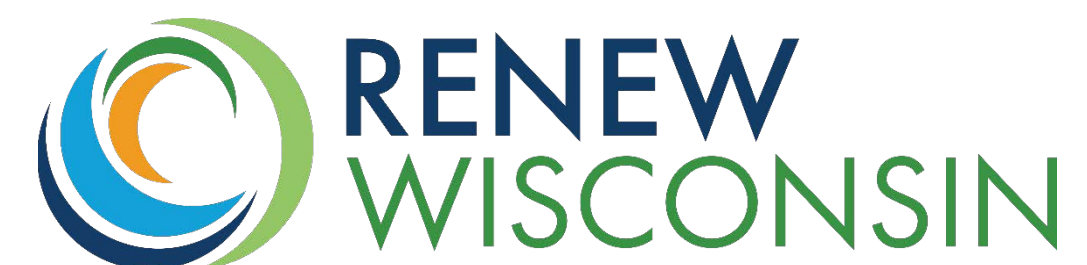




# YEAR IN REVIEW

## 2018

Michael Vickerman  
JANUARY 17, 2019







# UTILITY SCALE SOLAR



# Business

DOW 24,415.84 ▼ 251.94

S&P 500 2,705.27 ▼ 18.74

NASDAQ 7,442.12 ▼ 20.34

10-YEAR T-NOTE 2.86 ▲ 0.01

CRUDE OIL \$67.04 ▼ \$1.17

GOLD \$1,300.10 ▼ \$1.40

## Utilities to invest in solar power

\$390 million project would provide enough electricity for 70,000 customers

**Guy Boulton** Milwaukee Journal Sentinel  
USA TODAY NETWORK - WISCONSIN

Two of the state's largest utilities plan to invest a total of \$390 million in two solar power projects that would be the first of their size in the state.

Wisconsin Public Service, a subsidiary of Milwaukee-based WEC Energy Group, and Madison Gas and Electric, as well as the developers of the projects,

filed applications for approval with state regulators Thursday.

The two solar projects would generate a total of 300 megawatts — enough electricity for more than 70,000 residential customers — and indicate the changing economics of large-scale solar projects.

As recently as the end of 2015, the state generated a total of 25 megawatts from solar power.

"Alternative energy is not really alternative anymore," said Dan Litchfield, a director of project development for Invenergy, the developer of one of the two projects.

The projects would be built in Iowa County, near the villages of Montfort and Cobb, about 12 miles west of Dodgeville, in southwestern Wisconsin, and in the Town of Two Creeks and the city of Two Rivers, near the Point Beach nucle-

ar power plant in northeastern Wisconsin, WPS and MGE said in a news release.

The project in Iowa County is being developed by Invenergy, a Chicago firm that develops wind and solar projects.

The project in Manitowoc and Kewaunee counties would be developed by NextEra Energy, based in Juno

**See SOLAR, Page 11A**



# ABOUT THESE TWO SOLAR PROJECTS

Name	County of location	Developer	Capacity committed to MGE + WPS	Total capacity (in MW)
<b>Badger Hollow</b>	Iowa	Invenergy	150	300
<b>Two Creeks</b>	Manitowoc	NextEra Energy	150	150





# Badger Hollow Solar

## Invenergy

[www.badgerhollowsolarfarm.org](http://www.badgerhollowsolarfarm.org)

1.2 million panels

Docket No.: 9697-CE-100  
Decision date: March 2019

- Anticipated capacity: 300 MWAC
- In-service date: 4Q 2020
- Location: Towns of Eden, Mifflin & Linden in Iowa County
- Project footprint: 3,500 acres



# WHY ARE MGE AND WPS COMMITTING TO 300 MW OF SOLAR?

## FROM THEIR APPLICATION (5-BS-228), PAGE 4

*When compared to alternative generation sources, the Solar Facilities will save customers money over the 30-year economic life of the assets*

*[A]cquiring the Solar Facilities presents the least cost alternative when compared to securing needed capacity and energy from generating technologies that use other fuel sources.*





