

We will begin our presentation shortly, starting with a brief introduction to zoom.









COMMUNITY FOUNDATION OF CENTRAL WISCONSIN CROW SOLAR



Today's Agenda

- 1. What is the Grow Solar Central Wisconsin group buy program?
- 2. How does solar power work?
- 3. Solar options & considerations
- 4. Costs and cost-saving incentives
- 5. How to begin your solar journey

GOAL: Simplify a complex topic and make it easier and more affordable to go solar.







Why are we here? There are problems with the way you currently buy electricity. 1. Unpredictable rate increases

- 2. Not building equity
- 3. Pollution



Manitoulin Island WKSIN Green Bay Cchkosh Model for lower prices:

1. Competitive contractor selection

- 2. Community-led outreach
- 3. Limited time offering

Everyone wins.

4. Strong customer education

OHIO

5. Economy of scale

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Grow Solar Central Wisconsin Group Buy

- Educational sessions throughout the summer
- Open to all Lincoln, Marathon, Portage, Waushara, and Wood County residents, businesses, farms, and nonprofits
- Start with a free, no-obligation site assessment
- Turnkey system: program Pricing includes design, permitting, components, installation (all-in cost), and warranties
 - Financing available; American-made modules tier 1 offering



INSTALLER PROFILE

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Northwind Solar has been in business for over 14 years.

- •We have installed over 400 systems in the SCWGB area totaling over 3 MW. In total over 600 systems and 5 MW.
- •Our major customer areas are residential, agricultural, commercial and non-profits.
- •In 2017, we transitioned into a worker-owned cooperative.
- •We promise you that we will bring high standards, quality focus, and integrity or our work.
 - New headquarters in Amherst Business Park (next to Central Waters) with 42 kW of solar, 3 EV charging stations and Tesla Powerwall and Generac PWR Cell storage systems.



How Does Solar Work? Part 2 of 5



CENTRAL WISCONSIN

What's a Kilowatt Hour (kWh) and a Kilowatt (kW)?





KILOWATT HOUR (kWh) a unit of energy used or produced. This is what shows up on your bill. **KILOWATT (kW)** a measurement of capacity: how big your array is.

Every home's system size and energy use is different.



Photovoltaic Solar Resource : United States and Germany





Configuration: How It Works...









Grid-Tied / Net Metered Home

DAILY HOUSEHOLD POWER PRODUCTION AND CONSUMPTION



Net Metering is generally calculated on a monthly basis
 Net Metering policies vary based on utility





A Year in the Life" of a Grid-Tied / Net Metered Home















Inverter, the heart of the array.









Inverter, the heart of the array.







Online Monitoring

NORTHW	solar	edge		Home Nor	rth Wind Renewable Energy 🗡
Dashboard Smart Home	Layout Analysis	Reports Alerts	Admin	Choose a site (inse Northwind Solar	ert at least 3 letters to search):
Current Power 5.4 kW	Energy today 7.22 kWh	Energy this month 1.09 MWh	Lifetime energy 18.39 MWh		ELST CONNECT
Power and Energy			caw	Status	Active
Day Week Month	Billing Cycle Year			ID	1583465
08/01/2021 - 08/31/202	21			Name	Northwind Solar
				Address	Allen Street, 578, Amherst,Wisconsin,United St
	System Produc	tion: 1.09 MWh		Installed	04/17/2020
				Last Updated	08/26/2021 09:45
				Peak Power	7.6 kWp
Wh			solar <mark>edge</mark>	EV Charger	Active
60 k		.		S S S S S S	unny 9 °F eels like 69 °F Vind E, 7 MPH lumidity 76 % unrise at 06:13 unset at 19:43
40 k	١.١	,		Thursday	Friday Saturday
20 k				81 - 61 °F Partly Cloudy	77 - 68 °F 86 - 70 °F 40% Chance of Storms Storms
				Environmenta	al Benefits





Options & Considerations Part 3 of 5





Location and Siting

- South-facing with 9am-3pm sun exposure is ideal
- Avoid shading: trees, buildings, poles
- East or West-facing roofs are also workable options



Mounting: Roof Mounted Solar

- Roof is most common
- Need good solar window
 - South is ideal, but E/W only reduce ~20%
 - Trees can partially shade



Mounting: Ground Mount

- Good for larger arrays and for properties where house roof is shaded
- Require large un-shaded area
- Take advantage of best solar window
- Anchor to ground mounts
- Easy to remove snow, dust
- Static, but may have a summer/winter adjustment





Considerations

- System size and design
- Module type
- Inverter type
- Slope, height of roof
- Complexity of electrical interconnection
- Age & type of roof
- Multiple PV arrays

- Need good solar "window"
 - South is ideal, but East + West only reduces production ~20%
- Environment
 - Shading
 - Snow / Hail
 - Wind Loading
 - Squirrels



Energy Efficiency

The cheapest kWh is the one that's never used.





Solar + Storage

TESLA

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You Might Need Batteries if:

SMA

- 1. Want backup power
- Don't get full net-metering
 credit
- 3. Future Proof
- 4. Want more energyindependence

Stacked Ground Mounted Battery







Is my home well-suited for solar?

- Do I have a south facing roof?
- ❑ Are there shade issues?
- □ When do I anticipate re-roofing?
- □ Is my roof structurally sound?
- □ Is my home energy efficient?



Solar Costs Part 4 of 5





Cost of Solar Over the Past Decade





Resource: National Renewable Energy Laboratory (NREL)



How Group Buys Work

The more properties that go solar, the lower the price:

Base Price:

\$2.85/Watt

Base price is lower than installer's market rate.

