

Earth Day Energy Forum

Jeff Lutsey

Brady Steigauf

Jeff Schneider



focus on energy



GROW SOLAR

POWERED BY



**CLIMATE CHANGE
COALITION**
OF DOOR COUNTY



Every Day is Earth Day *“Energy - Making it and Saving it”*

Thursday 4/18, 6 - 7:30 pm

Energy Forum, Sister Bay

Saturday 4/20, 10 - 4 pm

Earth Day Festival at Kress Pavilion, Egg Harbor

Sunday 4/21, 1 - 4 pm

Earth Day Festival at Crossroads, Sturgeon Bay

Monday 4/22, 5 - 8 pm

Earth Day Open Mic, at One Barrel, Egg Harbor

<https://www.everydayisearthdayfest.org/2024-schedule>



Earth Day *Energy Forum*



**CLIMATE CHANGE
COALITION**
OF DOOR COUNTY



Earth Day *Energy Forum*



AGENDA

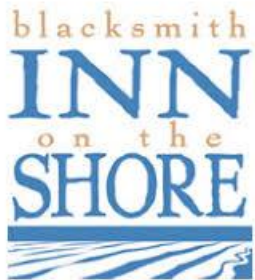
6:00 pm	Welcome & Introductions
6:10 pm	Home Energy Efficiency <i>with Focus's Brady Steigauf</i>
6:40 pm	Solar Power <i>with MREA's Jeff Schneider</i>
7:15 pm	Additional Q & A



Earth Day *Energy Forum*



Climate Change Coalition of Door County - SPONSORS



Earth Day *Energy Forum*

Climate Change Coalition of Door County



Community Compost

Tree Planting

Climate Education



2024 FOCUS ON ENERGY OVERVIEW

Brady Steigauf – Community Liaison Manager



AGENDA



- What is Focus on Energy?
- Easy home improvements
- Energy audits – why you need one
- Appliance upgrade results and suggestions (in order of bill/environmental impact)
- Incentives and rebates (focus on energy and/or IRA)

WHAT IS FOCUS ON ENERGY®?



- Wisconsin utilities' statewide program for energy efficiency and renewable energy incentives + IRA Home Energy Rebates
- 107 partnering utilities
- Provides financial incentives, education, information, and other resources to encourage participation that leads to increased energy savings and reduced utility bills

ENERGY 101



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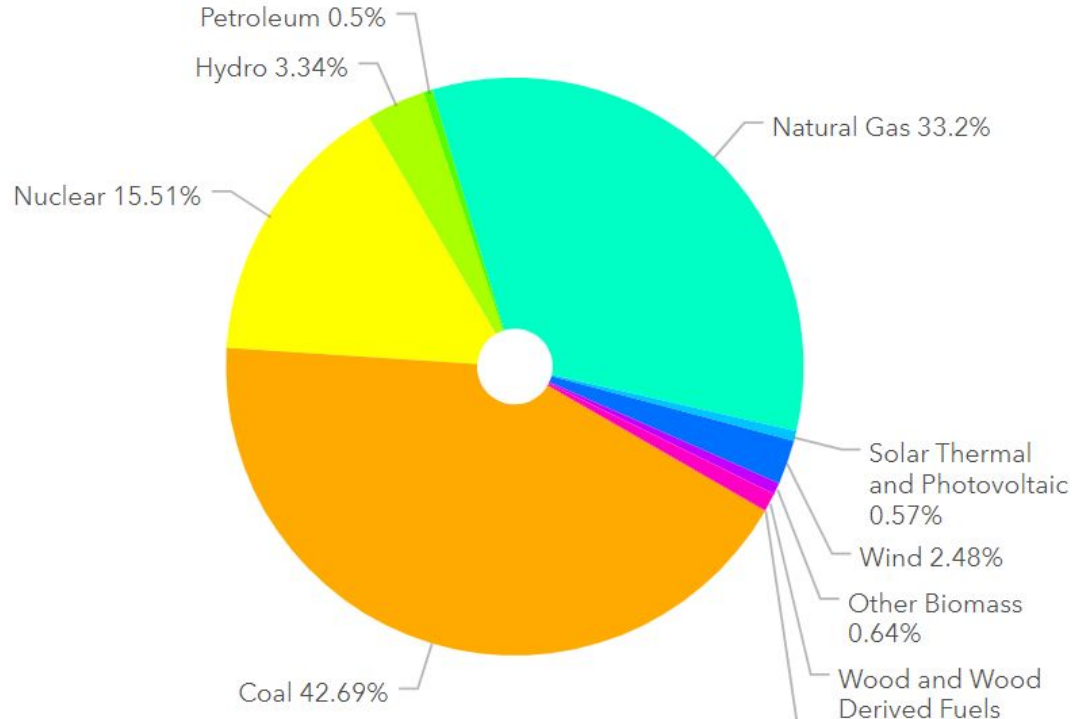
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WHERE OUR ELECTRICITY COMES FROM IN WISCONSIN



Wisconsin Energy Use for Electric Generation by Source 2021



Main Takeaways:

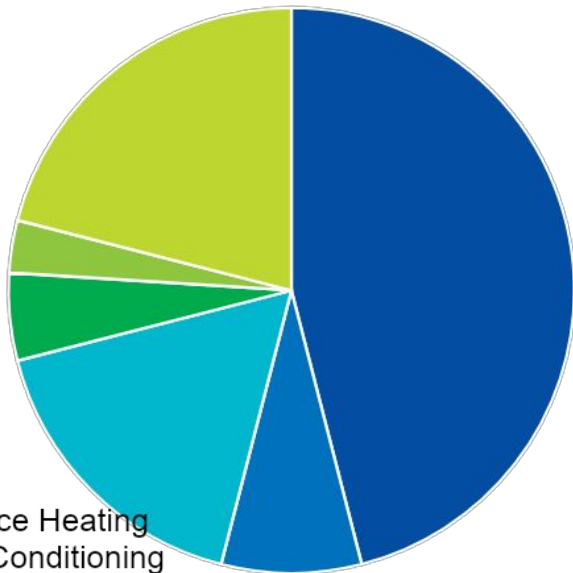
Saving energy saves natural resources.

The cheapest energy is the kind you don't use!

