



Wisconsin Renewable Energy Policy

Friday, June 16, 2017

The Energy Fair – 12pm, Red Tent

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ABOUT
RENEW WISCONSIN:

FOUNDED 1991

SUPPORT FOR:

- SOLAR
- WIND
- BIOMASS & BIOGAS
- GEOTHERMAL
- HYDROPOWER



SUMMARY OF TODAY'S DISCUSSION

Large Scale Renewables – Wind & Solar

Policy Drivers

Deployment Activities



Home, Business, Farm, & Nonprofit
Renewables – Solar, Geothermal & Biogas

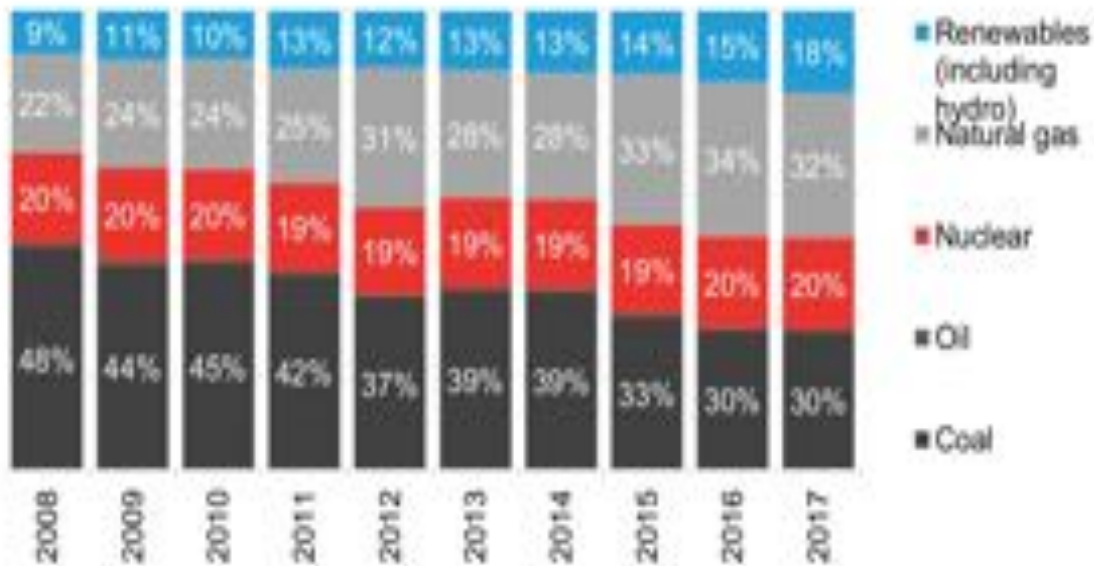
Policy Drivers

Deployment Activities

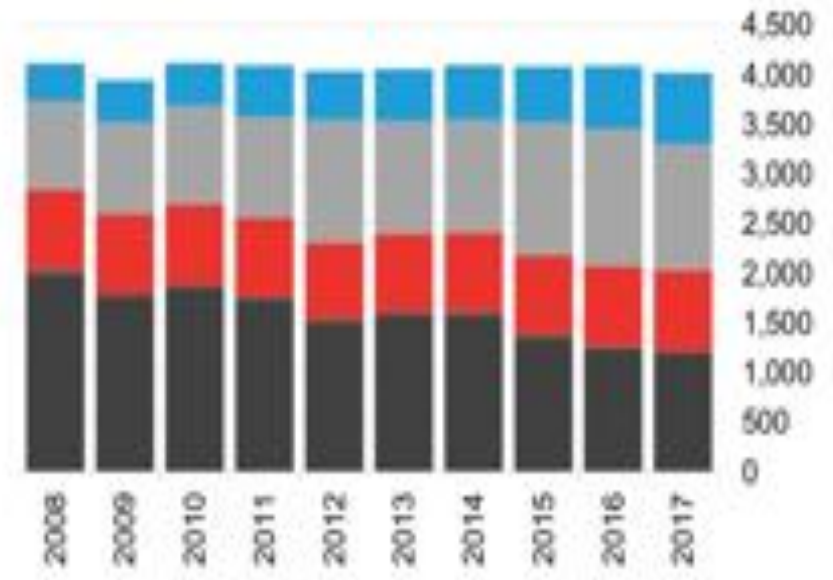


RENEWABLES NOW 18% OF U.S. ELECTRICITY!

U.S. electricity generation by fuel type (%)

