

RENEWABLE ENERGY UPDATES

TYLER HUEBNER, RENEW WISCONSIN

WISCONSIN INDUSTRIAL ENERGY GROUP, AT CHARTER STEEL IN SAUKVILLE • JUNE 6, 2019



**ABOUT
RENEW WISCONSIN:**

FOUNDED 1991

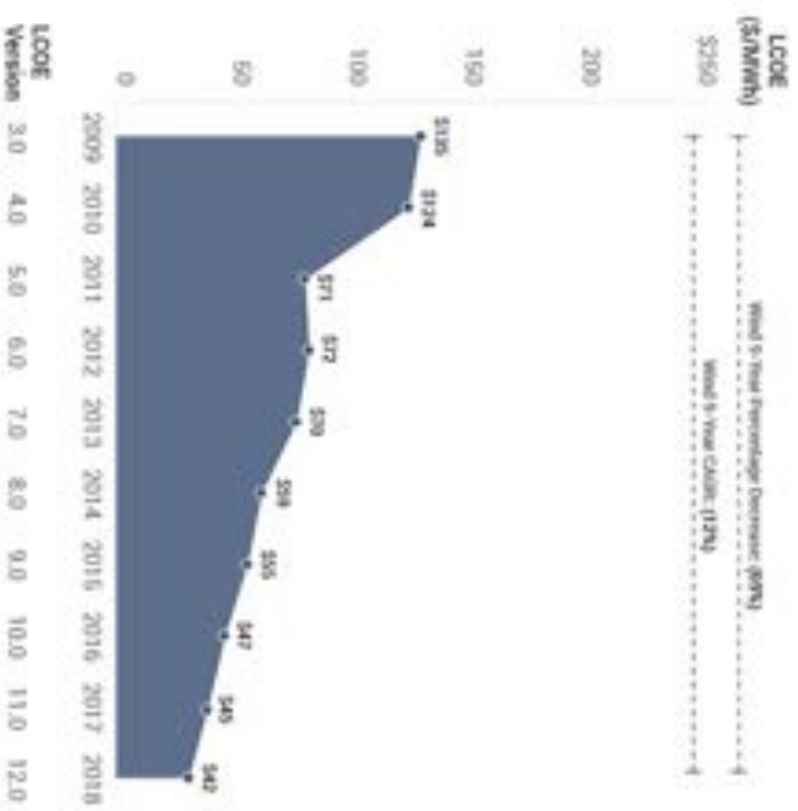
SUPPORT FOR:

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

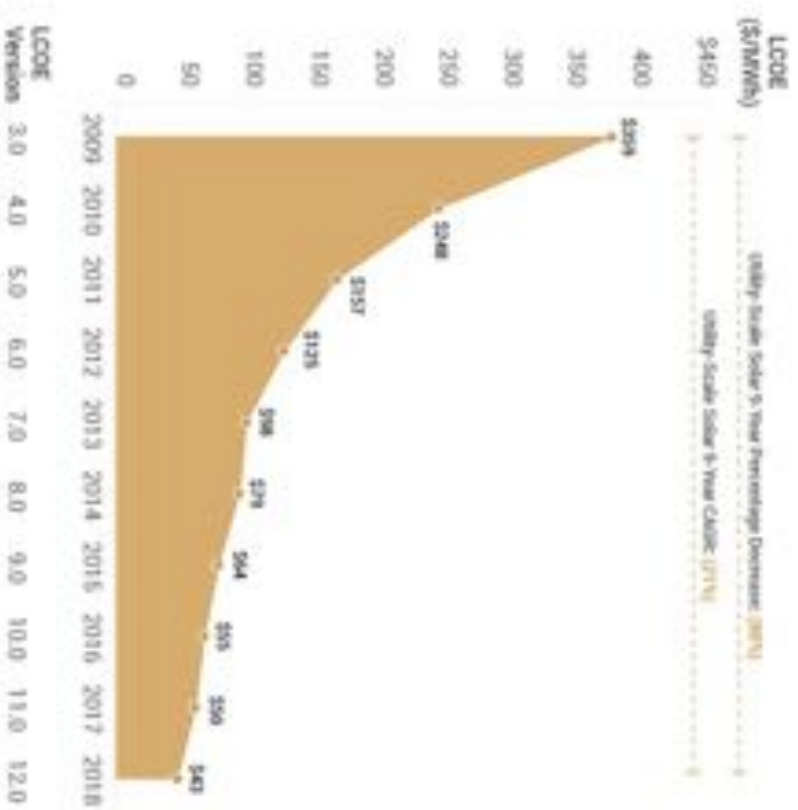


WIND & SOLAR COSTS HAVE DECREASED DRAMATICALLY SINCE 2009

Unsubsidized Wind LCOE



Unsubsidized Solar PV LCOE



WIND: ▼ 69%

SOLAR: ▼ 88%



Large Wind & Solar Projects in Wisconsin

500 MEGAWATTS OF UTILITY-SCALE SOLAR PV APPROVED IN APRIL 2019



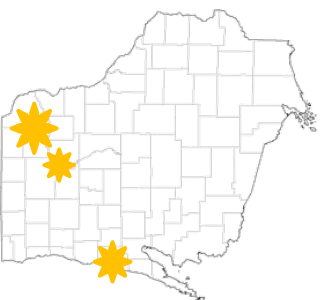
Invenergy

300 Megawatts Solar
(PSC Approval)



Richland Co. Solar Farm

Savion (Tradewind)