# COMMUNITY SOLAR





# XCEL RENEWABLE\* CONNECT CASHTON ARRAY

PROJECT CAPACITY: 1 MW







# FOCUS ON ENERGY





**focus on energy**<sup>™</sup>

Partnering with Wisconsin utilities

## 2018 RESULTS (HEAT PUMPS AND BIOGAS)

	NO. OF INSTALLATIONS	INCENTIVES AWARD	ANNUAL OUTPUT (IN KWH)
GSHP (residential)	68	\$44,200	346,936
Biogas (non-residential)	1	\$364,403	2,539,934



## 2018 RESULTS (SOLAR)

	NO. OF INSTALLATIONS	INCENTIVES AWARD	AGGREGATE CAPACITY (IN KWH)
Solar (residential)	750	\$1,207,641	4,648
Solar (non-residential)	220	\$2,829,523	10,602
<b>TOTAL</b>	<b>970</b>	<b>\$4,037,164</b>	<b>15,250</b>





# RESIDENTIAL SOLAR GROUP BUY PROGRAMS



# WISCONSIN SOLAR GROUP BUYS • 2018

PROGRAM	PARTICIPANTS	SIGNED CONTRACTS	AGGREGATE CAPACITY (IN KW)
MadiSUN	Cities of Madison/ Full Spectrum Solar/ Midwest Solar Power/RENEW Wisconsin	21	98
Glacial Heritage Solar	MREA, Heart of the City, Sustain Jefferson, Full Spectrum Solar,	18	139
Cheq Bay Renewables Solar Group Buy	Cheq Bay Renewables, Next Energy Solution	85	547
Solar Central Wisconsin	MREA, Mid-State Tech. College, North Wind RE	32	177
Solar Sauk County	MREA, Sauk County Climate Awareness and Action, Eagle Point Solar, All-Sky Energy	67	448
Sierra Club – John Muir	SunVest Solar	21	154
Solar Sheboygan County	Arch Electric	10	103
Solar SE Wisconsin	Great Lakes Community Conservation Corp.	12	88





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Partnering with Wisconsin utilities

## SOLAR GROUP BUYS 2016 - 2018

	NO. OF PROGRAMS	NO. OF INSTALLATIONS	AGGREGATE CAPACITY (IN KWH)
2016	4	128	528
2017	5	164	1,051
2018	8	266 *a 200% increase from 2016!!	1,759 *a 300% increase from 2016!!





## SOLAR SAUK COUNTY



## SIERRA CLUB SOLAR GROUP BUY



**SIERRA CLUB**  
JOHN MUIR CHAPTER





# SOLAR FOR GOOD





# SOLAR FOR GOOD 2018 BY THE NUMBERS

No. of completed projects • 32

Aggregate capacity (in kW) • 1,039

Total grants awarded (\$) • \$278,449





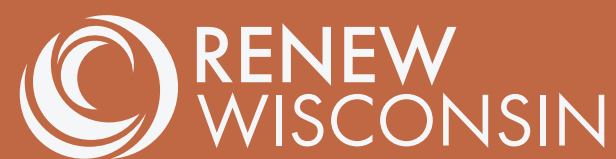
**ESCUELA VERDE • MILWAUKEE**



**HECKRODT NATURE PRESERVE • MENASHA**



# RIBBON CUTTINGS





## SOLAR PV GROWTH IN WISCONSIN

### 2018 Additions

15 MW Focus-supported  
8 MW other

**23 MW total**

YEAR	CUMULATIVE CAPACITY (IN MW)	RATE OF INCREASE
2015	25	25%
2016	42	68%
2017	80	90%
2018	103	29%





# 2018 HONOR ROLL



# TECHNICAL COLLEGES

## MADISON AREA TECHNICAL COLLEGE

Project capacity: 1.85 MW

Largest rooftop solar system in Wisconsin



Developing • Renewable • Relationships  
[www.sunvest.com](http://www.sunvest.com)