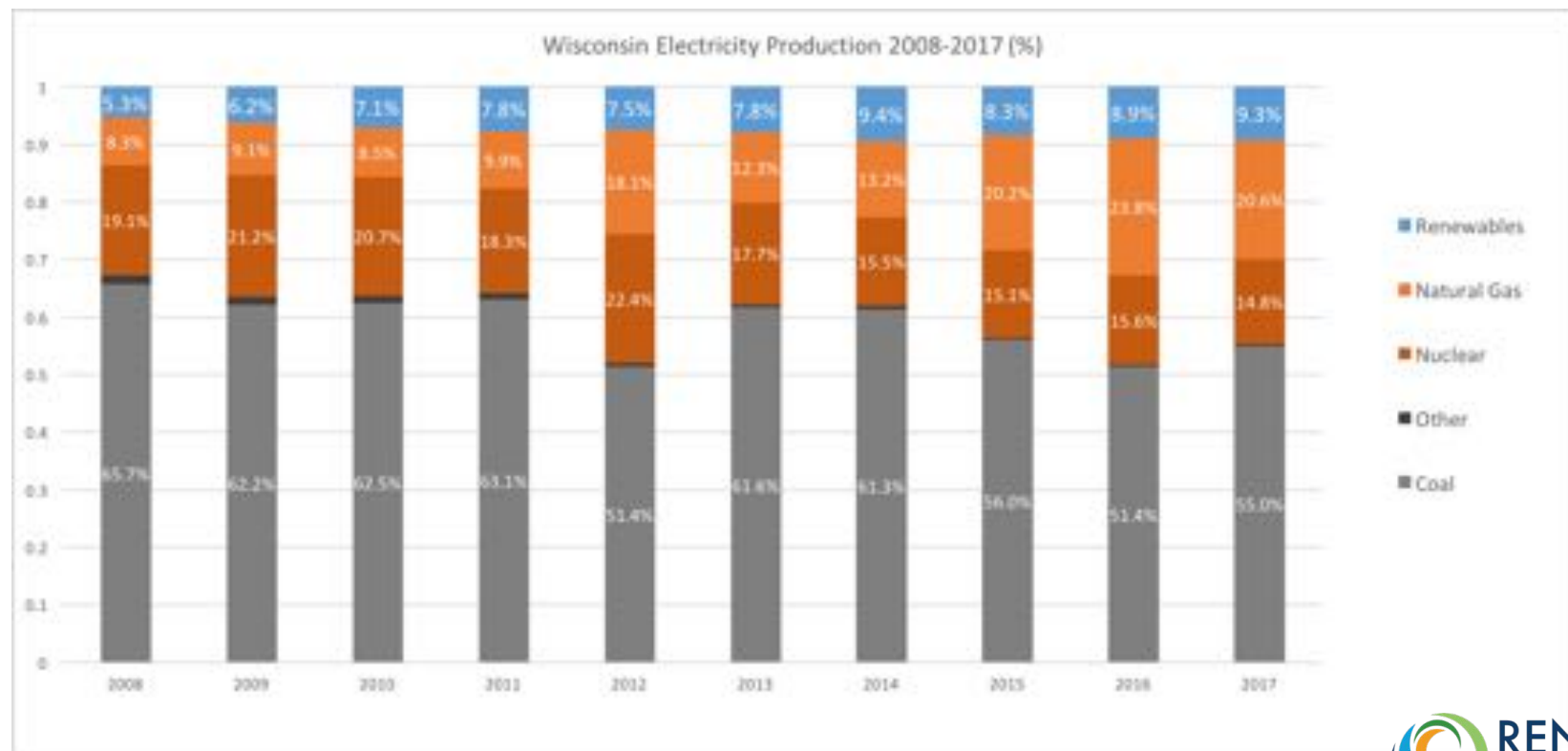


U.S. electricity generation by fuel type (TWh)



Source: Bloomberg New Energy Finance

WISCONSIN'S ELECTRIC EVOLUTION IS JUST STARTING



LARGE-SCALE RENEWABLE POLICY: RENEWABLE PORTFOLIO STANDARD

10% WI Renewable
Electricity Standard



1.7 Billion in WI
Development



746 MW of wind:
210,000 homes worth



LARGE-SCALE RENEWABLES POLICY: FEDERAL PRODUCTION TAX CREDIT



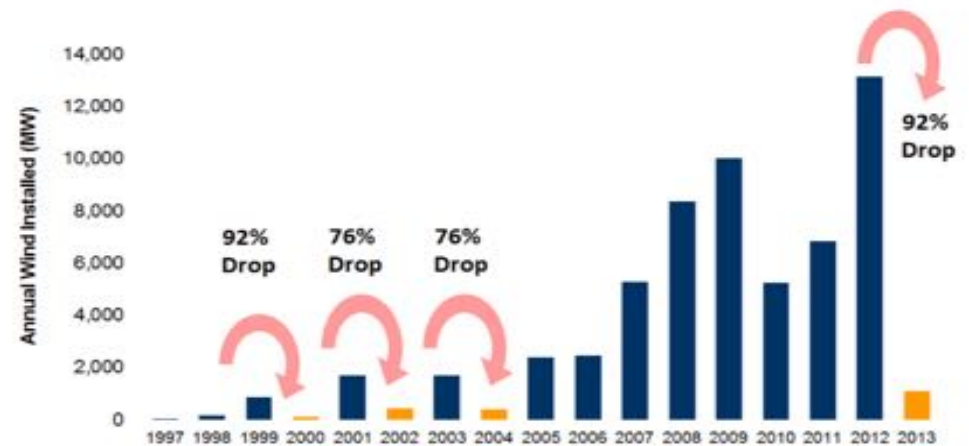
Production Tax Credit extended through 2019
– continues to drive new wind development

2016: 100% PTC (2.3 cents / kWh)

2017: 80% PTC

2018: 60% PTC

2019: 40% PTC



*Cost of wind energy has dropped
about 66% from 2009 to 2015!*



WIND ENERGY DEVELOPMENT



Image: Milwaukee Journal-Sentinel

WIND ENERGY DEPLOYMENT: ALLIANT, MGE EXPANSIONS

Powering a clean energy future

Alliant Energy doesn't stop at what works today. We're looking beyond traditional energy generation to pursue clean energy sources. This means delivering low-cost, reliable energy, and driving economic growth and jobs in Iowa.