49.9 Megawatts

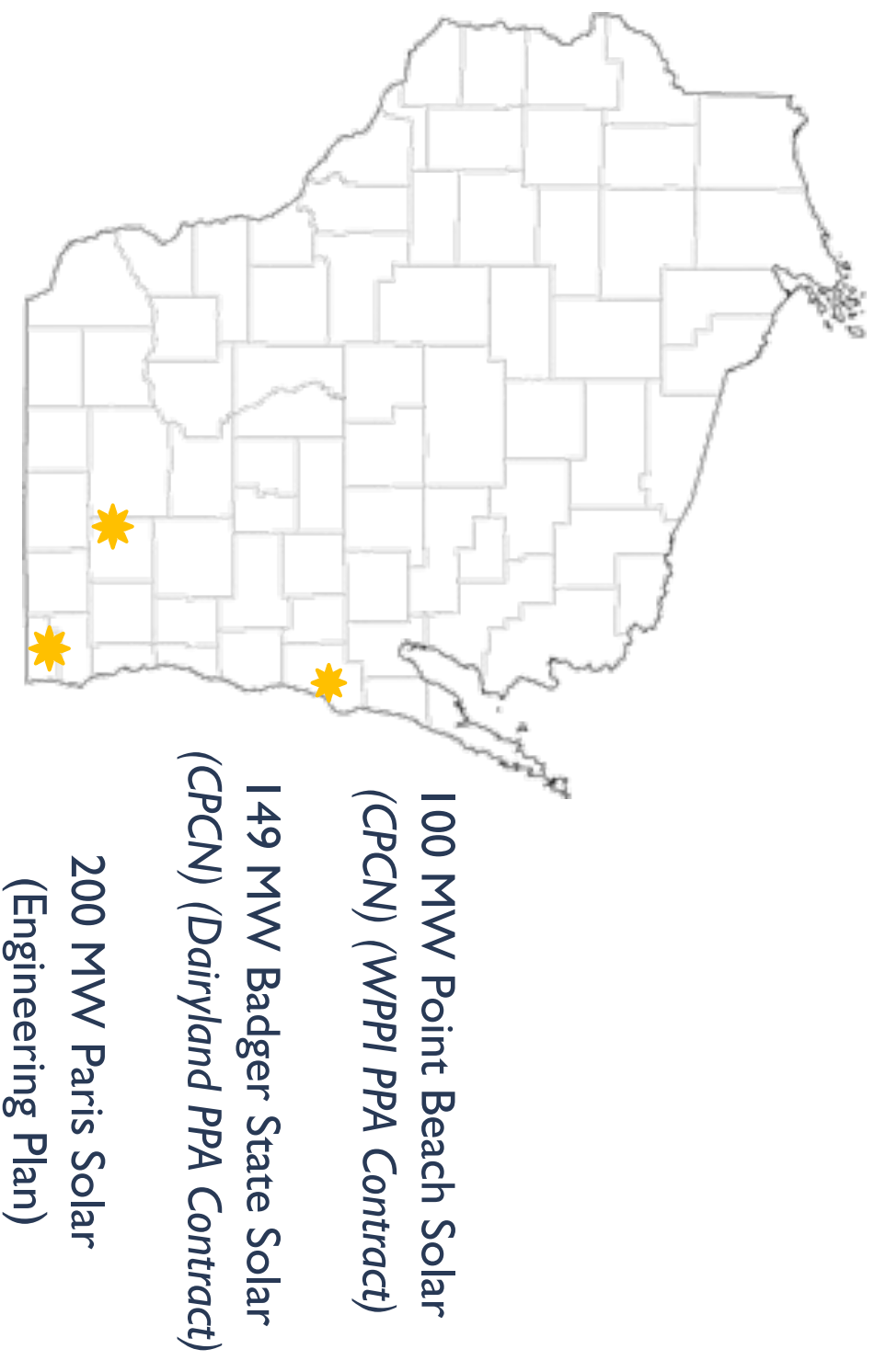


Two Creeks Solar, LLC



150 Megawatts Solar
(PSC Approval)

449 MEGAWATTS MORE OF SOLAR FILED AT PSC



100 MW Point Beach Solar
(CPCN) (WPP1 PPA Contract)

149 MW Badger State Solar
(CPCN) (Dairyland PPA Contract)

200 MW Paris Solar
(Engineering Plan)

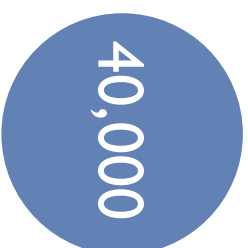
PROFILE: RED BARN WIND FARM



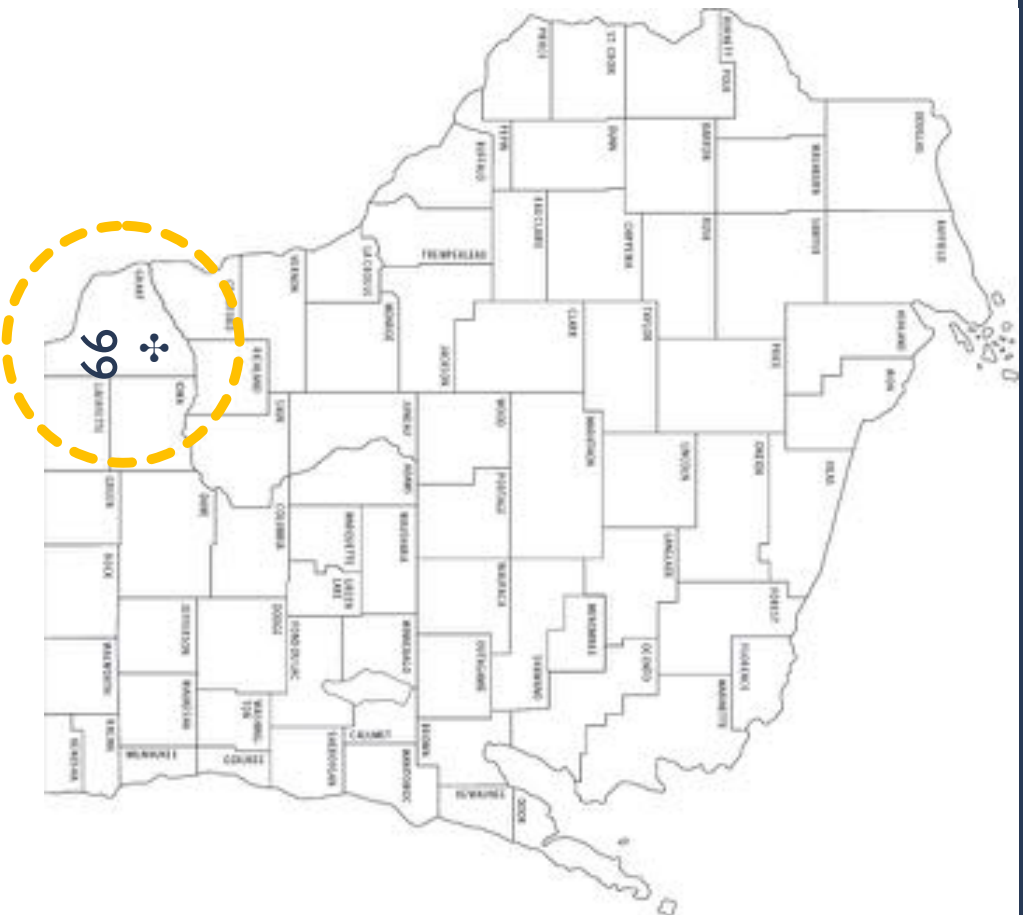
Project Resources Corporation
Project Developer



