SMALL SOLAR FARMS - WHY MORE ARE NEEDED

- Michael Vickerman
- Policy Director
- RENEW Wisconsin
- Energy Fair – 2022
- Custer, WI

Hermsdorf Farm 8 MW

On the border between City of Madison and Town of Cottage Grove
My role as RENEW’s Policy Director:

PROBLEM-SOLVING

Problem to solve:

How to expand clean energy options in the state of Wisconsin as expeditiously as possible

*Because we haven’t a minute to waste.*
WHAT FLAVORS OF SOLAR ARE NEEDED FOR THE FUTURE?

All are needed!

- Utility-scale – transmission/bulk
- Utility-scale – distributed applications
- Rooftop – commercial & industrial
- Rooftop – residential
- Solar-powered transportation

Chris Clark, CEO, Xcel
GOOD IDEAS THAT KEEP RUNNING INTO ROADBLOCKS

- Third party financing of customer-sited solar power
- Charging electric vehicles at service stations
- Building electrification → solar + heat pumps
  ✓ Small-scale solar farms (a/k/a community solar)
Wisconsin has 7.1 MW of community solar, six arrays

- MGE 4.0
- Xcel 2.1
- WPL 1.0
Hodag Solar Park
Rhinelander, WI

7.5 megawatts (AC)

14.5 – 15 million kWh/yr

Developed by OneEnergy Renewables

Owned by Wisconsin Public Service Corp.

Bifacial panels

These solar panels at the Hodag Solar Park are collecting every bit of winter sun, both from the sky and the rays reflected from the snow. WPS began operations at the facility located in the Town of Crescent last month. Photo by Eileen Persike.
This is a large solar farm, one of the largest in Wisconsin.
DEFINITION – SMALL SOLAR FARM

- Front-of-meter installation
- Generation remains within utility distribution system – does not enter transmission system
- $< 0.5 \text{ MW} < 20 \text{ MW}$
ATTRIBUTES – SMALL SOLAR FARM

- Very few landowners involved
- Relatively fast turnaround for permitting + construction
- Flexible siting – urban or rural settings
- Flexible uses – can serve:
  - Rate base
  - Individual customers (onsite and offsite)
  - REC (renewable energy credit) markets
SMALL SOLAR FARM PORTFOLIOS

- OneEnergy Renewables
  - Mastodon Solar (2021)
  - Butter Solar (2019)


- WEPCO – Solar Now (ongoing, started in 2019)
IMPORTANT NUMBERS TO REMEMBER

- 7 acres to 1 MW of solar
- 1 MW solar → 2,000 MWh/year*
- 1 MW solar → 200 WI households

*Assumes panels are mounted on single-axis trackers

Stromland Solar -- Buffalo County -- 3 MW
MASTODON
SOLAR PORTFOLIO

STROBUS SOLAR
1.5 MW
JACKSON ELECTRIC COOPERATIVE

RURAL SETTING
Mastodon Solar
Jackson County Arrays

1) Strobus  1.5 MW
2) Blue Prairie  2.5 MW
3) Shamrock  3.0 MW
O’BRIEN SOLAR FIELDS

Fitchburg
20 MW
A 20 MW SOLAR FARM ON THE EDGE OF TOWN
SOLAR POWER FOR OFFSITE CUSTOMERS

An MGE-owned Renewable Energy Rider project serving two large nonprofit customers

Hermsdorf Farm 8 MW

May 2022
MGE’S SMALL SOLAR FARMS AND THEIR OFFSITE CUSTOMERS

**Middleton Morey Airport** (5 MW)
- City of Middleton
- Middleton-Cross Plains Area School District
- Shared Solar subscribers

**Dane County Airport** (9 MW)
- Dane County

**O’Brien** (20 MW)
- State of Wisconsin, UW-Madison, City of Fitchburg
- Placon, Promega, Willy St. Coop, Tribe 9 Foods

**Hermsdorf** (8 MW)
- City of Madison
- Madison Metropolitan School District

42 MW total
Cashton array • 2 MW
Butter Solar represents the culmination of a unique public-private partnership involving an independent power developer and its partners, municipal utilities, a food cooperative, and a city government.
UMMEG and its member communities purchase the output from the solar arrays developed by OneEnergy Renewables.
At the same time, Organic Valley and the City of Madison purchase the renewable energy attributes associated with the solar output, providing another revenue stream that contributes to the project’s financing.