We're building up to **500 MW** of new wind generation.

We'll add **tens of millions** of dollars in local property taxes in the first 20 years.

This will create more than **1,500** jobs for Iowa at the peak of construction.

Up to **\$1 billion** in new wind investment in Iowa

Up to \$1 billion in new wind investment in Iowa

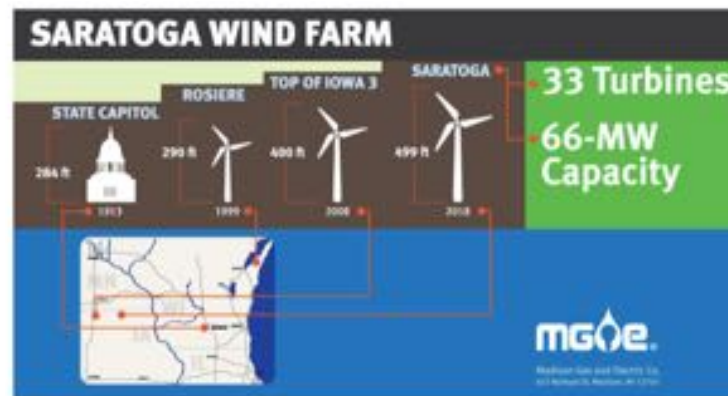
We're building the state's largest solar array.

Our existing Whispering Willow Wind Farm has 200 MW of clean energy capacity.

Additional wind energy generation will power 215,000 homes.

alliantenergy.com/cleanenergyfuture

ALLIANT ENERGY



"With recent advances in technology, this project represents a long-term, cost-effective strategy for MGE to continue to transition to cleaner energy sources."

MGE CEO Gary Wolter



RENEW WISCONSIN PRESENTATION

Images: Alliant Energy, MG&E Websites

LARGE SCALE SOLAR



Ash Ridge - Richland



Medford - Taylor



Downsville - Dunn

LARGE SCALE SOLAR

***WPPI Energy & NextEra Energy Resources, Inc
100 Megawatt Solar Farm to be built in 2020***



One of the Dairyland Power Cooperative arrays at
Taylor Electric Cooperative in Medford, WI.
The NextEra and WPPI project will be approx. 50x as large.

***"This solar energy center
adds diversity to WPPI
Energy's power supply
portfolio in a way that's
more cost-effective than
other opportunities
currently available to us."
- Mike Peters, President
and CEO of WPPI Energy.***



RENEW WISCONSIN PRESENTATION

Image: Dairyland Power via RENEW WI Blog

450 MEGAWATTS OF UTILITY-SCALE SOLAR PV



Invenergy

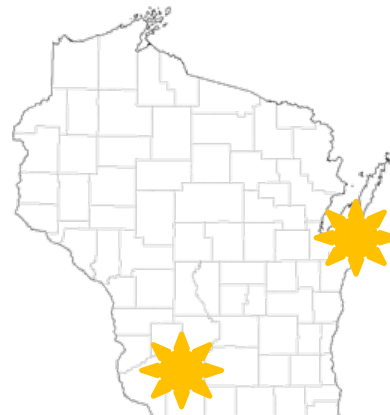
300 Megawatts Solar



Two Creeks Solar, LLC



150 Megawatts Solar



*Preliminary & 1
Informational Purpos*

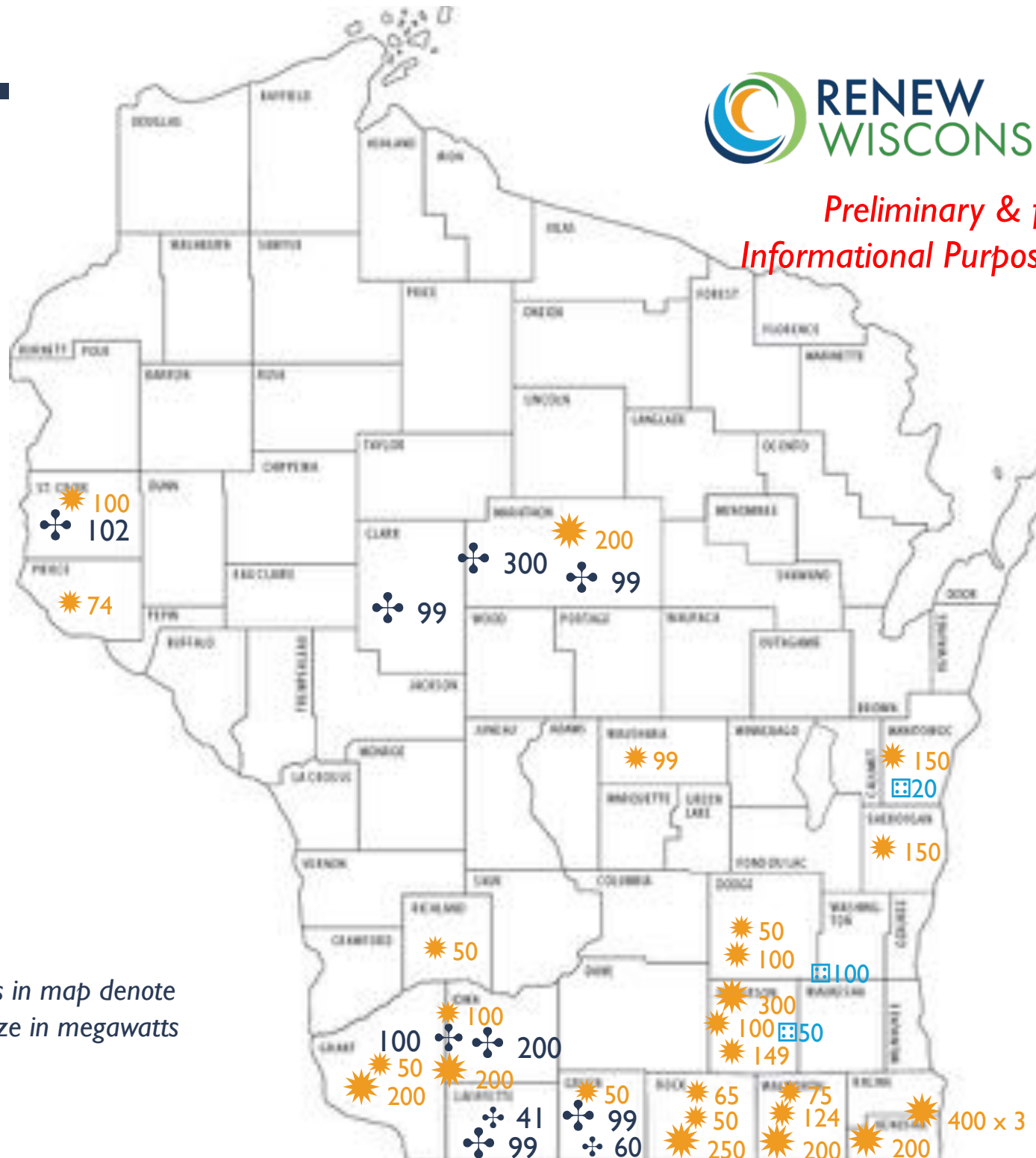
Wisconsin Solar, Wind and Energy Storage in April 2018 MISO Queue:

