Welcome to Our Solar Power Hour!

GROW SOLAR

LINN + JOHNSON COUNTIES

We will begin our presentation shortly and start with a brief introduction to Zoom

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LINN + JOHNSON COUNTIES

mrea
midwest renewable energy association

Johnson County

Johnson County Conservation

LINN COUNTY

LCED
LINN CLEAN ENERGY DISTRICT

JCED

Johnson Clean Energy District

CITY OF IOWA CITY
UNESCO CITY OF LITERATURE

Matthew 25

Public Health
Prevent. Promote. Protect.
Linn County, Iowa

The Nature Conservancy

AMERICORPS ENERGY & COMMUNITY

CEDAR RAPIDS
City of Five Seasons®

Thank you to our Co-hosts!

LINN COUNTY

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Public Health
Prevent. Promote. Protect.
Linn County, Iowa

Johnson County

Johnson County
Conservation

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www.LinnJohnson.GrowSolar.org

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Johnson County Conservation

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The Nature Conservancy

www.cedar-rapids.org &
www.nature.org/en-us/about-us/where-we-work/united-states/iowa/

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CORALVILLE

www.coralville.org

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Johnson Clean Energy District

johnsoncleanenergydistrict.org

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LCED

LINN CLEAN ENERGY DISTRICT

linncounty.energydistrict.org

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North Liberty

northlibertyiowa.org

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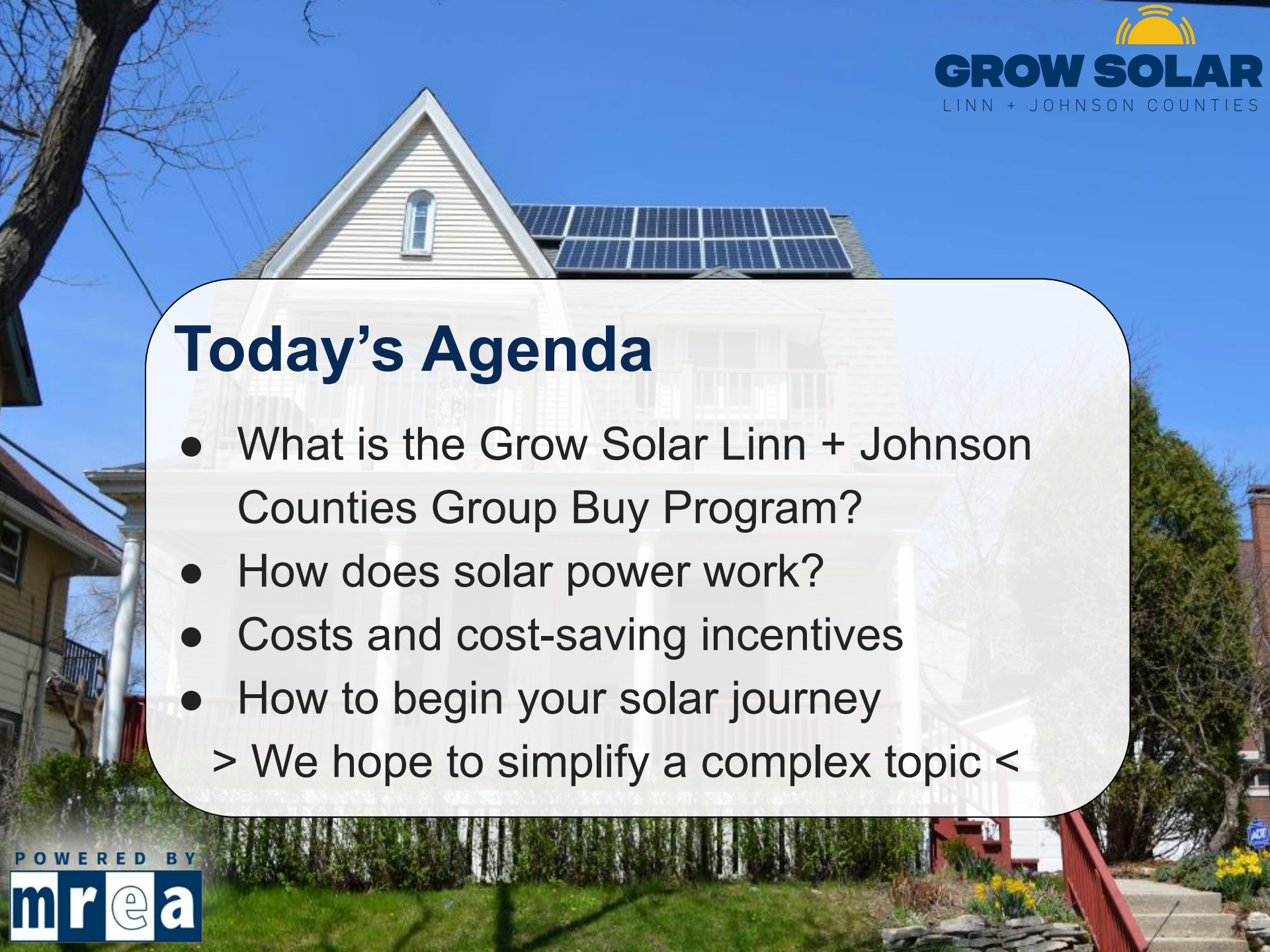

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Today's Agenda

- What is the Grow Solar Linn + Johnson Counties Group Buy Program?
- How does solar power work?
- Costs and cost-saving incentives
- How to begin your solar journey

> We hope to simplify a complex topic <

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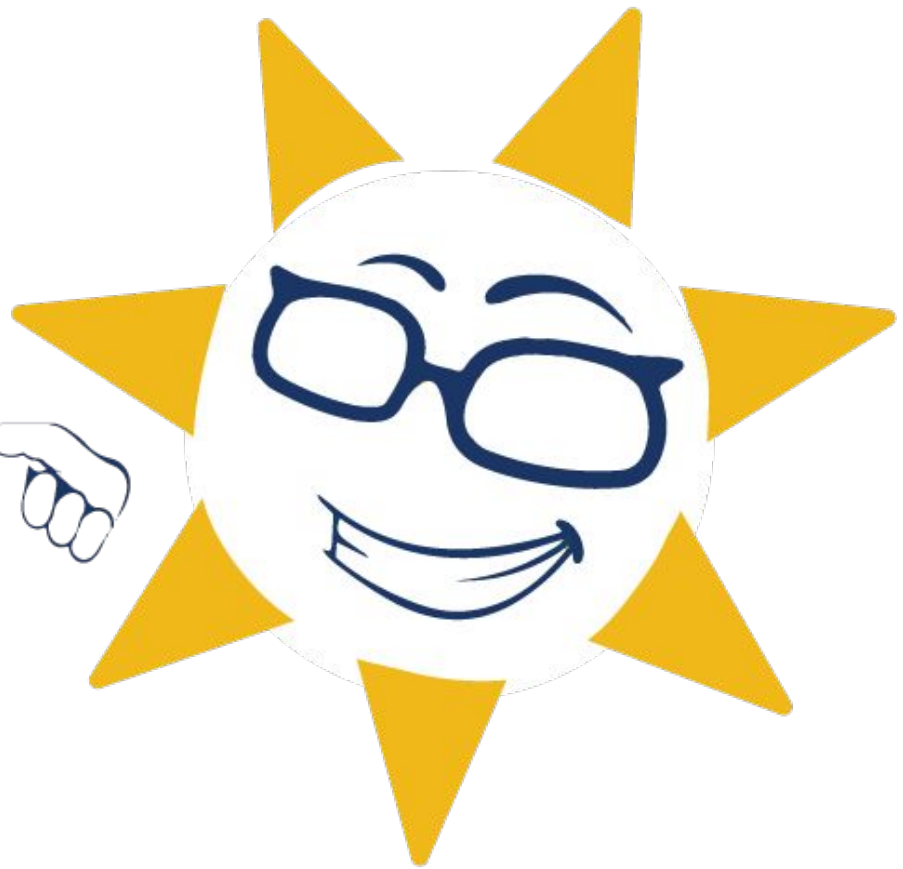
It's time for a poll!



