made available online include in-depth site plans, correspondence to the township, petitions and a property value impact report.

Many of residents' concerns are environmental

For other residents, whose properties don't abut the Portside footprint but are nearby, many of the concerns are environmental.

Sarah Beebe lives down the road on Carrigan at a home, where she's been for four years and has begun hobby farming in her backyard. There, she has chickens and ducks, as well as a lamb she calls Lamb Lamb and a black-colored steer she named Johnny Cash.

The proximity of industrial solar, she said, makes her nervous.

"If something were to catch on fire, we do not have fire hydrants on (this area of) Carrigan," Beebe said. "... Fire departments would have to bring in a water tanker in order to put out any fires or deal with anything like that."

Both Beebe and the Wests were concerned about other environmental factors, too, such as the impact on their well water.

"Anything that goes in the soil near us, we're screwed," Beebe said with a cow mug in hand Thursday.

Valentino has maintained solar panels are safe.

"There are no liquid components of panels and no risk of any unsafe impacts from panels on groundwater," he said via email. "We have performed water runoff testing at our Assembly Solar project in Shiawassee County, Michigan, which concluded that the project had no impact on stormwater runoff collected from the panels.

"There are no components of panels that would impact the safety of groundwater or soil health. Solar projects do not require the use of large quantities of fertilizer and pesticides that are commonly used for traditional crop planting. Panels are made almost entirely of glass and aluminum."

Some residents have been in support of Ranger Power's plans, citing environmental reasons. Two submitted written comments to the township prior to a commission hearing originally planned for Oct. 10.

Dick West and Beebe also emailed the township.

Beebe said she understood the progress supporters often wanted to see with solar energy but questioned how something more unnatural could affect the nature she moved to Fort Gratiot to enjoy.

"And I feel like something like that, of that proportion to come out here, it's like they've already got their foot in the door," she said. "So, what's (the) next (thing) we bring in?"

Angie West also wondered what the development would do to wildlife, adding, "The grandkids were standing out there for the bus the other morning, and there was a deer right out in this field. Does it drive it away?" Still, the couple said they wanted to hear Ranger Power out and planned to be there Nov. 8.

"They deserve the opportunity to tell their side of the story," Dick West said.

"I want to hear what their plan is, their projection, what the scope of where they're going to put it, and how are they going to access it," his wife added. "And I want them to be able to do that without the mob mentality of just people being upset."

Fort Gratiot resident Dick West looks out over the property behind his family's residence along State Road on Thursday. He and wife, Angie, had several concerns over how a massive solar development proposed nearby would impact the environment, which their family enjoys recreationally.
JACKIE SMITH/TIMES HERALD

Solar nosie a concern for other residents

Some of the upset residents shared — leaving a crowd of swelling attendance at the Oct. 10 township meeting and many at the St. Clair County board meeting on Oct. 19 — have had to do more with public notice of the solar proposal.

The increasing awareness among some residents, however, has also led them to their own research, often sharing findings on social media and referencing Ranger's Shiawassee project in open meetings.

"Drive down M-13. See how ugly these solar fields are," resident Vance Richardson told county commissioners earlier this month. "... I tell you, I drove down a quarter mile, turned left, I could hear this high-pitched whining noise."

Richardson lives along Cole Road near the Portside Solar footprint, though not close to an area proposed for solar panels, and multiple family members have been outspoken about their concerns. By phone on Friday, Valentino said the sound emitted from developments comes from one piece of equipment, and he didn't expect it to impact Fort Gratiot or Clyde residents.

"One of the things we're doing with this project that was not a requirement of that (Shiawassee) project is to set back inverters 350 feet from all residences, which if you've ever driven by Assembly, you could and know that's much more room than you need," he said. "But again, citing back to the Fort Gratiot and Clyde Township ordinances, they both require a dBA (A-weighted decibels) level at the property boundary or residence that is equivalent to ambient."

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