☀️ 4,260 MW Solar

⚡ 1,300 MW Wind

🔋 170 MW Storage

Numbers in map denote
project size in megawatts



CORPORATE DRIVERS OF LARGE RENEWABLES

Procter & Gamble to make iconic brands including Tide and Dawn with wind power

New Texas based wind farm to provide 100 percent electricity to all P&G Fabric & Home Care plants in the US and Canada

GM | CORPORATE NEWSROOM

Home News Company Plants & Facilities Images Videos Key Contacts

GM Commits to 100 Percent Renewable Energy by 2050

GM pledges to source global electricity from wind, sun and landfill gas, joins RE100

2018-09-14

CORPORATE RENEWABLE ENERGY BUYERS' PRINCIPLES:
INCREASING ACCESS TO RENEWABLE ENERGY

65 COMPANIES **48** MILLION MWH OF DEMAND FOR RENEWABLE ENERGY **\$5** TRILLION IN MARKET CAP

www.buyersprinciples.org



Amazon Wind and Solar Farms

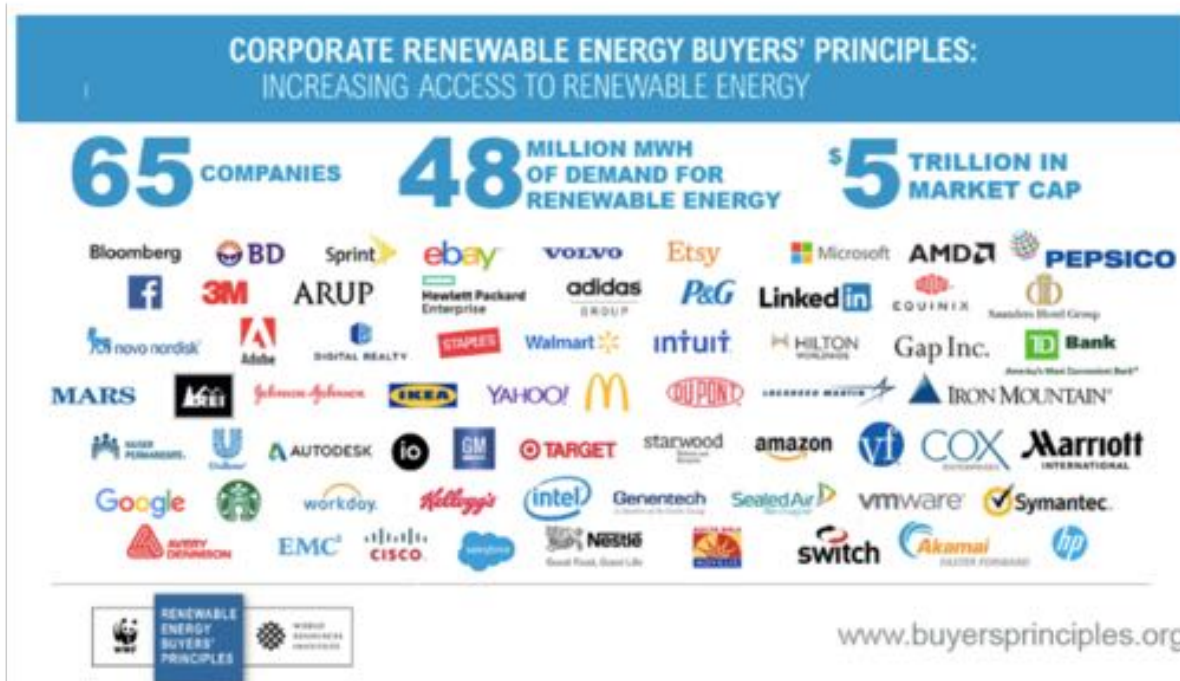
In September 2016, we announced the plan to build our largest wind project to-date, Amazon Wind Farm Texas. A 253-megawatt (MW) wind farm in Scurry County, with

Key Drivers for Business:

- Long-term, low-cost, price stability
- Customer interest
- Employee attraction & retention

POLICY OPPORTUNITY: CORPORATE BUYERS TARIFFS

- Corporations want to directly purchase output from renewables projects.....
- Through tariffs offered by their utility companies.
- Madison Gas & Electric has an approved program to serve these customers!