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Why are we here?
To lead in creating more sustainable communities by making solar simple.
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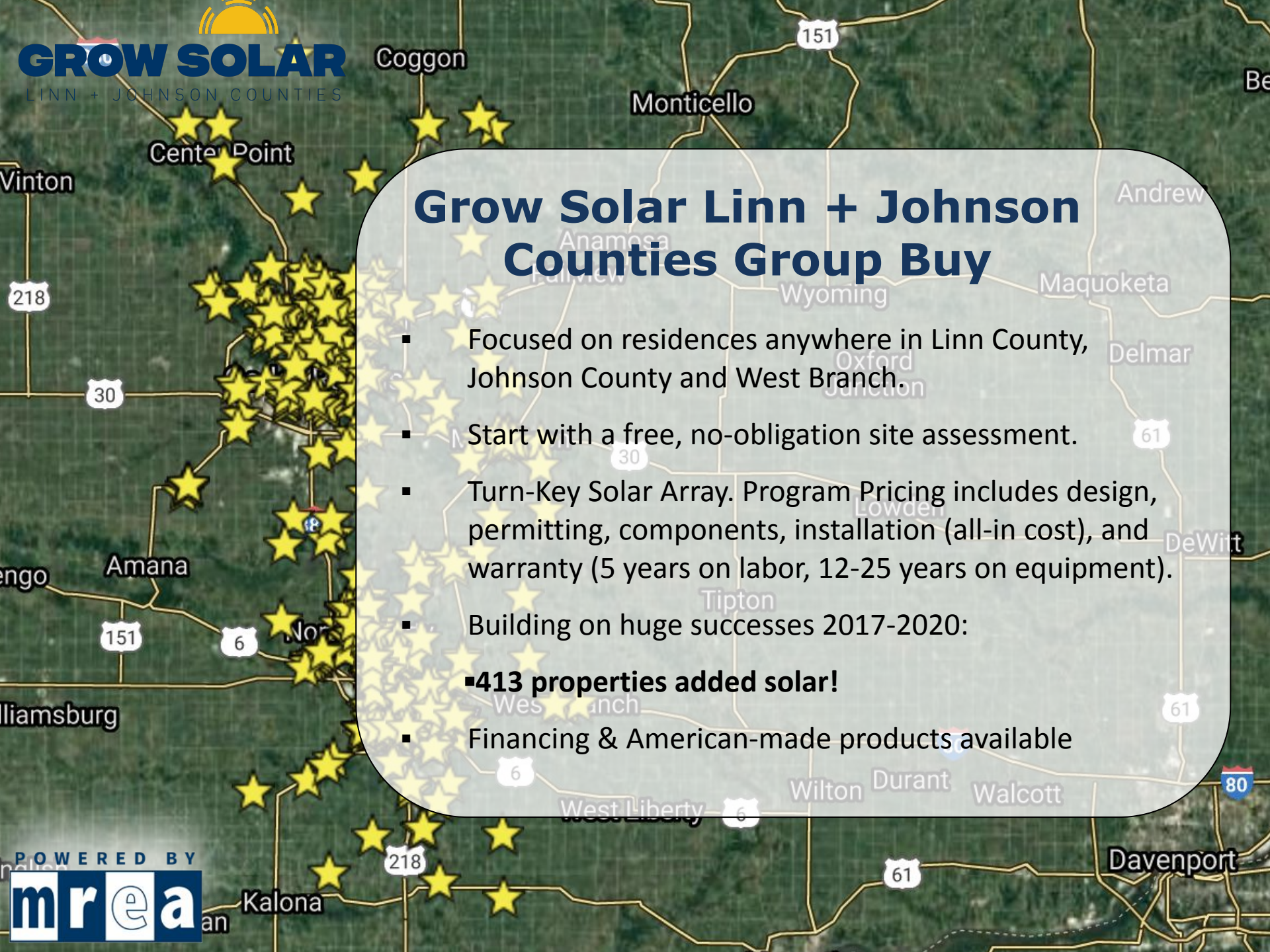
What is a group buy?
Lower Prices through:
1. Competitive Contractor Selection
2. Community-Led Outreach
3. Limited-time Offering
4. Strong Customer Education
5. Economy of Scale
Everyone wins.
Sudbury
Manitoulin Island
St Cloud
Minneapolis
Green Bay
Traverse City
Lake Michigan
Lake Huron
Grand Rapids
Detroit
Ann Arbor
Lake Erie
Cleveland
Akron
Fort Wayne
Toronto
Mississauga
IOWA
Des Moines
Peoria
ILLINOIS
INDIANA
OHIO
Pittsburgh
Columbus
Indianapolis
Bloomington
Cincinnati
Kansas City
Olathe
MISSOURI
Louisville
Evansville
Lexington
WEST VIRGINIA
KENTUCKY
Mark Twain National Forest



Grow Solar Linn + Johnson Counties Group Buy

- Focused on residences anywhere in Linn County, Johnson County and West Branch.
- Start with a free, no-obligation site assessment.
- Turn-Key Solar Array. Program Pricing includes design, permitting, components, installation (all-in cost), and warranty (5 years on labor, 12-25 years on equipment).
- Building on huge successes 2017-2020:

413 properties added solar!

- Financing & American-made products available

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midwest renewable energy association

Who is the MREA?

- Founded in 1990 with the first Energy Fair
- Promote renewable energy through educational courses in solar PV, solar thermal and small wind
- 42 Solar group buys, 1,900 properties, 14,000 kW of solar

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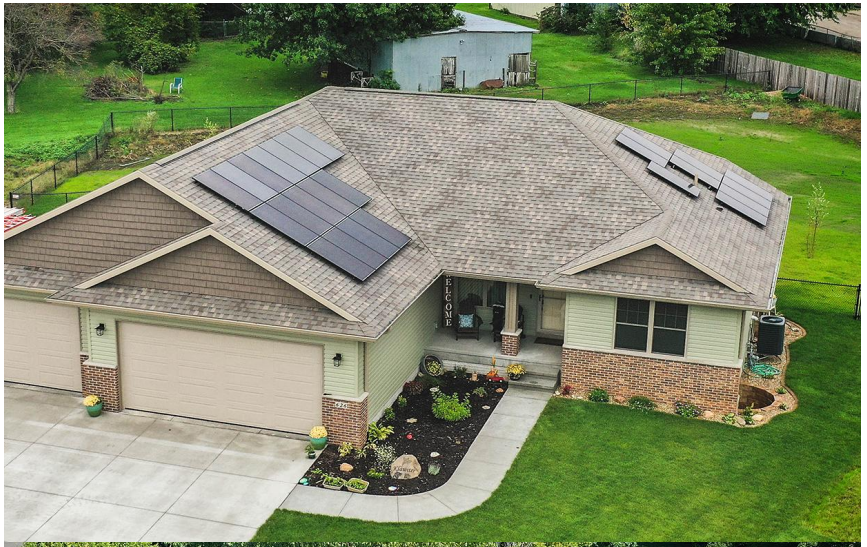
INSTALLER PROFILE

- **Eagle Point Solar** will custom design your solar array based on your last 12 months of kWh consumption on your electric utility bill. Eagle Point Solar will submit the application to interconnect to your utility company.

- Eagle Point Solar and SiteGen Solar will construct your solar array in conjunction with NABCEP certified designers/installers. No subcontractors will be utilized on any projects in this group buy.