Megawatt wind farm
Up to 29 turbines



Equivalent homes powered annually (estimated)



PROFILE: SUGAR RIVER WIND FARM



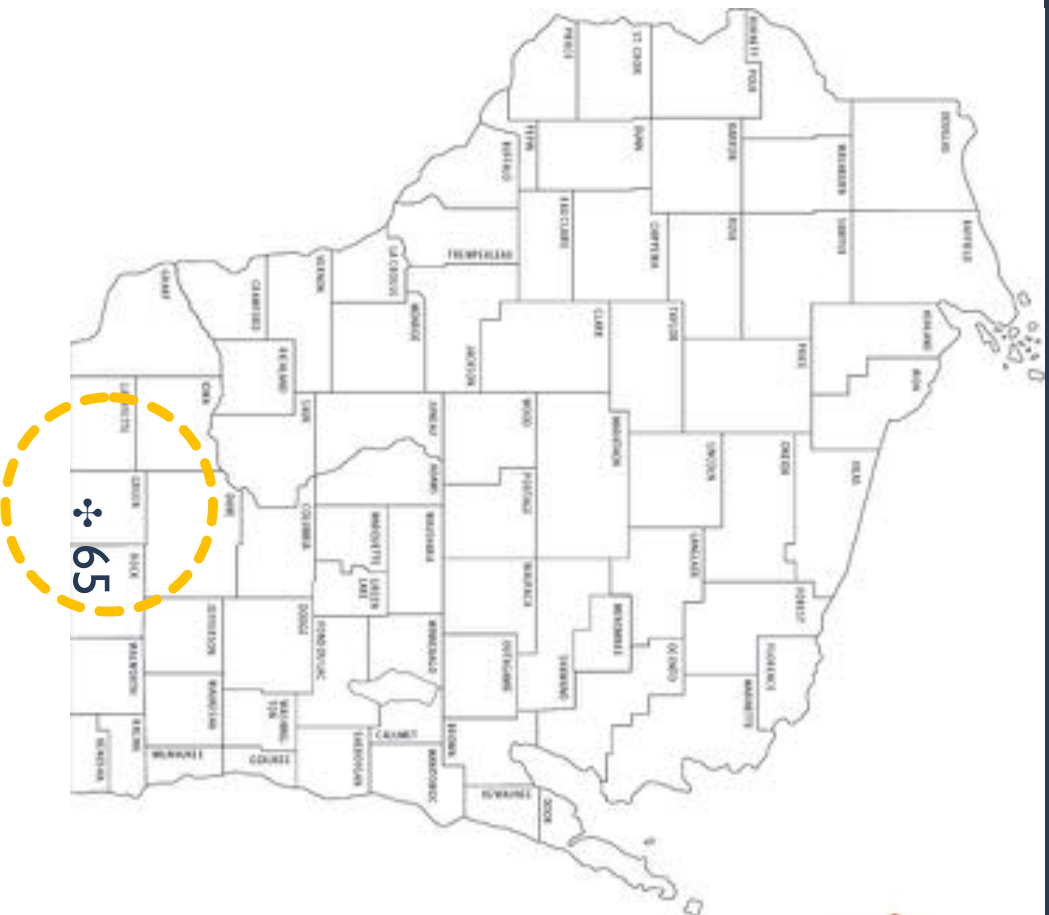
Project Developer

65

**Megawatt wind farm
24 turbines**

29,000

**Equivalent homes
powered annually
(estimated)**

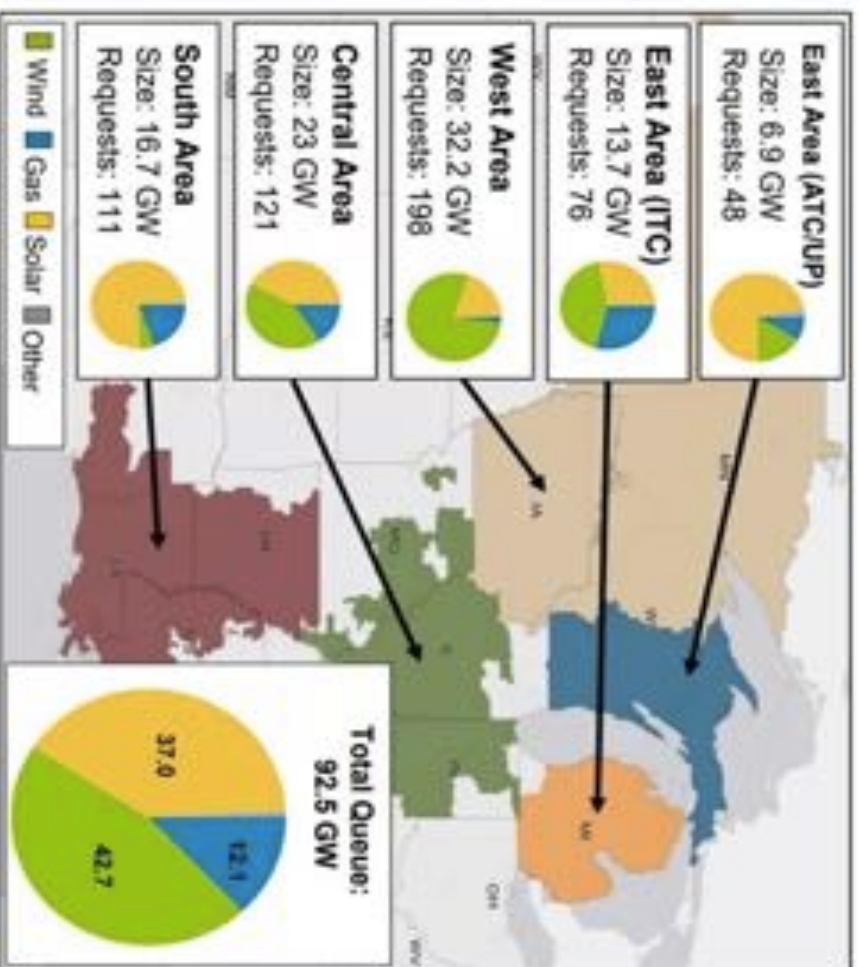


MISO total generation capacity (2018): 175,000 to 191,000 megawatts

New Generation Proposals capacity (2018): 92,500 megawatts

“There is more wind & solar in queue than our load on most days” – MISO executive

MISO Active Queue by Study Area



MAJOR UTILITY COMMITMENTS TO RENEWABLE ENERGY BY 2050

Utility Provider	Business Plan	2017 WI Renewables Mix (5-RF-2017) (RPS + GPP)
Wisc. Public Service	80% CO2 Reduction by 2050	7.9%
Wisconsin Electric	80% CO2 Reduction by 2050	7.6%
Alliant	80% CO2 Reduction by 2050	13.5%
MG&E	80% CO2 Reduction by 2050	13.2%
Xcel	80% CO2 Reduction by 2030 + 100% by 2050	28.1%
WPPi	--	15.9%
Dairyland	--	14.5%
Other	--	--
Total WI Mix from RE	--	12.15%

MAJOR UTILITY COMMITMENTS TO RENEWABLE ENERGY BY 2050

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Alliant	80% CO2 Reduction by 2050	13.5%
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Xcel	80% CO2 Reduction by 2030 + 100% by 2050	28.1%
WPPi	--	15.9%
Dairyland	--	14.5%
Other	--	--
Total WI Mix from RE	--	12.15%

RENEW Wisconsin

Estimate:

- Assume “flat load”
- Assuming IOU commitments are met

- → **~62%** renewable / carbon-free electricity by 2050



Customer & Distributed Generation

WI'S LARGEST ROOFTOP SOLAR PROJECT KEEPS GROWING



American Family Insurance
Aug/Sept 2017
1.2 MW

IKEA
July 2018
1.6 MW



Madison College
December 2018
1.85 MW



SOON TO COME - WI NEW LARGEST ROOFTOP SOLAR PROJECT



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Ashley Furniture to invest \$29M in solar energy; Arcadia project to be largest rooftop system in state

CHRIS HUBBUCH chubbuch@madison.com Apr 25, 2019



Ashley Furniture's headquarters and manufacturing facility in Arcadia, Wis., has about 67 acres of roof, which can accommodate a roughly 7-megawatt solar array that would be the largest rooftop system in Wisconsin.