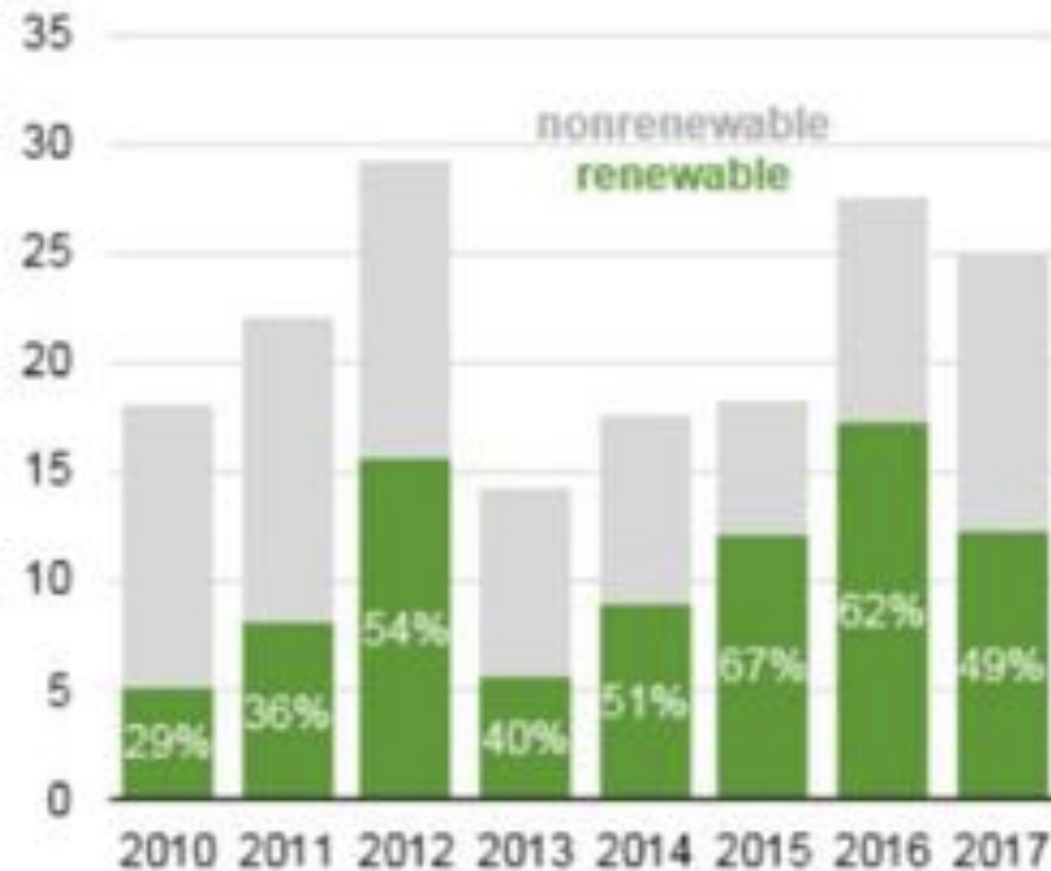
WISCONSIN'S POWER PROVIDERS: VOLUNTARY GOALS & ACTIONS

Power Provider	Goals & Actions
We Energies & Wisconsin Public Service	33% renewables / carbon free 40% CO2 reduction by 2030
Alliant Energy	40% CO2 reduction by 2030
Xcel Energy	60% CO2 reduction by 2030
Madison Gas & Electric	30% renewables by 2030 - Applied for 67 MW Wind
WPPI Energy	Purchase 100 MW solar in 2021
Dairyland Power	2015-17 Additions: Purchasing 178 MW of wind, 20 MW of solar
Great Lakes Utilities	RFP for 25 MW of wind/solar issued May 2017



A CHANGING ELECTRIC GRID

Utility-scale capacity additions, 2010-2017
gigawatts



Source: U.S. Energy Information Administration, Form EIA-846



A CHANGING ELECTRIC GRID

WPR NEWS



We Energies' Pleasant Prairie coal-fired power facility is now permanently offline.

Eric Allix Rogers (CC-BY-NC-SA)

Pleasant Prairie Power Plant Ends Operation

We Energies Says Its Coal-Fired Plant Went Offline A Week Early

Wednesday, April 4, 2018, 10:35pm

By Chuck Quimbach

Share:



Listen



Download

One of Wisconsin's largest coal-fired power plants, We Energies' Pleasant Prairie facility in Kenosha County, has permanently shut down about a week ahead of schedule.