- Your solar array will be connected to your home, business, or farm, by Paulson Electric, and Eagle Point Solar's Master Electricians.

- This process is a turnkey solution for everyone.



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Eagle Point SOLAR
Bringing you the SUN®

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How Does Solar Work?

Part 2 of 5

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

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.

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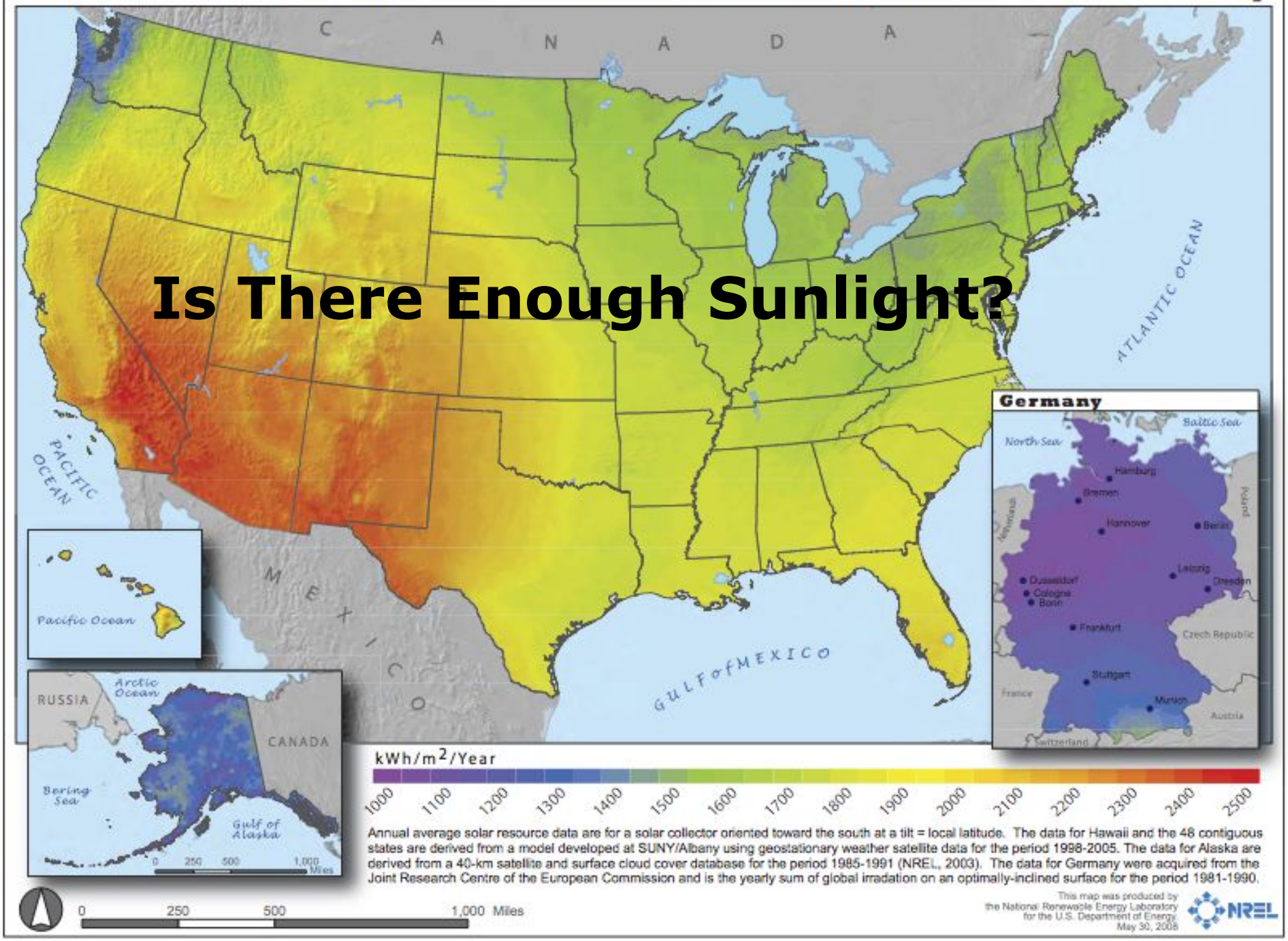
Photovoltaic Solar Resource : United States and Germany



Annual average solar resource data are for a solar collector oriented toward the south at a tilt = local latitude. The data for Hawaii and the 48 contiguous states are derived from a model developed at SUNY/Albany using geostationary weather satellite data for the period 1998-2005. The data for Alaska are derived from a 40-km satellite and surface cloud cover database for the period 1985-1991 (NREL, 2003). The data for Germany were acquired from the Joint Research Centre of the European Commission and is the yearly sum of global irradiation on an optimally-inclined surface for the period 1981-1990.

This map was produced by the National Renewable Energy Laboratory for the U.S. Department of Energy
May 30, 2008
NREL

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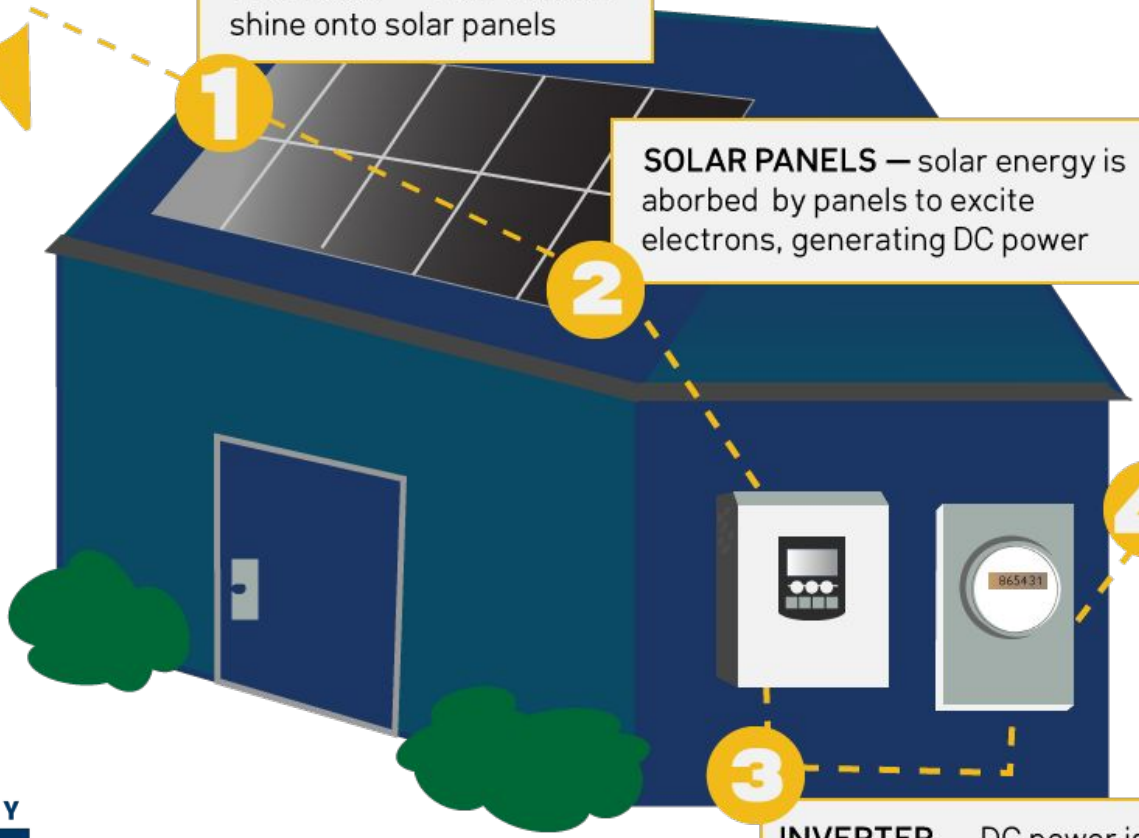
Configuration: How It Works...