Source: [Public Service Commission of Wisconsin: Wisconsin Energy Statistics](#)

ENERGY USE BY END-USE: US HOMES, 2015

Energy Use by End Use - Average Single Family Home

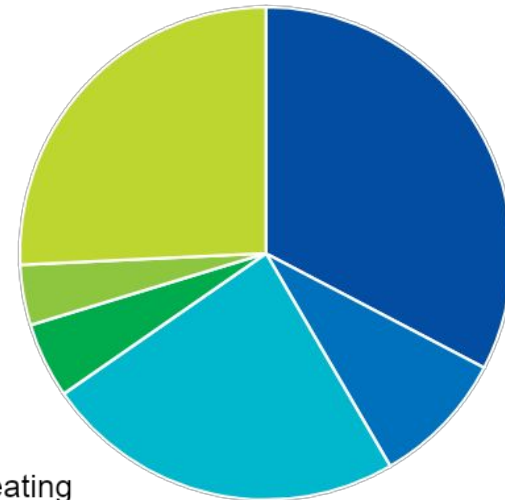


Main Takeaways:

Saving energy for heating and cooling your home / water have the biggest impact.

Apartments use less energy – especially for heating.

Energy Use by End Use - Average Apartment



- Space Heating
- Air Conditioning
- Water Heating
- Lighting
- Refrigeration
- Other

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- Air Conditioning
- Water Heating
- Lighting
- Refrigeration
- Other

EASY HOME IMPROVEMENTS



- Get a **free energy-saving pack** from Focus on Energy!
- **Change all lights to LEDs** + turn off as you leave rooms.
- **Thermostats** can save you big:
 - When home:
 - Set to 78+°F in the summer. Use fans as much as possible.
 - Set to 68-°F in the winter, down to 65° F to sleep. Wear sweaters, long underwear.
 - When away:
 - Set to 85°F in the summer.
 - Set to 60°F in the winter.
- **Use power strips or unplug** electronics to stop "vampire energy."
- Use inexpensive **caulk** around windows and doors. **Weatherstrip** doors.
- Use your **shades**: block out direct sunlight in summer, but let it in during winter.
- **Save hot water** with pipe insulation + low flow water fixtures
- **Small behaviors add up – estimated 16-20% savings.** ([IEA](#))
- Source: www.energy.gov/save/renters

ENERGY AUDITS – WHY YOU NEED ONE!



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ENERGY AUDIT



- **Step 1: Consider an Energy Assessment**

- Cost: ~\$500 - \$800
- Benefits: Calculated energy savings for your home, contractor quotes, + higher Focus on Energy rebates
- Incentive: Federal tax credit up to \$150

- **Step 2: Insulation & Air Sealing**

- Cost: ~\$2,000 - \$4,000 for the average home
- Benefits: A more comfortable home, less noise, lower bills, less pollen and dust, humidity control, and fewer ice dams
- Incentives: (next slide)

INSULATION & AIR SEALING INCENTIVES

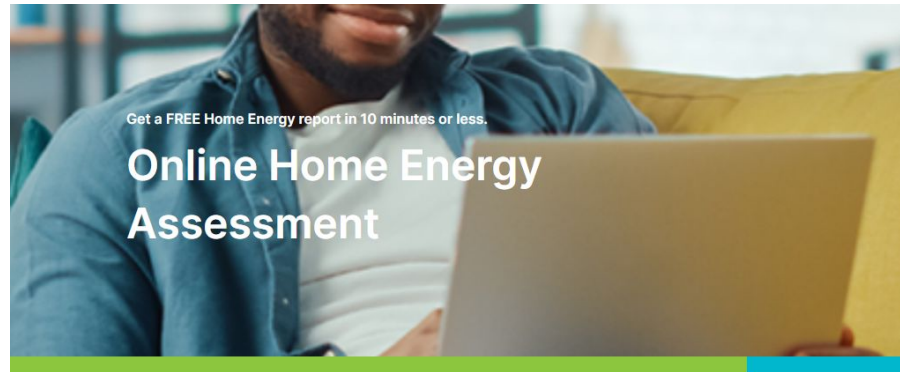


Item	Federal Tax Credit (30% of project cost, up to cap listed below)	2023 Focus on Energy Rebate
Insulation	Up to \$1,200	Standard Up to \$1,875 Income-Qualified* Up to \$2,550
Home Energy Audit	Up to \$150	N/A
Windows & Skylights <i>(Must meet ENERGY STAR® Most Efficient criteria)</i>	Up to \$600	N/A
Exterior Doors	Up to \$250 per door \$500 annually	N/A

FREE ONLINE HOME ASSESSMENT TOOL



- Easy, free, only takes ~15 minutes
- Great first step before getting a professional home energy audit



<https://focusonenergy.com/home-assessment>

FIND A TRADE ALLY (CONTRACTOR) TOOL



Home Business

Search by Zip Code Select a Distance

Enter Zip Code Entire State

— OR —

Search Business Name

Enter Business Name

What service do you need?

Home Energy Assessment

Languages Spoken

Spanish

Find a business certified as:

Minority Business Enterprise (MBE)
 Women-Owned Business Enterprise (WBE)
 Disabled Veteran Business (DVB)

Search

Close Search Filters

Wulf Bros Inc
126.3 miles away
2613 S Bay Shore Dr Unit 1
Sister Bay, WI 54234
(920) 845-2525
andys@wulfbrothers.com
http://www.wulfbrothers.com
View Profile

Edgeline LLC
101.7 miles away
921 Alabama Ct
Sturgeon Bay, WI 54235
(920) 495-3343
edgelinellc@gmail.com
View Profile

Lake Michigan Wind & Sun
95.9 miles away
1015 County Road U
Sturgeon Bay, WI 54235
(920) 743-0456
info@windandsun.com

Innovative Led Solutions
99.7 miles away
111 S Fulton Ave
Sturgeon Bay, WI 54235
(920) 255-4117
mike.cuculi@innovativeledsolutions.com
https://www.innovativeledsolutions.com

Eagle Mechanical Inc
99.6 miles away
850 S Lansing Ave
Sturgeon Bay, WI 54235
(920) 746-9200
bguilette@eaglemiwi.com
http://www.eaglemiwi.com

Support

APPLIANCE UPGRADES

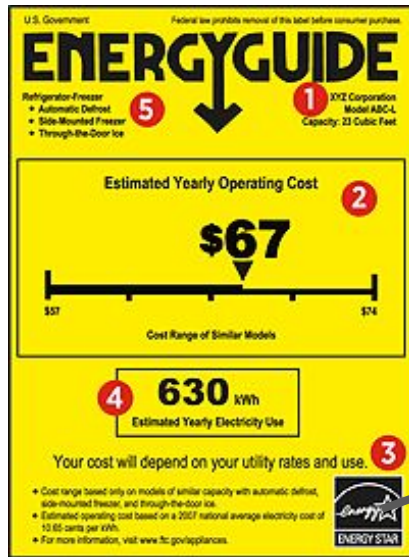


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IS YOUR EQUIPMENT EFFICIENT?