New Lisbon • 2.5 MW
Organic Valley Becomes 100 Percent Renewably Powered

Largest Food Company to Source All Its Electricity from Renewable Sources Brings Cost Savings to Rural Midwest

Organic Valley, August 01, 2019

Organic Valley, America’s largest cooperative of organic farmers and one of the nation's leading organic brands, today announced that construction of three community solar projects totaling 12.67 MWdc is complete, making the cooperative the largest food company in the world to be 100 percent renewably powered. These solar projects are part of the 32 MWdc Butter Solar Portfolio ("Butter Solar") which is owned and operated by BluEarth Renewables US.
REC’s from five Butter Solar arrays will account for 1/3rd of Madison’s clean electricity goal.

Wisconsin’s capital city sets a high bar with ambitious renewable energy goal – 100% RE by 2030

Madison, Wisconsin committed to getting 100 percent of its energy from clean, renewable sources in a resolution passed unanimously by the City Council on Tuesday. It became the 24th city to make such a promise.

Note: Covers City of Madison operations, including transportation and heating. **
Sheep from a neighboring farm demonstrating their value as a vegetation management tool at Butter Solar’s Cashton array.

A neighboring farm’s sheep herd helps manage the organic pasture where the new solar project is located. Courtesy of Lexi Leum from Organic Valley
HOW MUCH SOLAR CAPACITY IS UNDER ACTIVE DEVELOPMENT?

Twelve approved solar farm CPCNs (2 ½ now operating) 2,149 MW
Three pending solar farm CPCN applications (100 MW+) 500
Nine approved utility-owned solar farms (50-99 MW) 563
Four MGE RER/shared solar projects (all operating) 42
Seven small solar farms (5 operating, 2 planned) 22 64 ~2%

35 farms Total 3,276 MW

3,276 MW solar = 9% of Wisconsin’s electricity sales by 2026
Many developable sites in Wisconsin
Generation is community-scale (local)
Finite supply of sites accommodating large-scale solar
High level of support with host communities
Economics between small and large solar farms can be similar
Large solar farms alone can’t take utilities all the way to zero carbon
Utilities are wedded to economies of scale
Utilities are invested in protecting their generation monopolies
IOUs averse to buying power from independents
Difficult for developers to secure fixed long-term contracts
Utilities control interconnection to the wires (leverage)
Most (not all) utilities are indifferent to customer aspirations
POLICIES/PRACTICES FOR GROWING THIS SEGMENT

- Affirm 3rd party financing of solar for host customers – ongoing!
- Long-term contracts for developers - ongoing
- Fixed and fair power purchase terms - ongoing
- Customer commitments to aggressive decarbonization
- Community solar legislation – next year?
- In the meantime, invest in SolarShare Wisconsin!
RENEW LAUNCHES SOLARSHARE WISCONSIN CO-OP

An investment and development platform for spreading solar around WI
THE VISION FOR WISCONSIN:

COMBINING LOCAL RENEWABLE POWER WITH REGENERATIVE AGRICULTURE

https://solarshare.coop/
**WEBSTER CREEK SOLAR FARM**

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<th>Details</th>
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<tr>
<td>Peak Output</td>
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<td>Expected Annual Energy Production</td>
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<td># of Panels</td>
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<td>Project acreage</td>
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<td>Planned vegetation</td>
<td>Pollinator planting within and around panels</td>
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## LEMONWEIR SOLAR FARM

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<th>Description</th>
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<td>Expected Annual Energy Production</td>
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<td>Planned vegetation</td>
<td>Pollinator planting within and around panels</td>
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QUESTIONS?

MICHAEL VICKERMAN, RENEW WISCONSIN

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