PHOTONS — from the sun shine onto solar panels

1

SOLAR PANELS — solar energy is aborbed by panels to excite electrons, generating DC power

2

3

INVERTER — DC power is converted to AC power, which is comonly used in homes and businesses

4

ELECTRIC METER — tracks the power produced, consumed, and sold back to your utility

5

UTILITY GRID

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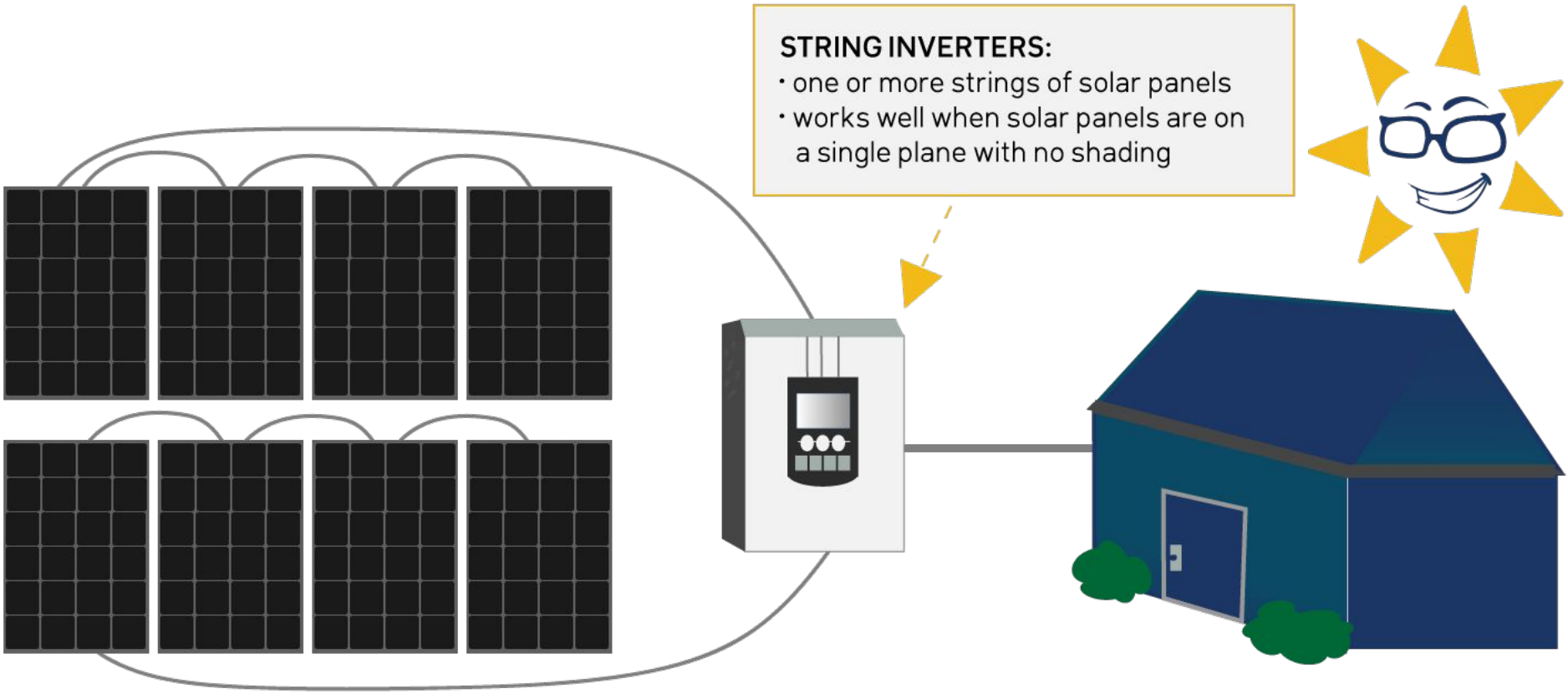
Inverter: The heart of the solar array



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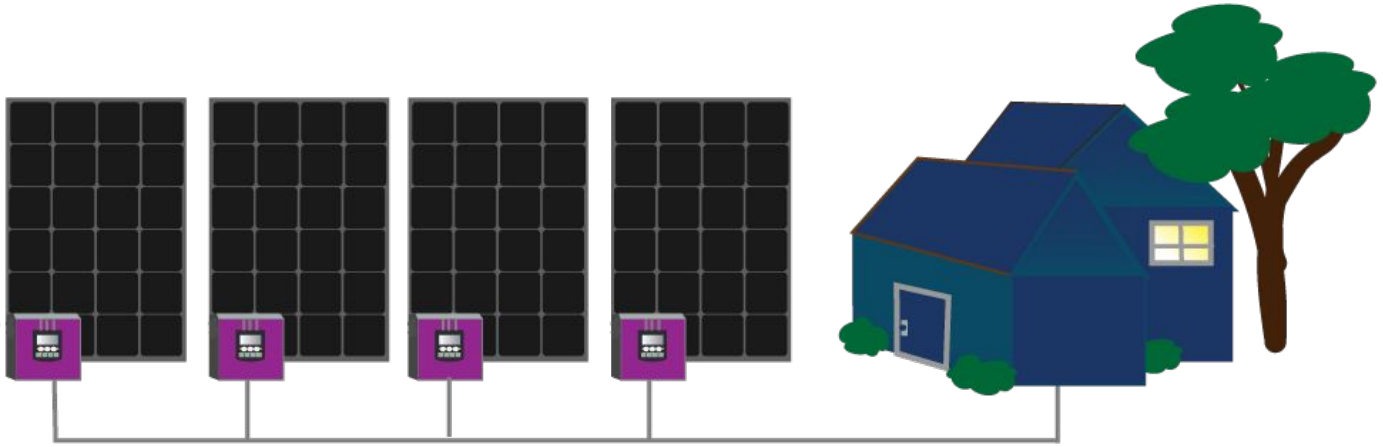
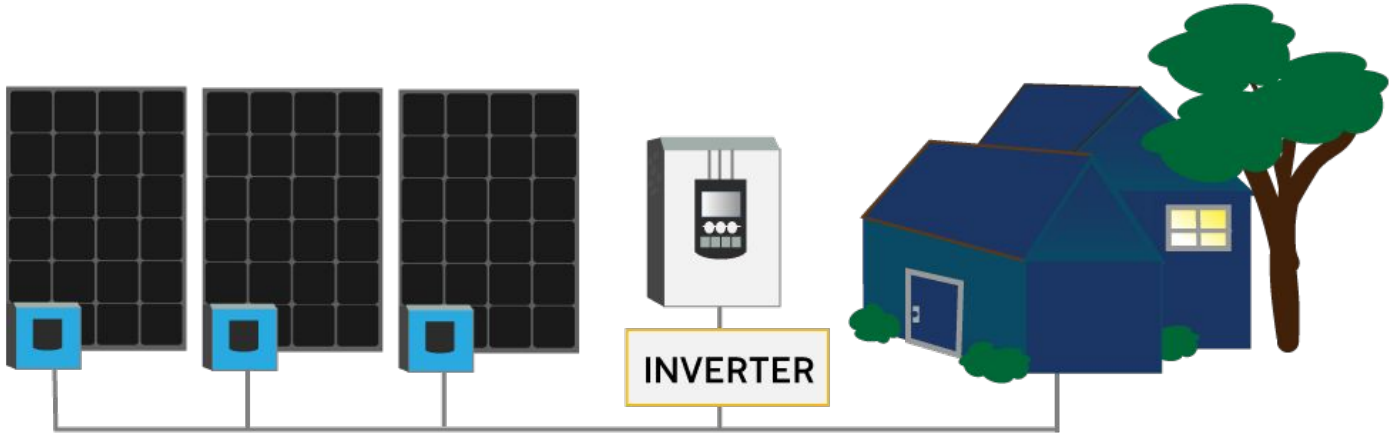
Inverter: The heart of the solar array