- ENERGY STAR label vs EnergyGuide label

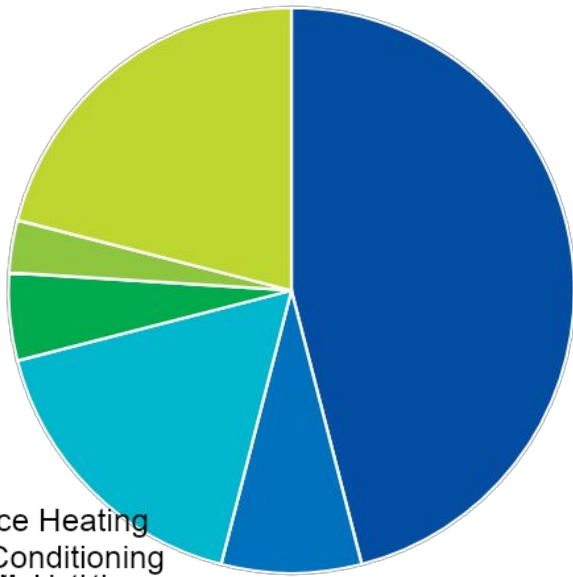


This logo means the appliance IS efficient.

This label shows the cost and relative efficiency, so you can compare. Does NOT guarantee it is efficient.

ENERGY USE BY END-USE: US HOMES, 2015

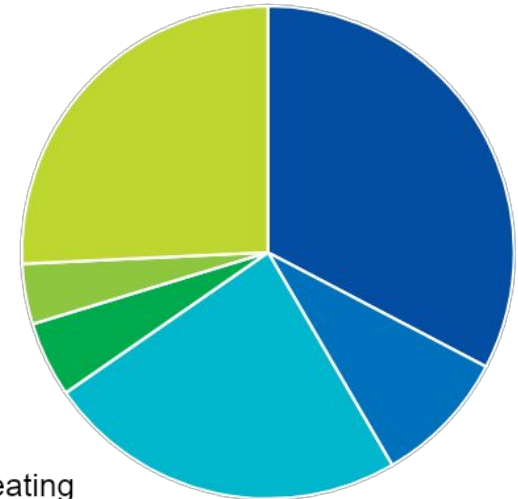
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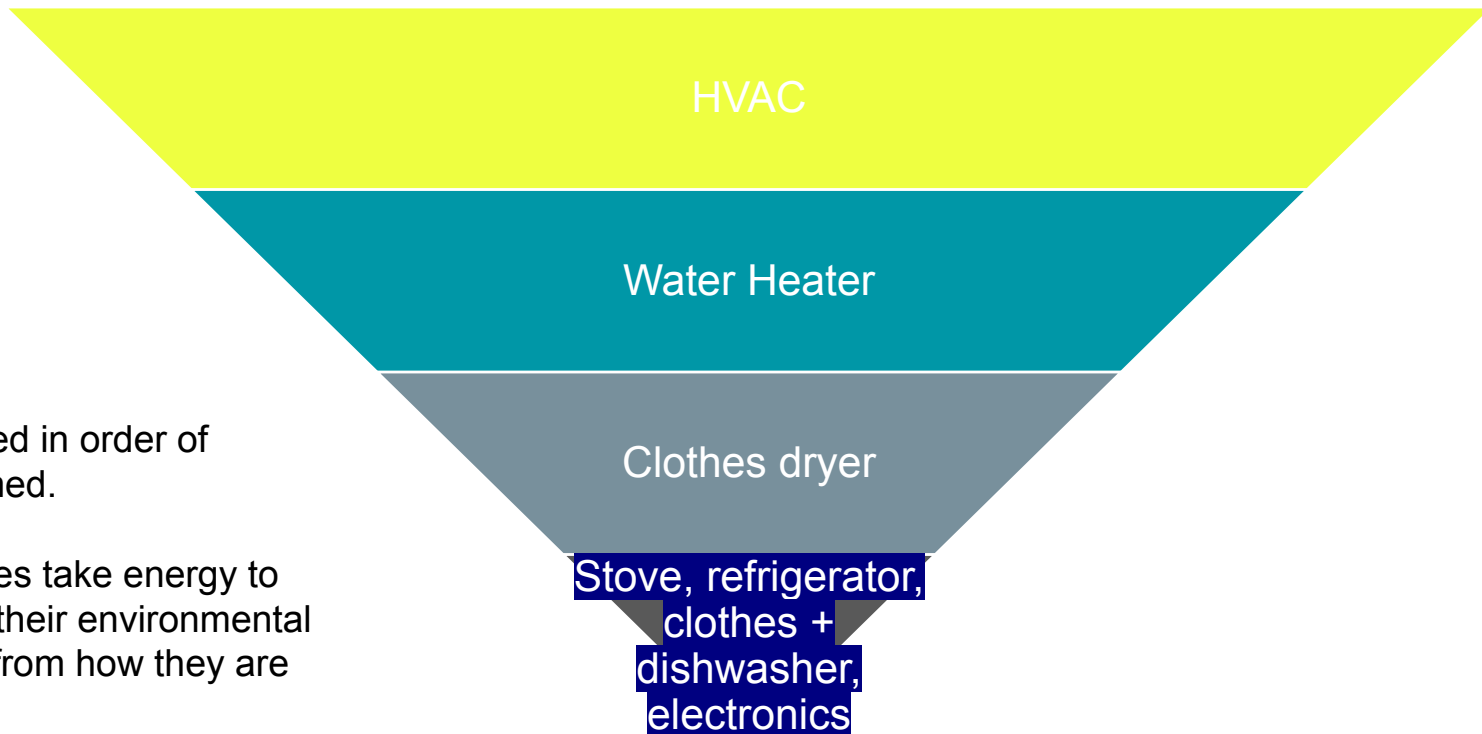
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REPLACE BEFORE THEY FAIL: A GUIDE TO APPLIANCE REPLACEMENT



Appliances listed in order of energy consumed.

While appliances take energy to make, most of their environmental impact comes from how they are used.