RENEW WISCONSIN PRESENTATION

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Home, Business, Farm, & Nonprofit Renewables – Solar, Geothermal & Biogas

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KEY PROGRAM: FOCUS ON ENERGY REBATES

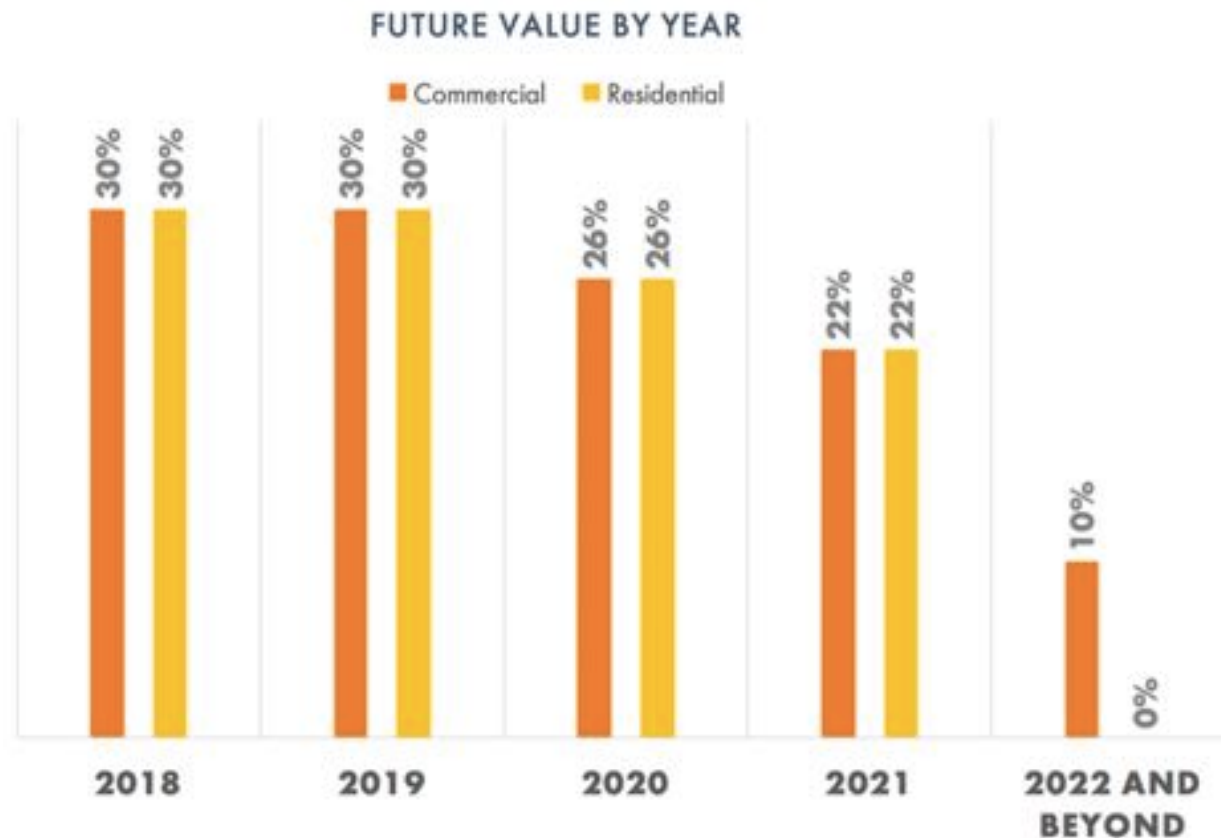
BIG VICTORY BY RENEW WISCONSIN IN MAY 2018!!



- **\$5.5 million annually for 2019 through 2022**
- **2018 Programs:**
 - **Residential solar rebates:** 12% of system cost, maximum of \$2000; \$1.1 million budget (1/2 used)
 - **Small Commercial solar rebates:** 12% of system cost, maximum of \$4000; \$200k budget (all used)
 - **Larger Business rebates:** Sept 2018 RFP for 2019 projects



KEY POLICY: FEDERAL TAX CREDITS, DEPRECIATION



5 year Accelerated Depreciation for business installations (worth approximately another 20% to many businesses)

- Does not expire



KEY POLICY: NET METERING



Demand:
5,000 kWh

=

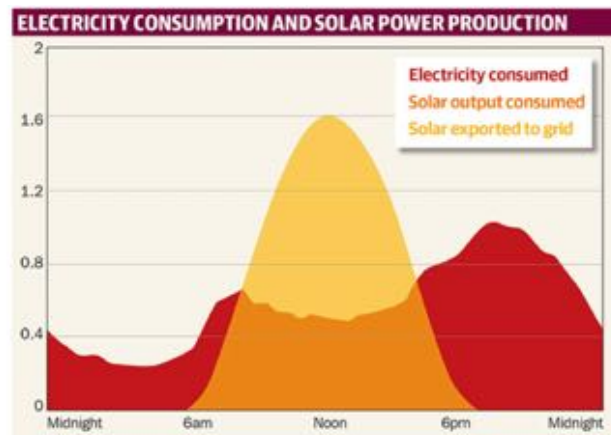


Generate:
3,750 kWh
Credited @ Retail Rate

+



Purchase:
1,250 kWh
Bought @ Retail Rate



- “Rollover Minutes”
- Annual vs. Monthly Netting
- System Size (20 kW, 100 kW)