MICRO INVERTERS:
- one microinverter per panel
- function well on roofs with shade or multiple panel orientations



POWER OPTIMIZERS:
- one optimizer per panel,plus central string inverter
- function well on roofs with shade or multiple panel orientations



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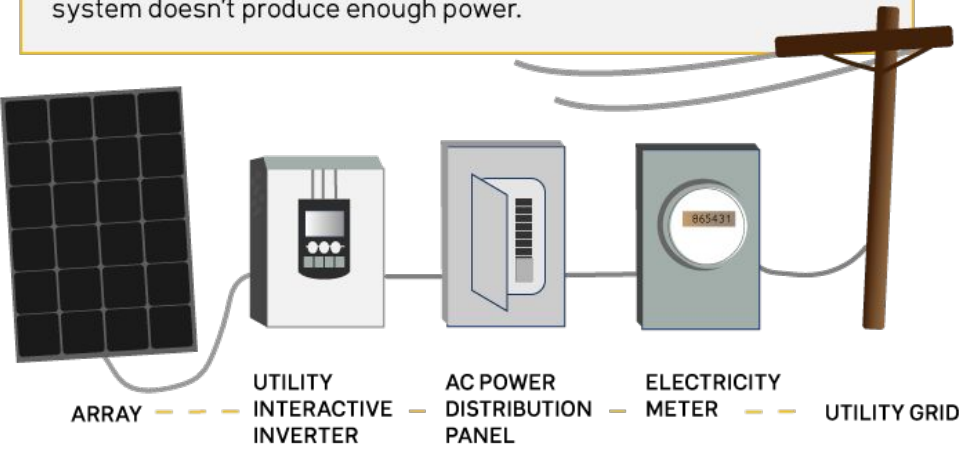
Grid-Tied VS. Off-Grid

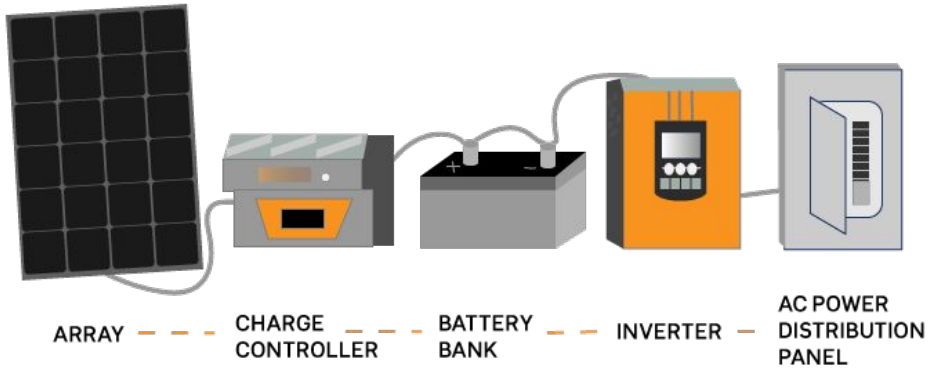
GRID-TIED DESIGN:
Excess electricity can be delivered to the utility grid, **AND** you can use electricity from the utility grid when your system doesn't produce enough power.

- Least Expensive Option
- Allows for Net Metering
- Grid Off = Solar Off



OFF-GRID DESIGN:
A stand-alone PV system that operates autonomously and supplies power to electrical loads indpendent of the utility grid.

- Requires Batteries & Charge Controller
- Not Connected to the Grid
- Grid Off = Solar On



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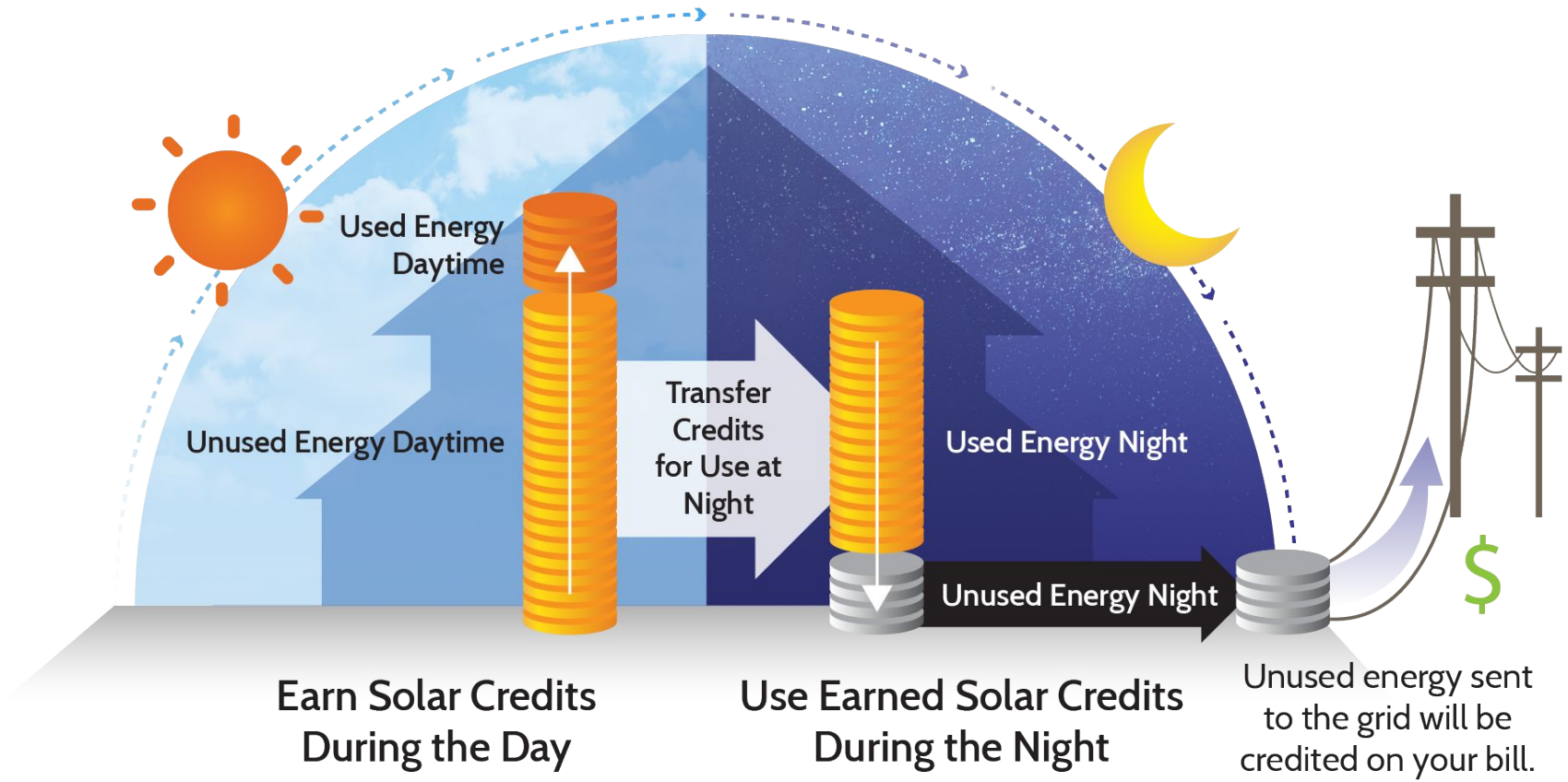
How Net Metering Works