INCENTIVES AND REBATES

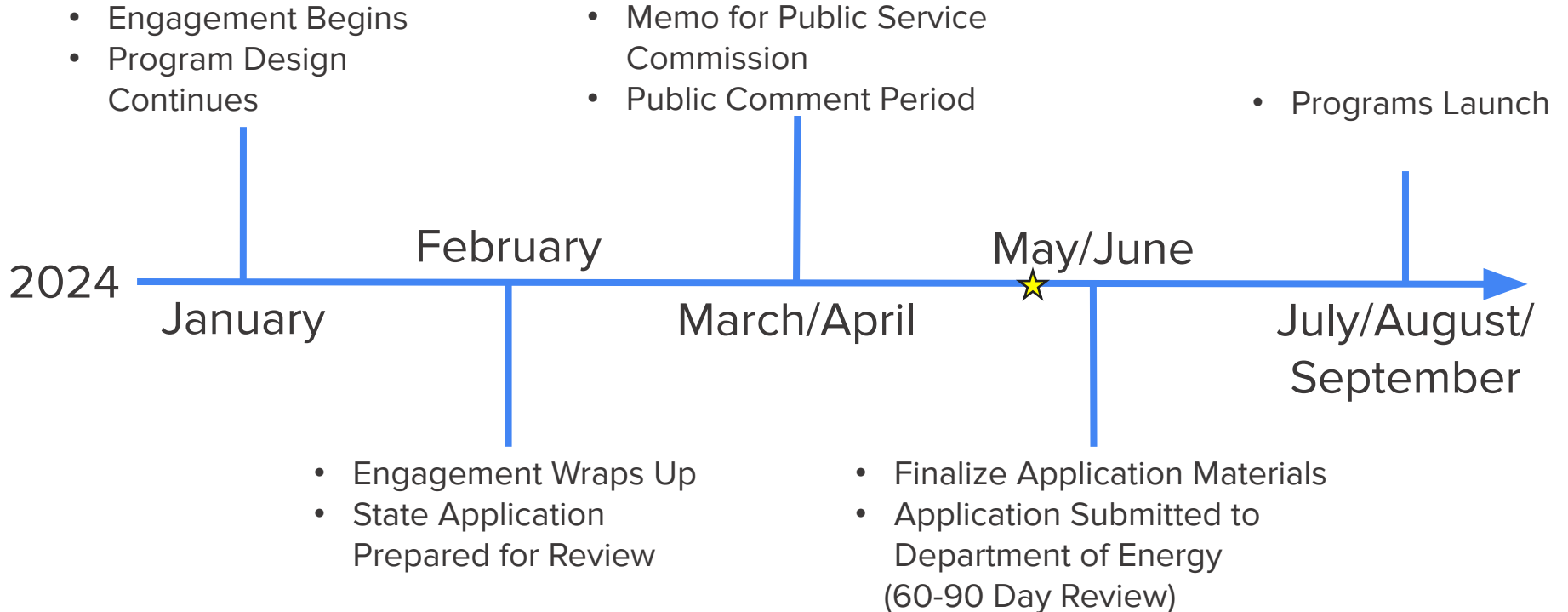


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IRA HOME ENERGY REBATE PROGRAMS TIMELINE



STACKING INCENTIVES



- (State) Focus on Energy
 - Reduces cost, upfront or after project completion
- (Federal) IRA Home Energy Rebates
 - Reduces cost, upfront or after project completion
- (Federal) Tax Credits
 - Returns money after taxes filed

FOCUS & TAX INCENTIVES



Important Dates: Instant discounts will be available starting:

June 1, 2024, instant discounts* begin for qualifying residential-grade heating and cooling equipment. *Incentive levels may change.

Last day to **apply** for a traditional rebate on residential HVAC equipment is **June 30, 2024.**

Item	Federal Tax Credit (30% of project cost, up to cap listed below)	2024 Focus on Energy Rebate
Air Source Heat Pumps	Up to \$2,000	Up to \$1,000
Geothermal Heat Pumps	30% of total project cost	Up to \$1,000
Central Air Conditioners ENERGY STAR®	Up to \$600	N/A
Furnaces (Natural Gas)	Up to \$600 Minimum 97% AFUE	Standard Up to \$150 Income-Qualified* Up to \$550 Minimum 95% AFUE
Furnaces (Oil)	Up to \$600	N/A
Hot Water Boilers (Natural Gas) ENERGY STAR®	Up to \$600	Standard Up to \$500 Income-Qualified* Up to \$700
Hot Water Boilers (Propane, Oil)	Up to \$600	N/A
Biomass Stoves/Boilers	Up to \$2,000	N/A
Heat Pump Water Heaters	Up to \$2,000	Instant discount available through participating Trade Allies
Water Heaters (Natural Gas)	Up to \$600 Requires ENERGY STAR® v5.0 effective 4/18/23	Instant discount available through participating Trade Allies

IRA HOME ENERGY REBATES



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IRA HOME EFFICIENCY REBATE PROGRAM (HOMES)



Type of Home Energy Project	Households below 80% Area Median Income (AMI)	Households between 80 and 150% AMI	Households above 150% AMI ²
Home Efficiency Project with at least 20% predicted energy savings	80% of project costs up to \$4,000 ¹	50% of project costs up to \$2,000 (maximum of \$200k for a multifamily building)	
Home Efficiency Project with at least 35% predicted energy savings ²	80% of project costs up to \$8,000 ¹	50% of project costs up to \$4,000 (maximum of \$400k for a multifamily building)	

*Program details subject to change pending decisions from WI Public Service Commission and US DOE.

Information presented here is based on US DOE guidance.

IRA HOME ELECTRIFICATION AND APPLIANCE REBATE (HEAR) PROGRAM



Type of Home Energy Project	Households below 80% Area Median Income (AMI)	Households between 80% and 150% AMI	Households above 150% AMI
Home Electrification Project Qualified Technologies (only households with an income below 150% AMI are eligible)	100% of project costs up to \$14,000	50% of project costs up to \$14,000	Not Applicable
	ENERGY STAR® electric heat pump water heater	Up to \$1,750	
	ENERGY STAR® electric heat pump for space heating	Up to \$8,000	
	ENERGY STAR® electric heat pump clothes dryer	Up to \$840*	
	ENERGY STAR® electric stove, cooktop, range, oven	Up to \$840*	
	Electrical load service center (electrical panel)	Up to \$4,000	
	Electrical Wiring	Up to \$2,500	
	Insulation, air sealing, ventilation	Up to \$1,600	

*Program details subject to change pending decisions from WI Public Service Commission and US DOE. Information presented here is based on US DOE guidance.



Bringing Solar Education & Group Buying
to Midwest Communities since 2013

About Us:

Midwest Renewable Energy Association (MREA)

- Promotes renewable energy, energy efficiency, and sustainable living through education and demonstration.
- Founded in 1990, focused around the **Energy Fair**, an event bringing together renewable energy experts, workers, academics and enthusiasts for a weekend of education, networking and fun.
- The MREA created **Grow Solar**, a program that has run over 60 solar group buys across the Midwest since 2013.



midwest renewable energy association



Agenda:

- Benefits of Going Solar
- Solar Basics
- Solar Considerations
- Solar Options & Incentives
- Solar Group Buying
- Getting Ready for Solar



Benefits of going solar

Financial Incentives

Lower Energy Bills

- Installing solar panels reduces monthly energy costs, potentially eliminating them entirely during sunny seasons.