WISCONSIN'S POWER PROVIDERS: NET METERING POLICIES

Power Provider	Net Metering Policies
We Energies	300 kW (AC) Monthly Netting
Wisconsin Public Service	20 kW (DC) Monthly Netting
Alliant Energy	20 kW (AC) Monthly Netting
Xcel Energy	100 kW (AC) Annual Netting
Madison Gas & Electric	100 kW (AC) Annual Netting
Municipals	Typically 20 kW (AC), some annual and some monthly netting
Electric Cooperatives	Typically 20 kW, mostly annual netting, but some very different



RESIDENTIAL SOLAR PV ECONOMICS

- Assume \$3.00 per kW installed cost (varies for each customer)
- Assume 5 kW solar PV system, creates about 6,000 kWh of electricity per year

■ System Price:	\$15,000	
■ Focus on Energy Rebate:	(\$ 1,800)	(12% of system cost)
■ Federal Tax Credit:	(\$ 3,960)	(30% of remaining cost)
■ Net system price:	\$ 9,240	
■ "Simple payback":	12.8 years*	

* 6000 kWh of electricity, assume 12 cents per kWh electric rate, \$720 in energy production per year. Faster payback if you are on "Time of Use" rates with higher prices for peak times



BUSINESS SOLAR PV ECONOMICS – 100 KW

- Assume \$2.25 per kW installed cost (varies for each customer)
- Assume 100 kW solar PV system, creates about 120,000 kWh of electricity per year
- System Price: \$225,000
- Focus on Energy Rebate: (\$ 27,000) (12% of system cost)
- Federal Tax Credit: (\$ 59,400) (30% of remaining cost)
- Accelerated Depreciation: (\$ 39,600) (~20% of remaining cost)
- Net system price: \$ 99,000
- “Simple payback”: 8.25 years*

* 120,000 kWh of electricity, assume 10 cents per kWh electric rate, \$12,000 in energy production per year. Faster payback if you are on “Time of Use” rates with higher prices for peak times



TARGET STORES - SOUTHEAST WISCONSIN



**16 stores in Waukesha, Milwaukee,
Outagamie, Ozaukee, Racine + Dane
counties**

Total: 5.83 MW DC



RENEW WISCONSIN PRESENTATION

Franklin, WI 380 kW DC
Supplying 40 - 60% of energy use



BIOGAS



- *Huge potential in WI, and we remain a leader with 34 farm digesters and 136 total*
- *Important challenges remain, and long-term view is needed*
- *Electric “buyback rates” remain a critical question*



BIOGAS: SWITCHING TO TRANSPORTATION FUELS



***Dane County Landfill +
Biodigesters***

***Brown County – state-funded
“BC Organics” Project***



DEPLOYMENT: LOCAL GOVERNMENTS

A4 | FRIDAY, APRIL 21, 2017

LOCAL & STATE

WISCONSIN STATE JOURNAL

Dane County eyes solar expansion

Thirty acres of panels could be installed at Dane County Regional Airport

LOGAN WROGE
lwroge@madison.com

Dane County will explore the feasibility of installing 30 acres of solar panels at the Dane County Regional Airport.

The airport will partner with a firm to look into a project that could generate more than 6 megawatts of electricity. After exploring the potential for the project, the firm would contact solar developers to submit proposals. The project would add to Dane County's growing profile of renewable energy sources.

"The future is now when it comes generating clean, renewable, home-grown energy, and I'm committed to Dane County leading the way," County Executive Joe Parisi said in a statement Thursday. "A project of this scale will take partners, and we think given the values of our community, a number of interested entities will step forward to be a part of this historic effort."

The airport proposal, which would need to receive Federal Aviation Administration approvals, would be the second largest solar project in Wisconsin and the largest in the region, beating out a 2.25-megawatt producing facility in Beloit, the county said.

Solar energy projects are already in the works for this year. Dane County's 2017 budget included \$2 million for solar panels at the Alliant Energy

Center and the Dane County Job Center.

Even without the planned additions, the county produced almost as much power from its existing solar operations and bio-gas generators from two landfills last year as it purchased from utility companies.

In 2016, the county paid for 35.3 million kilowatt-hours of electricity while producing 34.6 million kilowatt-hours from its renewable sources, representing a 98 percent renewable energy ranking, according to a county analysis.

The landfill operations divert escaping gas from the waste to power engines that turn generators. Utility companies have purchased \$35 million in excessive energy from Dane County's landfill generators since 1998.



RENEW WISCONSIN PRESENTATION

LET'S KEEP GOING

**Rules & Policies will determine
renewable energy's future, along with
technological advancements**

**Communities & Certain Utilities ARE
responding to offer customers' options**

**Keep up your advocacy.
Renewable energy is the future, and we
will win this transition for a stronger,
healthier Wisconsin**



RENEW WI'S ADVOCACY FOR WISCONSIN RENEWABLE ENERGY

- *Build bipartisan support*
- *Focus on Energy*
- *Utility rate cases & power plant proposals*
- *Support solar, wind, bioenergy, geothermal & hydro industries & technologies*
- *Legal defense*
- *Annual Policy Summit*
- *Leading communications and pushing messages & stories*



UPCOMING EVENTS

Sat. Sept 29, 2017

6th "Ride with RENEW"
fundraiser – Milwaukee, WI

Brewers Game Sept 28/29???