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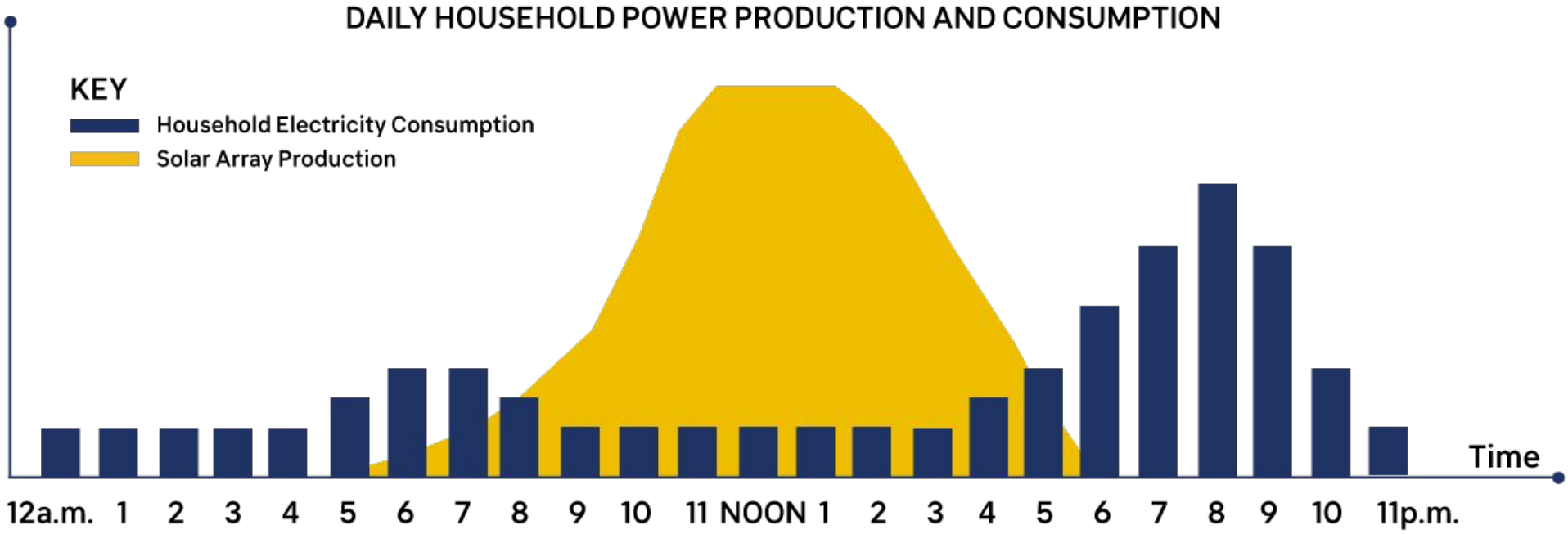
"A Day in the Life" of a Grid-Tied / Net Metered Home



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

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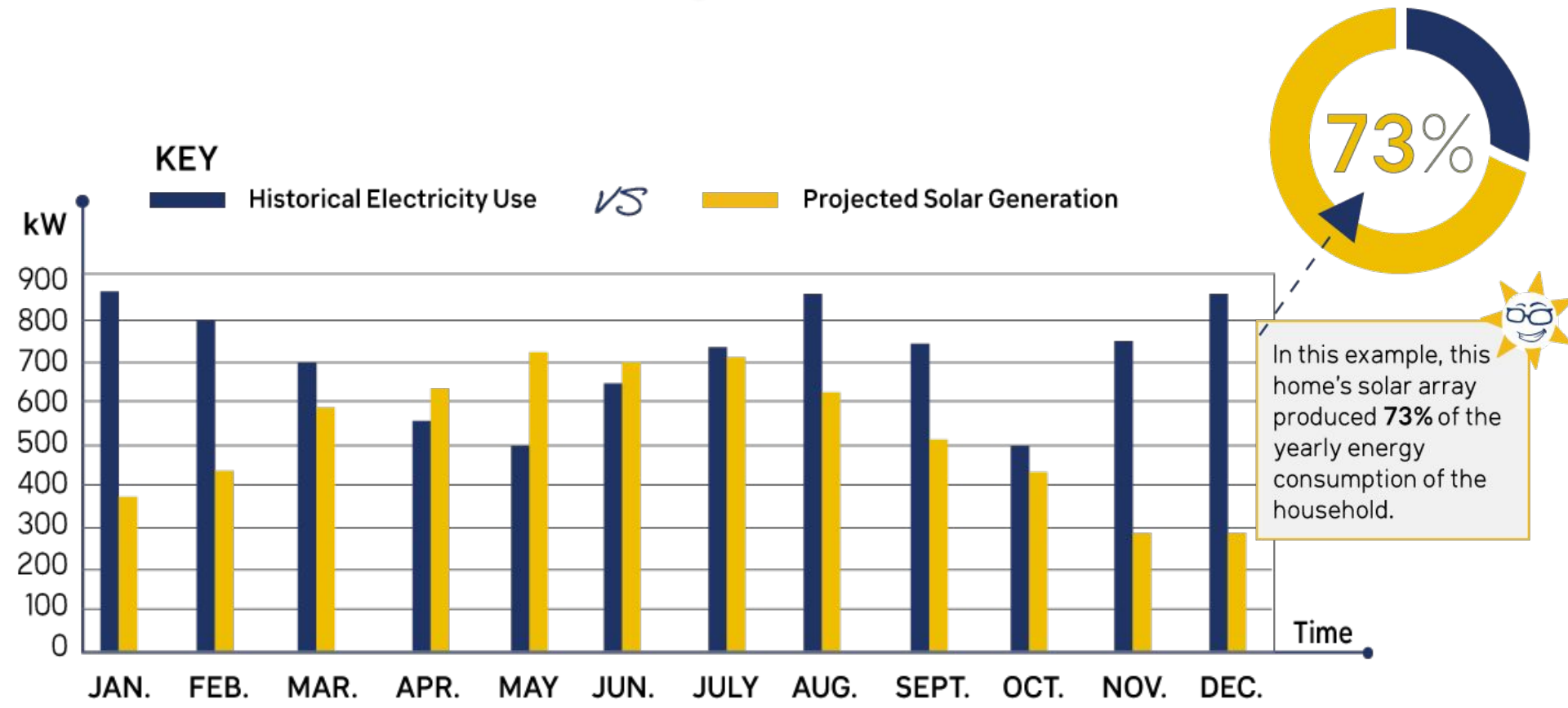
"A Year in the Life" of a **Grid-Tied / Net Metered Home**