# K-12 PUBLIC SCHOOLS

## DEERFIELD HIGH SCHOOL

Project capacity: 474 kW







# BIG BOX RETAIL

## IKEA • OAK CREEK

Project capacity: 1,652 kW

2<sup>nd</sup> largest rooftop solar system in Wisconsin







# FAITH COMMUNITIES

**SINSINAWA DOMINICANS • GRANT COUNTY**

Project capacity: 250 kW

Eagle Point  
**SOLAR**  
Bringing you the SUN®





## LOCAL GOVERNMENTS • COUNTY

**SAUK COUNTY (2 LOCATIONS)**

**HEALTH CARE CENTER**

**LAW ENFORCEMENT CENTER** (pictured)

Aggregate capacity: 675 kW

Eagle Point  
**SOLAR**  
Bringing you the SUN®





## LOCAL GOVERNMENTS • CITY

### CITY OF STEVENS POINT UTILITY GARAGE

Project capacity: 131 kW







## LOCAL GOVERNMENTS • TRIBAL

HO-CHUNK VILLAGE

93 systems

Aggregate capacity: 272 kW





## AFFORDABLE HOUSING

### SAWYER COUNTY HOUSING AUTHORITY

Project capacity: 133 kW  
(6 locations, 52 households  
in the Hayward, WI area)

Legacy Solar Co-op

CE Carlson Electric





# MULTIFAMILY

VERITAS VILLAGE • MADISON

Project capacity: 419 kW  
(four locations)



**T. Wall Enterprises** LLC  
Creating Places Where People Interact







# DOWNTOWN OFFICE PARKING CANOPY

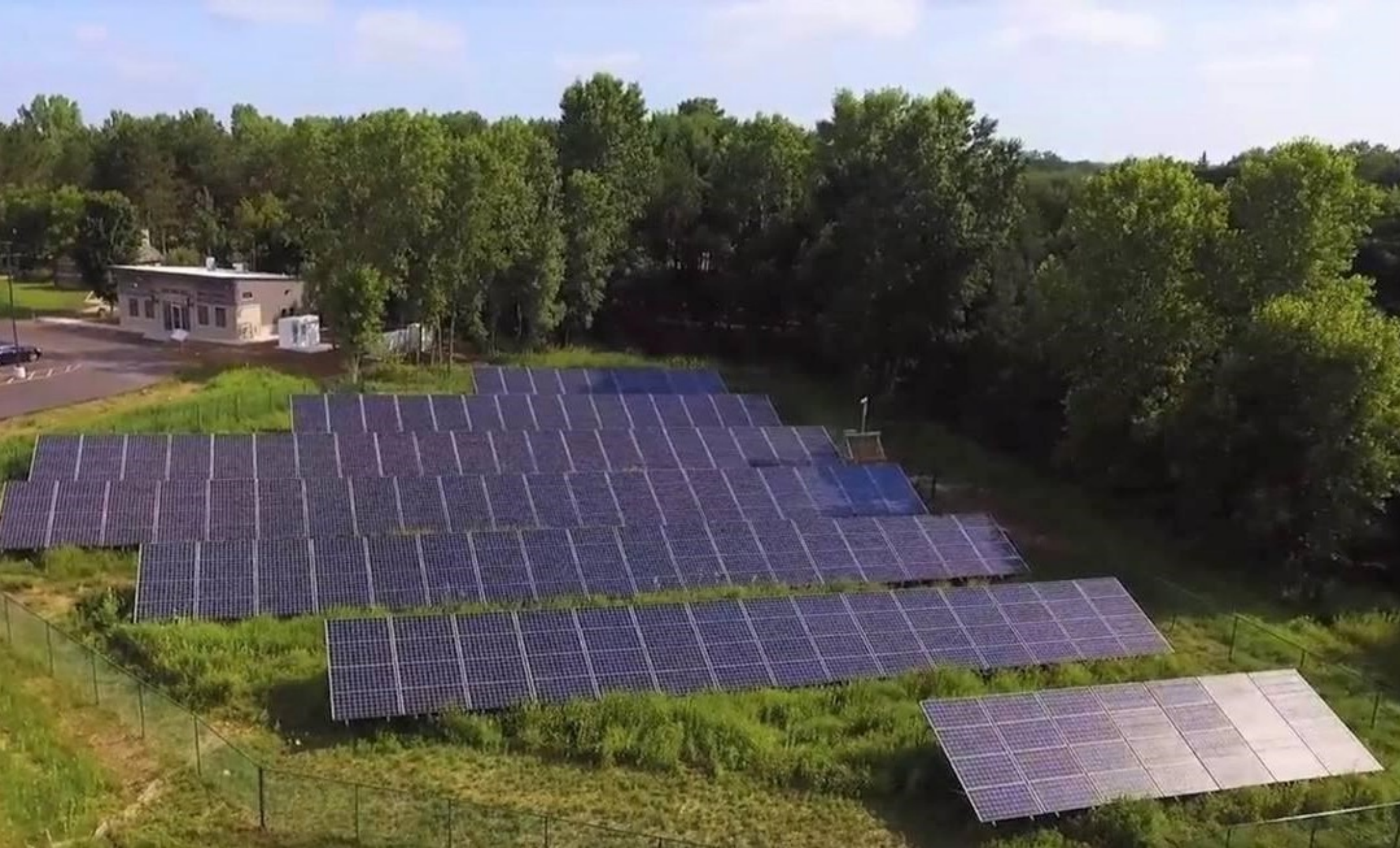
**J. JEFFERS AND CO. • MILWAUKEE**  
**CLARK OIL BUILDING**