Group Buy Volume Discounts

Collective kW	>50 kW	>100 kW	>150kW
Cumulative Discount per watt	\$.05/W	\$.10/W	\$.15/W
Cumulative Discount per kilowatt	\$50/kW	\$100/kW	\$150/kW
Approx. # of Homes	7-10 homes	20-30 homes	35-50 homes



Every Home Is Different

Your PV system will be tailor-made to fit your needs.



Pricing Varies by Site and Needs:

- System Design and Size
- Age and Type of Roof
- Panel Type
- Dual Fuel/Off-Peak Metering
- Inverter Type
- Height and Pitch of Roof
- Complexity of Electrical
 Interconnection

- Multiple PV Arrays
- Energy Storage
- Transformer & Electric
 Service Upgrade



Wisconsin Focus on Energy(FOE) Rebate

Solar Electric (PV) System	Incentive
Residential Single Family Homes	\$500 per installation
Business Up to 5 kW	\$200 per kW, up to \$1,000
Business 5 - 10 kW	\$1,000 + \$150 per kW above 5 kW, up to \$1,750
Business 10 - 100 kW	\$1750 + \$125 per kW above 10 kW, up to \$13,000

- Additional eligibility requirements and status of remaining funds can be tracked at <u>https://focusonenergy.com/residential/renewable-energy</u>
- <u>NEW</u> FOC now offers a <u>Special Sector Incentive</u> for non-profits, schools, government and Native American tribes and nations. This incentive will help organizations that do not qualify for the solar Investment Tax Credit (ITC).

Residential & Commercial Renewable Energy Tax Credit (Federal)

- Tax credit of 26% on qualified expenditures
 - Includes labor costs, system installation, interconnection wiring
 - Does not include new roof unless roof reinforcement is necessary to support the solar panels
- No maximum credit
- Res: The home must be owned by the taxpayer but does not have to serve as the principal residence
- Goes away for residential in 2024 (remains at 10% for commercial)







Estimated Year 1 Production = 7,054 kWh





6.6 KW Residential System

Grow Solar Price

Market Price

<u>6.6 kW Central Wisconsin Residential Roof</u> <u>Array</u>		6.6 KW Market Price Reside <u>Array</u>	<u>ential Roof</u>
Base Cost (\$2.85/Watt)	\$18,810	Base Cost (\$3.06/ Watt)	\$20,196
Estimated Adders	\$500	Estimated Adders	\$500
Focus on Energy	- \$500	Focus on Energy	- \$500
26% Federal Tax Credit (Post-Focus rebate)	-\$4,760	26% Federal Tax Credit (Post-Focus rebate)	-\$5,250
Max group buy savings (~4%)	-\$990	Group buy savings	\$0
Net Cost	\$13,060	Net Cost	\$14,946



INSTALLATION TIMELINE (approximate)

e stal	Day 1	Sign Contract
	Week 1-6	Engineered design by NorthWind submitted for permitting and interconnection applications
	Week 6-12	Getting approval for interconnect application from Utility Company
	Week 12-13	Construction
POWER	Week 13-16+	Waiting for inspection/approval and Utility Company Permission to Operate
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Next Steps Part 5 of 5





Home Values

Zillow has released a report stating that homes with solar panels sell for 4.1% more than their generation-naked counterparts. *Zillow Economic Research*

A study by the National Renewable Energy Laboratory found that homes with solar sold faster and for more than equivalent non-solar homes.

NREL (National Renewable Energy Laboratory)

In a study across six states, Berkeley National Lab found that home buyers will pay a premium for solar homes. *Lawrence Berkeley National Laboratory*







Financing Solar

Clean Energy Credit Union

- 100% clean energy loans first of its kind launched
 2017
- Not for profit
- Choose one or both of these loan types:
 - 12-18 month loan for 26% of system cost (covers the 26% Federal Tax Credit)
 - 12-year fixed rate loan up to the remaining 74% solar electric system cost







Financing Home Repair and Solar

CAP Services Inc

- Nonprofit community action agency
- Financing for income eligible households
 - Up to 15 year term loans at 5% fixed rate for solar projects
 - Home repair/rehabilitation loans deferred up to 30 years as long as the property is borrower's primary residence





Environmental Benefits

Over the life of a 5 kW system, the electricity produced is equivalent to 163 tons of carbon dioxide (CO₂).

That's the CO_2 equivalent of any one of these:



Planting 3,798 trees.

Driving reduced by 326,000 auto miles, or 16,626 gallons of gasoline.

Recycling 515 tons of waste instead of sending it to landfill.

158,831 pounds (79.4 tons) of coal burned.





and you will help avoid the use of up to 3,975,500 gallons of water by Thermoelectric Powerplants.



Next Steps

- 1. Fill out the form we're sending you in the chat (we'll also send it in a follow-up email right after this webinar)
- 2. Northwind Solar will follow up in the next few days to get started on a **free**, **no obligation quote**. Please collect 12 months of electricity usage.
- **3. Request a site assessment**. Northwind Solar will verify your quote and provide you documentation and your contract.
- Sign contract and pay down payment with Northwind Solar before <u>November</u>
 <u>15th</u> to lock in Grow Solar Central Wisconsin pricing.
- 5. Celebrate, share your story, enjoy clean energy every time the sun shines!

CW.GrowSolar.org





Become a member of MREA!



Your support as a member makes a long lasting impact.

You help sustain and grow our many programs, including:

- Grow Solar Group Buy Program
- Solar on Schools Initiative
- Solar Professional Training
- Solar Ready Wisconsin Workforce Development Project
- Solar Corps Internship Program
- Rise Up Midwest, and more!





www.midwestrenew.org/membership

Everyone who goes solar through the program gets a FREE Basic Family Membership!





When there's a huge solar energy spi it's just called a "really nice day."

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