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Options & Considerations

Part 3 of 5

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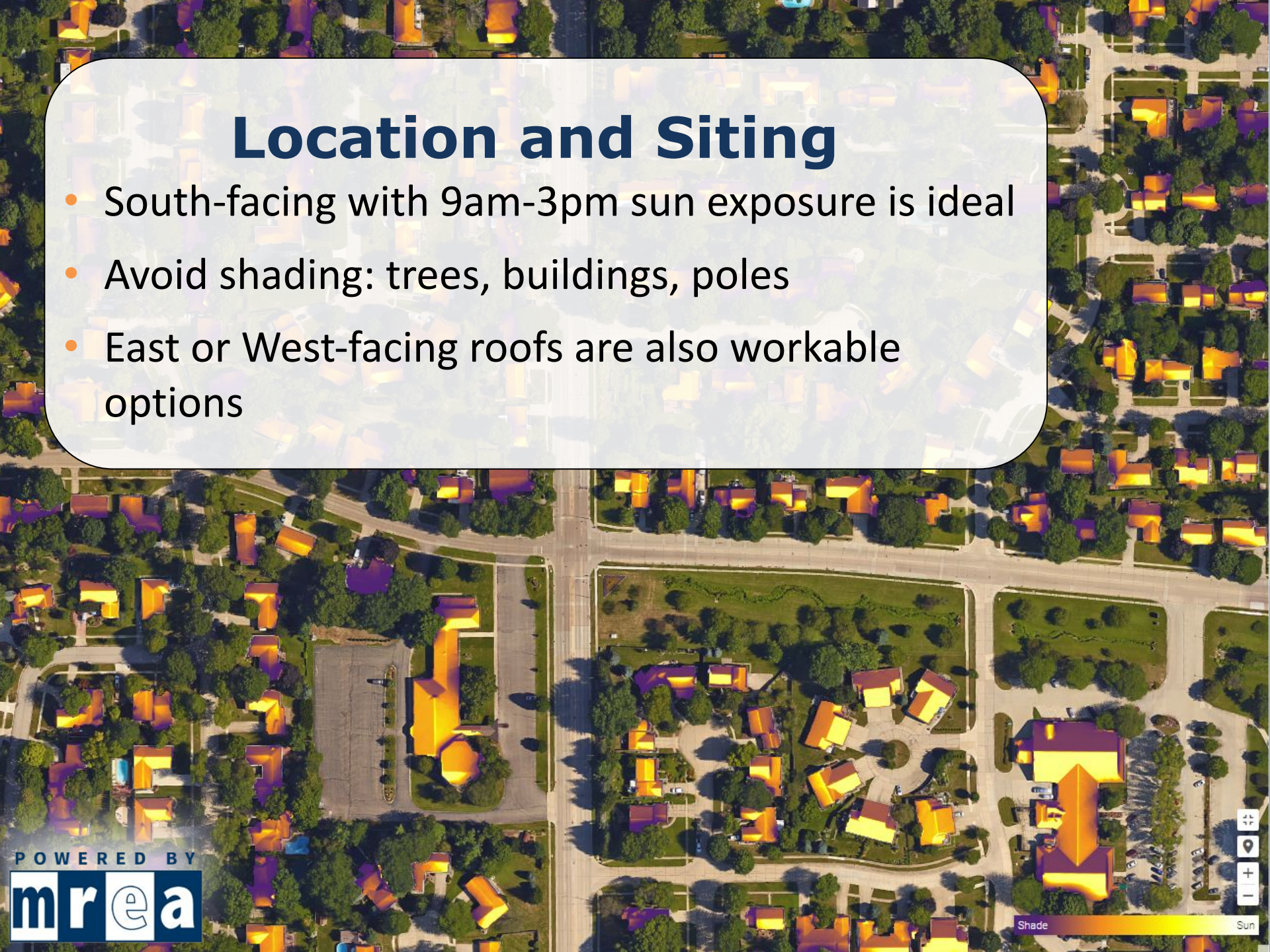
Location and Siting

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



Roof Mount

- Roof is most common
- Mounted flush to roof using existing pitch and position to the sun
- South-facing pitch is ideal, but East/West-facing are appropriate
- Considerations
  - Hail / snow
  - Shading from trees or nearby obstructions.
  - Wind Loading
  - Roof Condition (age of shingles)

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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
- Solar modules anchored to new structure
- Easy to remove snow and dust (if near farm field)

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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

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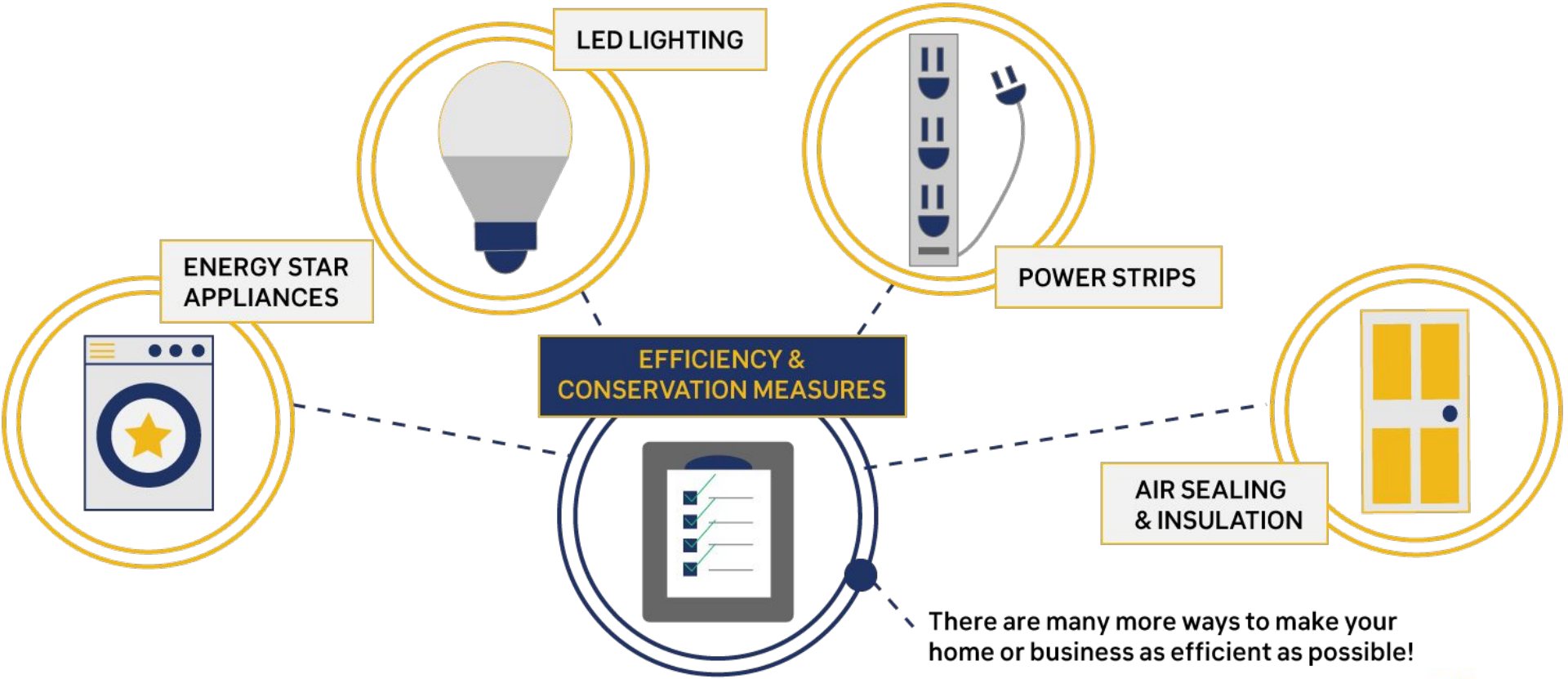
Energy Efficiency



There are many more ways to make your home or business as efficient as possible!