Project capacity: 374



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# ADVANCED GRID

## BUBOLZ NATURE PRESERVE & MICROGRID • MENASHA

200 kW solar array  
65 kW microturbine  
100 kW/420 kWh battery  
25 kW fuel cell

**FAITH**  
TECHNOLOGIES®





## ATHLETIC VENUES

### OREGON ICE ARENA

Project capacity: 190 kW

Legacy Solar Co-op







## PACE-FINANCED PROJECT

### H&H WAREHOUSE • MADISON

Project capacity: 56 kW



ELECTRIC | SOLAR | PLUMBING  
BUILDING AUTOMATION | ENERGY SERVICES





# FOOD & AGRICULTURE • DAIRY

**EMMI ROTH • PLATTEVILLE**

Project capacity: 500 kW







## FOOD & AGRICULTURE • ORGANIC

**GO MACRO • VIOLA**

Project capacity: 304 kW







## FOOD & AGRICULTURE • PRODUCE

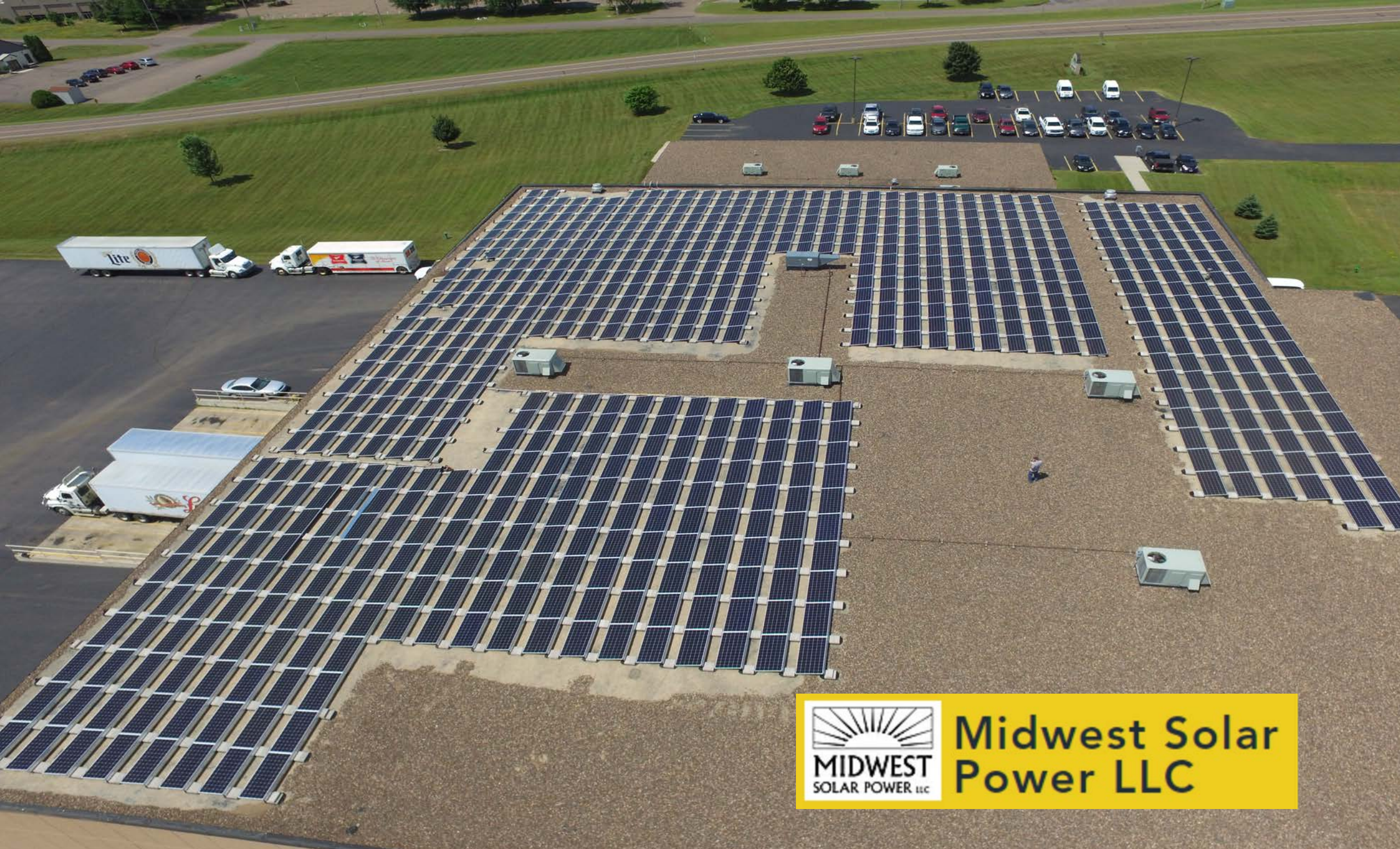
### MAGLIO FOODS • GLENDALE

Project capacity: 374 kW



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# DISTRIBUTORS

## GENERAL BEVERAGE

Chippewa Falls • 250 kW

Kaukana • 299 kW





# HEALTHCARE INDUSTRY

**GUNDERSEN LUTHERAN BEHAVIORAL HEALTH • LA CROSSE**

Project Capacity • 130 kW







# VETERANS ASSOCIATIONS

**VFW 8483 TRUAX/LONGMIRE • MADISON**

Project capacity: 40 kW

Legacy Solar Co-op



**Midwest Solar  
Power LLC**



# FOCUS ON ENERGY — QUAD PLAN III RESULTS

- ✓ Renewable budget - \$22 million (\$5.5 million/yr) through 2022
- ✓ Administrator may transfer funds between Res + Non-Res
- ✓ Changes to RECIP program;
  - 3 funding rounds per year
  - streamlined application process
  - Set aside for mid-size projects (20 kW → 100 kW)
- ✓ Admin-level change – east-west orientations (to 90 degrees from due south) are now eligible for incentives



# WHAT TO LOOK FORWARD TO IN 2019



**Before the end of January, OneEnergy Renewables will break ground on a group of 10 solar arrays in western Wisconsin totaling 26 MW.** These installations will supply electricity to municipal electric utilities while providing Organic Valley and the City of Madison with renewable energy credits associated with their output. All 10 arrays should be operational by mid-2019.