Energy Independence

- Unlike utility companies, your solar panels will never raise their rates! Once you go solar, you lock in your electricity rate for 25+ years.

Home Values

- Zillow has released a report stating that homes with solar panels sell for 4.1% more than homes without solar. (source: *Zillow Economic Research*)
- A study by the NREL found that homes with solar sold faster and for more than equivalent non-solar homes. (source: *NREL (National Renewable Energy Laboratory)*)



Environmental Incentives

The average solar system offsets 260,376 lbs of CO₂ in 25 years



287,672 miles driven by an average passenger vehicle



Switching 4,469 incandescent lamps to LED



Diverting 41 tons of waste from the landfill



Carbon sequestered by 139 acres of forest



CO₂ emissions from burning 129,218 pounds of coal



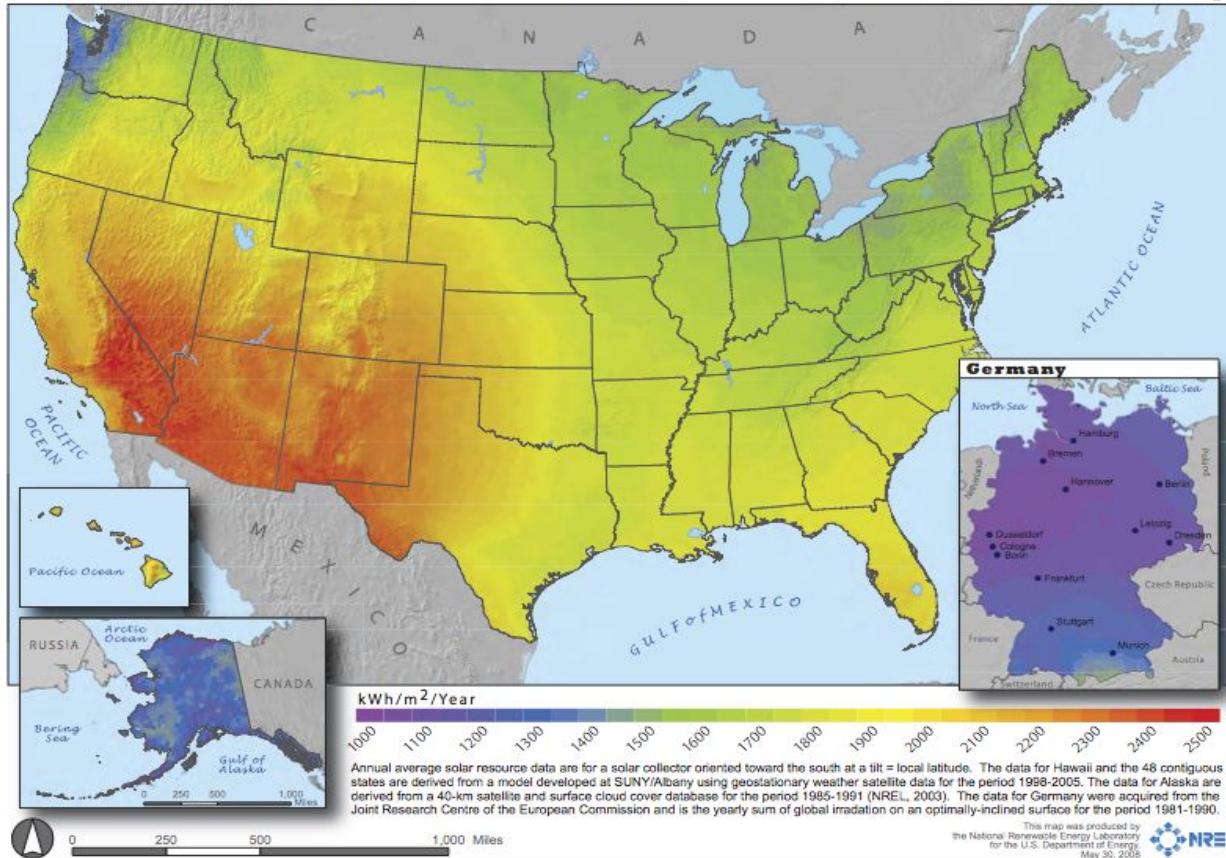
CO₂ emissions from 13,239 gallons of gasoline



Solar Basics

Is there Enough Sunlight?

Photovoltaic Solar Resource : United States and Germany



Solar 101: Sunlight to Electricity!