ASHLEY FURNITURE INDUSTRIES



Third Party Ownership

E&ENNEWS

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RENEWABLE ENERGY

Wis. solar dispute goes to court after regulators punt

Jeffrey Tomack, E&E News reporter • Energywire, Monday, June 3, 2019

SEARCH:



Net Metering – Rate Cases

Power Provider	Net Metering Policies	2019 Rate Case?
We Energies	300 kW (AC) Monthly Netting * May 2019: Filed “Fixed Cost Recovery Charge” aka Solar Tax. Pending “Standby Charge” for large C&I customers. If approved would take effect Jan. 2021.	Full Rate Case
Wisconsin Public Service	20 kW (DC) Monthly Netting	Full Rate Case
Alliant Energy	20 kW (AC) Monthly Netting	No
Xcel Energy	100 kW (AC) Annual Netting	Settlement – No Changes to Net Metering Proposed
Madison Gas & Electric	100 kW (AC) Annual Netting	No
Municipals	Typically 20 kW (AC), some annual and some monthly netting	Some
Electric Cooperatives	Typically 20 kW, mostly annual netting, but some very different	N/A




Utility Voluntary Renewable Energy Programs



Utility Voluntary Renewable Energy Programs

- Madison Gas & Electric
 - “Renewable Energy Rider” – up to 25 MW of load
 - Community Solar – Small Business would be eligible; Total of 2.0 MW

- We Energies
 - Dec 2018 Approvals:
 - “Solar Now” – 35 MW of solar on customers’ rooftops / property; up to 2.25 MW each
 - “Dedicated Renewable Energy Resource” – up to 150 MW of renewables to serve customers
- 



Utility Voluntary Renewable Energy Programs

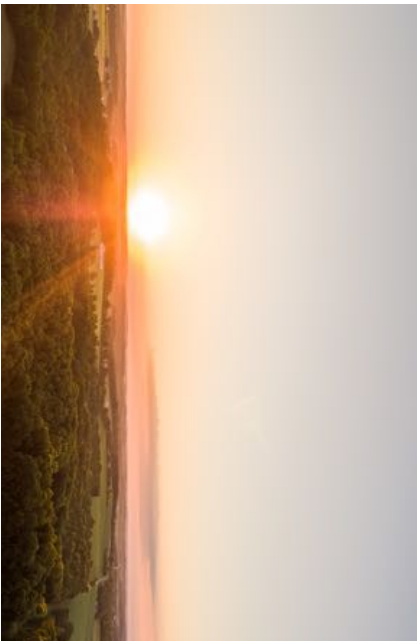
- Alliant - Proposals:
 - “Customer Hosted” – up to 35 MW of solar/DG on customers’ property
 - “Renewable Energy Partner” – up to 150 MW of renewables to serve customers
 - Community Solar – up to 3 MW, probably focused on residential / small commercial
- Xcel
 - Renewable*Connect – Lower premium renewable energy program with newer wind/solar projects
 - Solar*Connect Community – 3 MW of community solar (subscribed)



Working Together

- **Another new era – Utilities filing to add capacity**
 - How should demand response, customer-sited renewables, battery storage resources that are reducing peak capacity needs be valued in comparison to utility new-build resources?
 - Classic “supply-side” vs. “demand-side” conversation
- **Power plant exchanges – “steel for fuel” – and handling stranded costs.**
Alternative re-financing options, securitization, cost-effective clean energy replacements
- **Taking advantage of cost-effective renewables:** customer-owned, utility programs, etc... RENEW can be a resource to understand these opportunities.
- **Conversations, meetings, events between your businesses and potential solutions providers:** solar, storage, and beyond





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