January 17, 2019

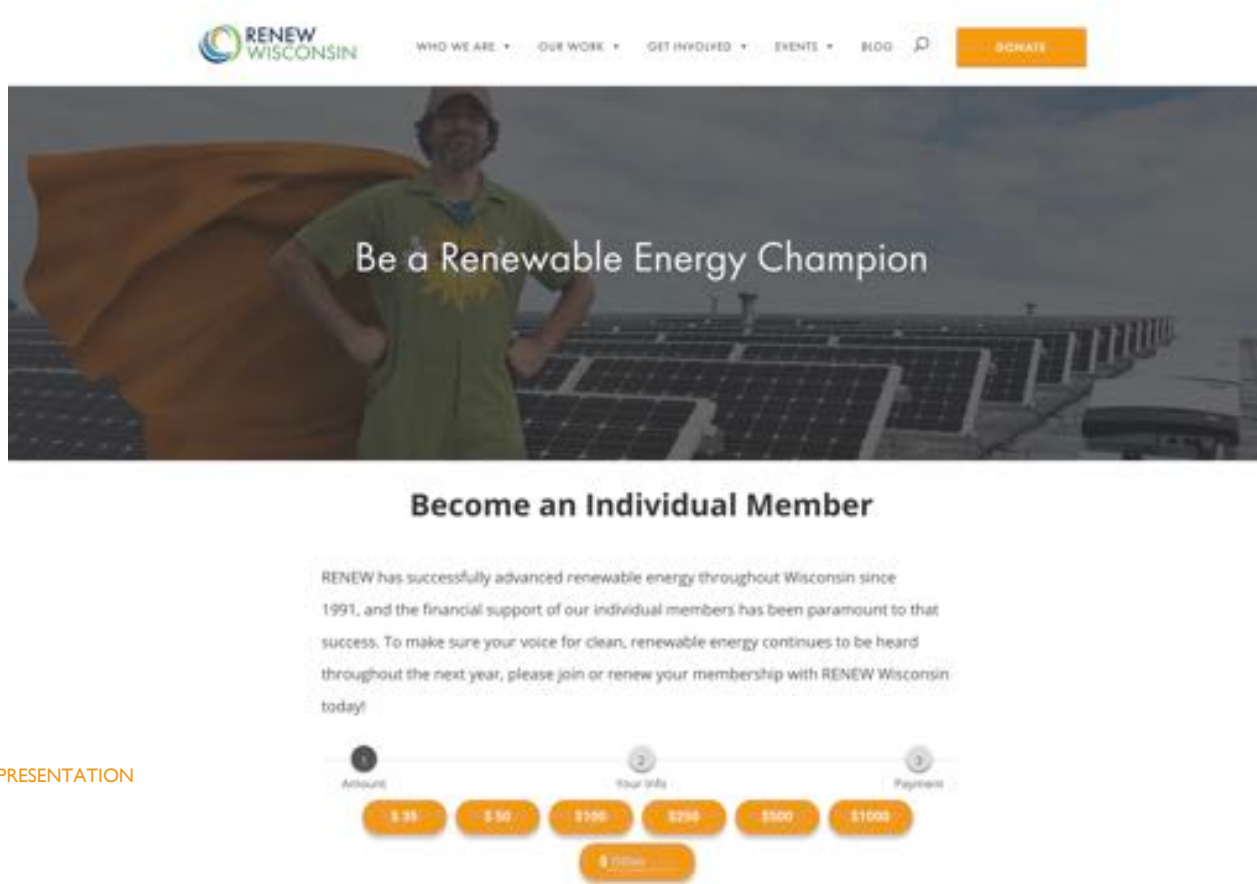
Annual Renewable Energy
Summit in Madison



RENEW WISCONSIN PRESENTATION

PLEASE CONSIDER SUPPORTING OUR WORK – ENERGY FAIR SPECIAL – GET A FREE BEER!

- Individual Memberships: Starting at \$35 (about \$3 a month)
- Business Memberships: Starting at \$200



The screenshot shows the RENEW WISCONSIN website. At the top is a navigation bar with the logo and links: WHO WE ARE, OUR WORK, GET INVOLVED, EVENTS, BLOG, and a SIGN UP button. Below the navigation bar is a large banner image of a man in a green shirt and a yellow cape standing in front of solar panels, with the text "Be a Renewable Energy Champion". Below the banner is the heading "Become an Individual Member". The main text reads: "RENEW has successfully advanced renewable energy throughout Wisconsin since 1991, and the financial support of our individual members has been paramount to that success. To make sure your voice for clean, renewable energy continues to be heard throughout the next year, please join or renew your membership with RENEW Wisconsin today!". Below the text is a three-step process: 1. Amount, 2. Your Info, and 3. Payment. Under "Amount", there are buttons for \$35, \$50, \$100, \$250, \$500, and \$1000, with a "Custom Amount" button below them. Under "Your Info", there are fields for Name, Email, and Phone. Under "Payment", there are fields for Card Number, Expiration Date, and CVV, and a "Payment Method" dropdown menu.

RENEW WISCONSIN

WHO WE ARE • OUR WORK • GET INVOLVED • EVENTS • BLOG • SIGN UP

Be a Renewable Energy Champion

Become an Individual Member

RENEW has successfully advanced renewable energy throughout Wisconsin since 1991, and the financial support of our individual members has been paramount to that success. To make sure your voice for clean, renewable energy continues to be heard throughout the next year, please join or renew your membership with RENEW Wisconsin today!

1 Amount 2 Your Info 3 Payment

\$35 \$50 \$100 \$250 \$500 \$1000

Custom Amount

Name Email Phone

Card Number Expiration Date CVV

Payment Method



Q&A AND THANK YOU



Thank you!

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