1

PHOTONS – Sunlight shines on the solar panels

2

PANELS – Solar energy is absorbed by panels to create an electric current

5

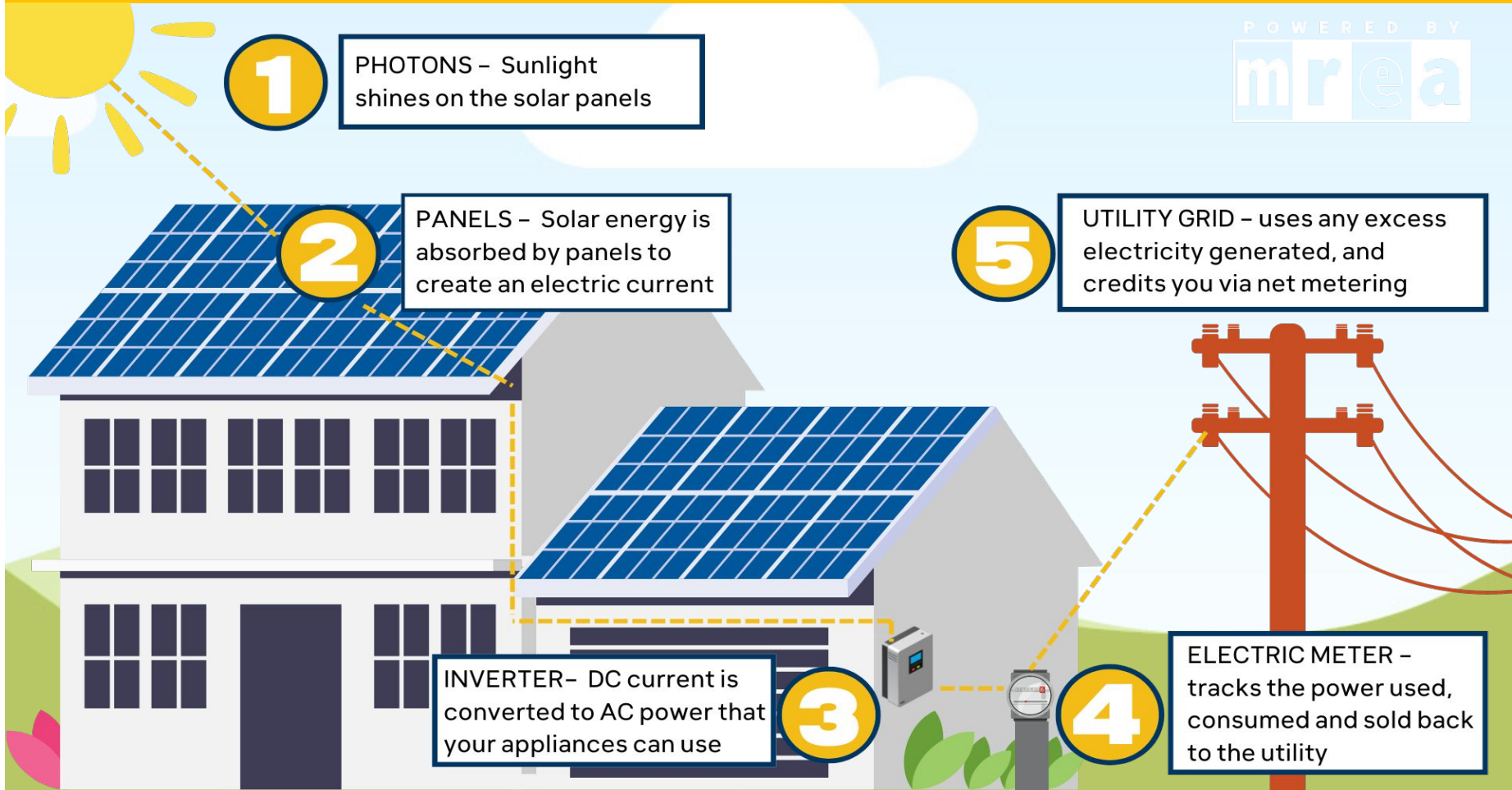
UTILITY GRID – uses any excess electricity generated, and credits you via net metering

3

INVERTER – DC current is converted to AC power that your appliances can use

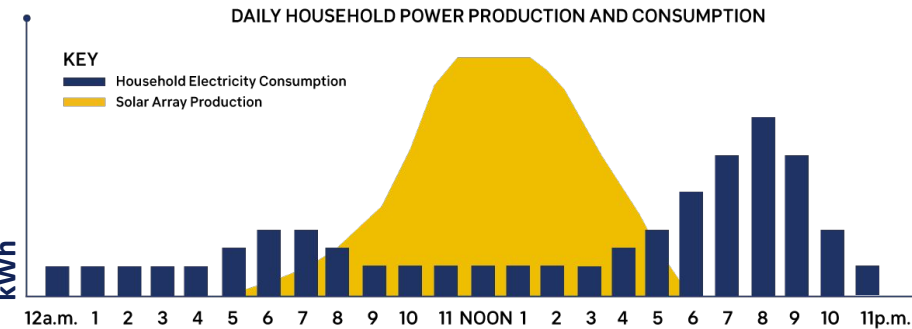
4

ELECTRIC METER – tracks the power used, consumed and sold back to the utility

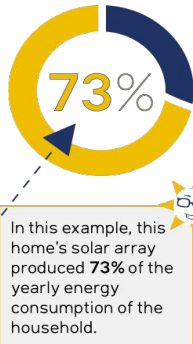
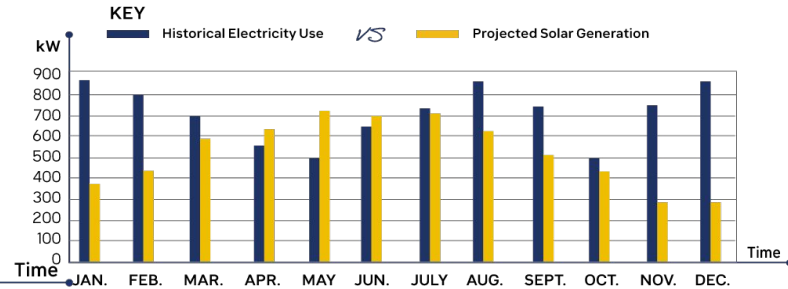


Net Metering: bill credits for electricity sent to the grid

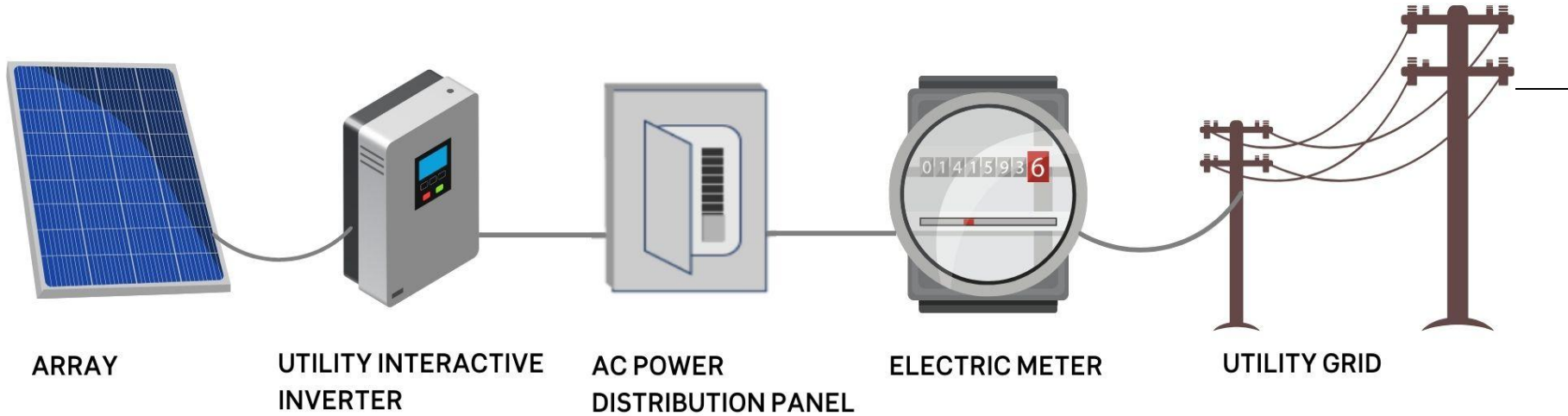
- Any excess electricity produced by your solar system is exported to the utility grid and you receive bill credits, reducing your overall electricity costs.



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



Grid-Tied Systems



GRID-TIED DESIGN

Excess electricity can be delivered to the utility grid, AND you can use electricity from the utility grid when your system doesn't produce enough power (like at nighttime).

Pros:

Least Expensive Solar Option

Allows for Net Metering

Con:

When the grid is down, your solar is down!

Off-Grid Systems

OFF-GRID DESIGN

As tempting as “going off grid” can sound, the price of a large solar array and accompanying battery backup is prohibitive.

Should only be considered for properties with no electrical service at all.

Pro:

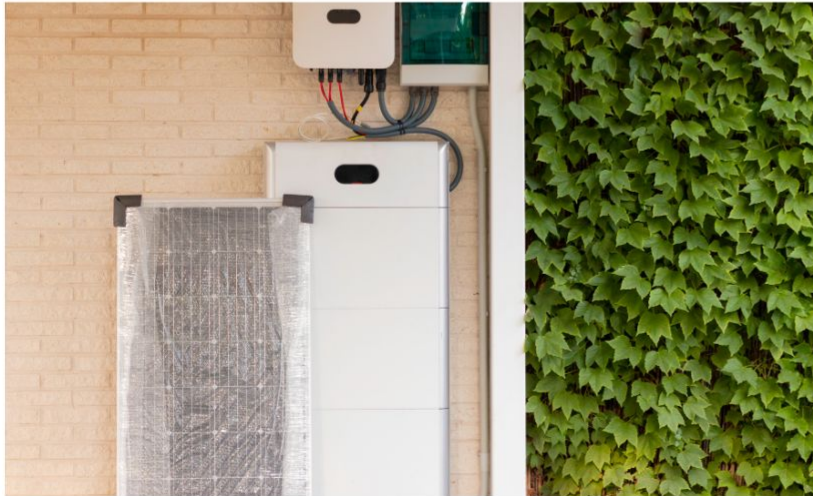
Keep power during outage

Cons:

Extremely pricey

Excessive for most people’s needs.

Lengthy ROI



WHAT ABOUT BATTERY BACKUP?

- Battery backup can be an alternative to generators
- Allows for limited power use during outages
- Batteries are too expensive to be a practical choice for most people, other than those requiring backup power.



Solar Considerations

Roof Mounted System: The most common type of installation.

Used for flat or pitched roofs:

- Typically attached via aluminum railing system.
- Roof penetrations require adequate sealing; installers assume responsibility for roof damage, leaks, mold.

Considerations for roof-mount systems:

- Snow / Hail / Wind Loading
- Roof Condition (age of roof)
- Squirrels



Students configuring a roof-mounted system on MREA's training roof.

Unshaded, south-facing roofs are best for solar:

Solar window: 9am-3pm.

- South-facing sun exposure is ideal.
- East or West-facing roofs also work for solar, but can require 20% more panels.
- Avoid shading: trees, buildings, poles.

Project Sunroof: Mapping Solar Potential.

- Search your home.
- Helpful to see your solar exposure, but pricing estimate may be inaccurate
- Talk to an installer for accurate pricing

Visit www.google.com/get/sunroof



Screenshot of Google's Project Sunroof.

Ground Mounted System: Option for Big Yards or Shaded Roofs

Use for larger arrays and for properties where roof is shaded.

- Require a large, un-shaded area and trenching
- Must be anchored to the ground and involves erecting a new structure. Therefore more expensive.

Considerations for ground mount systems:

- Easy to clean and remove snow/dust
- Easier to orient the array southward to get the optimal solar window
- Good option for homeowners with larger properties (such as many Door County folks!)



Every Home Is Different

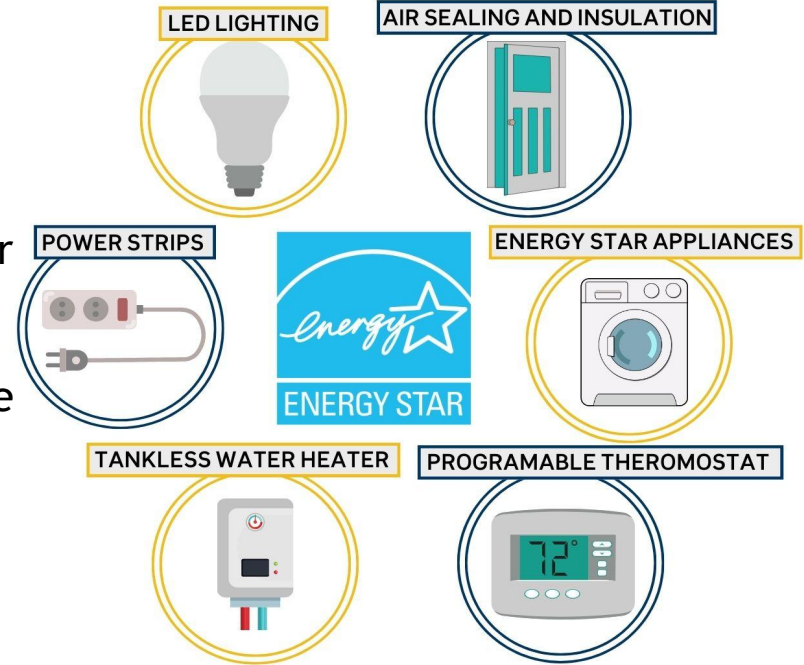


Your PV System Is Tailor-Made To Fit Your Needs and Goals

- System Design and Size
- Multiple PV Arrays
- Panel Type
- Inverter Type
- Complexity of Electrical Interconnection
- Age and Type of Roof
- Slope and Height of Roof
- Critter Guard
- Smart Circuit Breaker, i.e SPAN
- EV Charger
- Energy Storage

Invest in Energy Efficiency!

- Energy efficiency investments have a 3:1 return on investment
- Getting a home energy audit can help you save money right away, and make going solar cheaper too!
- There are federal and local resources that make energy audits and efficiency improvements more affordable.



REMEMBER:

"THE CHEAPEST ENERGY IS THE ENERGY YOU NEVER USE IN THE FIRST PLACE!"





Solar Options & Incentives

Current incentives can reduce total costs!

- **30% Federal Tax Credit**
 - Includes labor costs, system installation, interconnection wiring, energy storage system
 - The home must be owned by the taxpayer but does not have to serve as the principal residence
 - This tax credit can roll over to future years if the amount is greater than taxes owed.
- **Focus On Energy Rebate:**
 - Residential customers can receive up to \$300
 - Customers in specific rural ZIP codes can receive additional \$500 (Door County included!)
- Utility Net Metering credits help you pay back your system faster!

The image shows two tax forms. The top form is Form 5695, Residential Energy Credit, which includes instructions to go to www.irs.gov/Form5695 and attach to Form 1040 or Form 1040NR. The bottom form is Form 1040, U.S. Individual Income Tax Return, for the year 2018. It includes sections for filing status, dependents, and preparer information. The forms are partially filled out with placeholder text and checkboxes.

Paths for Solar Adoption:

- **Purchase the panels:**
 - Cash and/or finance
 - Best option for long-term ownership
- **Community Solar:**
 - Option for people who can't install solar on their own property
 - Utility policies in WI often do not allow community solar
- **Leasing or Power Purchasing Agreements (PPAs):**
 - Common nationwide, rare in Wisconsin
 - Considering a lease? Check the contract and ask questions. Be careful!
 - Never sign a solar lease without first exploring your ownership options



Typical installation



POWERED BY
mrea

Pictured above is a 18 module, or 7.2 kW DC, solar array.
Estimated annual solar production = **9,575** kWh

Photo Credit: MREA

Putting it all together - Financial Benefits:

EXAMPLE

7.2 kW Residential Roof System

Starting Base Price: \$3.00/Watt (\$21,600)	\$24,405
Site-Specific Adders:	
- Roof Slope (\$.15/W) (angle exceeding 30°)	+ \$975
- American Made Modules (\$.15/W)	+ \$1080
- Critter Guard	+ \$750
Final Quoted Price	\$24,405
Tax Credit (30%)	- (\$7,322)
Focus on Energy Rebate	- (\$300)
Net Cost	\$16,783



Estimated Year 1 Solar production = 9,575 kWh
 Year 1 Utility \$/kWh = \$.13/kWh

Payback = Net Cost / Year 1 electric bill saving
 = \$1,245

Payback Period = ~13 years

Cash Gained Over 25 Years = \$14,940

Assumes electricity rate remains the same



\$3.00/W is the current market price for northeast WI
 (Grow Solar program base price would be lower)

(Market price according to Energy Sage)

Market Pricing (Estimate)	Group-buy Base Pricing (Estimate)
~\$3.00/W	~\$2.85/W
\$21,600	\$20,520



*Getting Ready for
Solar*

Things to consider before speaking with an installer.

- Does your roof have good solar exposure? South-facing roof?
- Do you anticipate replacing your roof within 10 years?
- Is your home energy efficient?
 - More efficient home=smaller system needed=cheaper
- What “adders” might be needed for your project?
 - Ground mount? Critter Guard? New electric panel? EV charger?

Calculate your Energy Usage

Knowing your energy usage is the most important step in properly sizing your solar system. Gather past bills from as many years as possible to share with installers.



Image Credit: MREA

Due Diligence

Shop Around

- Get multiple quotes and ask your solar rep questions.
- Favor installers with NABCEP certifications.
- Use directories from organizations like SEIA, NABCEP and MREA to find reputable companies.
- Ask friends and neighbors about their installers. Read online reviews and Better Business Bureau pages.

Avoid Scams

- Choose a local solar installer with a proven record whenever possible. Be very cautious around offers from out-of-state companies.
- Favor companies that perform in-person site assessments.
- If it seems too good to be true, it is!





Solar Group Buying

Solar Group Buy programs bring buyers together to lower costs

How does a Solar Group Buy work?

- Host a series of free “Solar Power Hours” to educate communities about the benefits and affordability of Solar PV.
- Vetting process to competitively select qualified installers for the program.
- Interested participants sign up through the online form to further evaluate Solar PV for their home or business.
- Participants pool their buying power to secure significant discounts that make installing solar more affordable.



Sheila went solar through a Group Buy in Metro East.



When there's a massive solar energy spill...
it's known as "a really nice day" ☀️



Learn More about
solar group buys:
GROWSOLAR.ORG



Attend MREA's flagship event:
THE ENERGY FAIR

SATURDAY, JUNE 22
CUSTER, WI

Seminars • Demonstrations • Networking • Fun

SCAN CODE OR VISIT WWW.THEENERGYFAIR.ORG

Energy - Making it and Saving it

Becoming a lower, better energy user

1. *Reduce your power use*
 - energy audit
 - better appliances, heat pumps, etc
2. *Switch to solar power*
 - on your own
 - on your own in a group buy
 - “community solar,” working with Utility



Energy - Making it and Saving it

Community Solar

- Benefits:
 - lower cost, easier install
- *CCDC Task Force* created to explore future potential

Community Solar in (1) Sturgeon Bay... and (2) northern Door

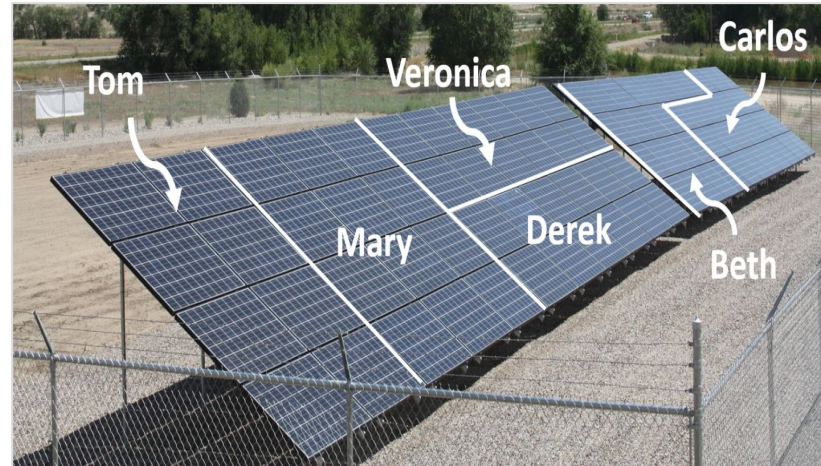
- Next step: Community education meetings: June, August
- Interested? Volunteer to help?



Energy - Making it and Saving it

Community Solar Example: Alliant Energy, Fond Du Lac

- Pay \$337 per “block”
- Initial home cost: \$4,000 (*for example*)
- Receive those panels’ output at 40% lower rate: \$0.08 / kWh
- Investment Payback: 10 years
- Reduced cost power for 20 years



In Conclusion...

Where do we go from here?

- *Take ideas from this forum*
- *Talk to us!*
- *Sign up... take action*
 - *in your home*
 - *on how you power your home*



Earth Day - *THANK YOU!*



**CLIMATE CHANGE
COALITION**
OF DOOR COUNTY