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BPI
BUILDING PERFORMANCE INSTITUTE INC.
CERTIFIED PROFESSIONAL

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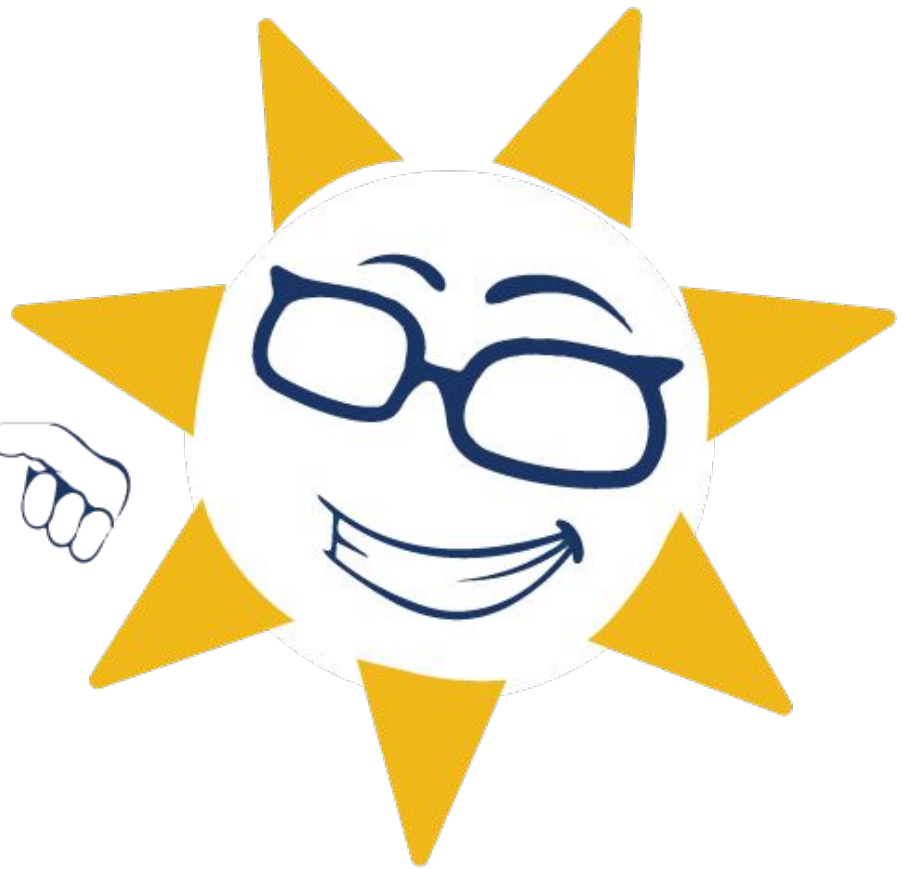
It's time for a poll!



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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?
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Solar Costs
Part 4 of 5

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How It Works

The more people go solar, the lower the price:

Competitive Base Price: $2.12/W

(Base price is lower than Eagle Point's typical price)

With Additional Discounts (assumes avg solar array = 6kW):

>50 kW	>150 kW	>300 KW	>500 kW
-$0.03/W	-$0.06/W	-$0.09/W	-$0.13/W
- $30/kW	- $60/kW	-$90/kW	-$130/kW
~8 homes	~25 homes	~50 homes	~83 homes

On a 6 kW array, the maximum *additional* Group Buy price break is $780

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Every Home Is Different

Your PV System Is Tailor-Made To Fit Your Needs

Pricing Varies by Site and Needs:

- System Design and Size
- Age and Type of Roof
- Panel Type
- Inverter Type
- Slope and Height of Roof
- Complexity of Electrical Interconnection
- Multiple PV Arrays
- Energy Storage

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Typical installation

Pictured above is a 22 module, or 7.2 kW DC, solar array.

Estimated annual solar production = **8,585** kWh

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Photo Credit: Eagle Point Solar

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7.26 kW Solar Array
22 330W VSUN Modules

7.26 kW DC Residential Roof System	
Starting price:	**$2.12/Watt ($15,392)**
Site-Specific Adders	
- 2 story roof ($.08/W)	**+ $580**
- 7/12 roof pitch ($.05/W)	**+ $363**
- Monitoring	**+ $350**
Final quoted price ($2.30/W)	**$16,685**
Installed Cost (**$2.30/Watt**)	$16,685
26% Federal Tax Credit	($4,338)
*Iowa 11% Tax Credit	($1,835)
Net Cost	**$10,512**
Net Cost w/o IA Tax Credit	**$12,347**

Simple Payback: 9 yrs

Estimated Year 1 Solar production = 9,253 kWh
Year 1 utility $/kWh = $.165/kWh
Payback = Net Cost / Year 1 electric bill saving = $1,168
Cash Gained Over 25 Years = $42,100

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Incentives & Next Steps

Part 5 of 5

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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
- Ask your tax professional for further details

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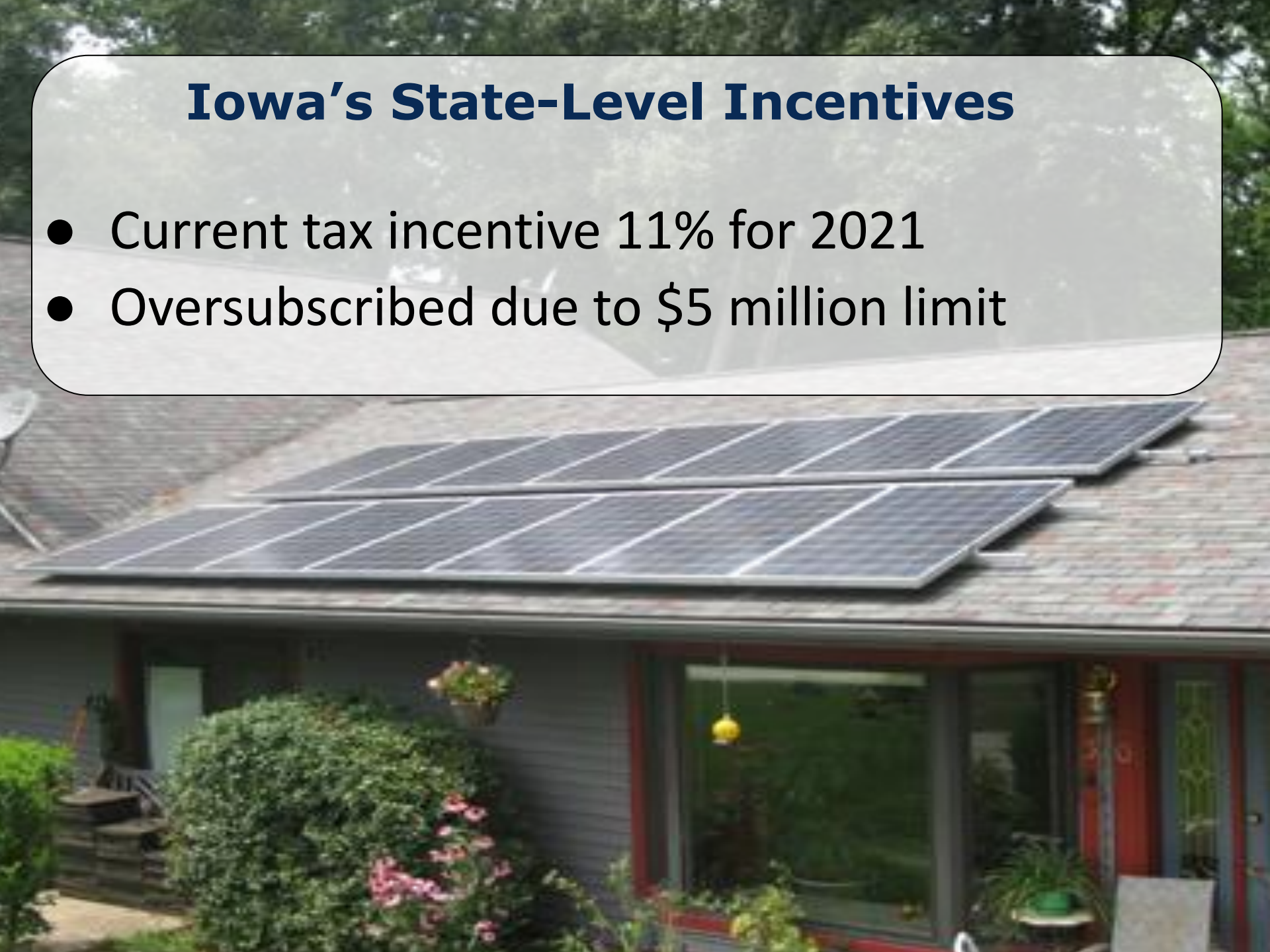
Iowa's State-Level Incentives

- Current tax incentive 11% for 2021
- Oversubscribed due to $5 million limit



Home Values

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

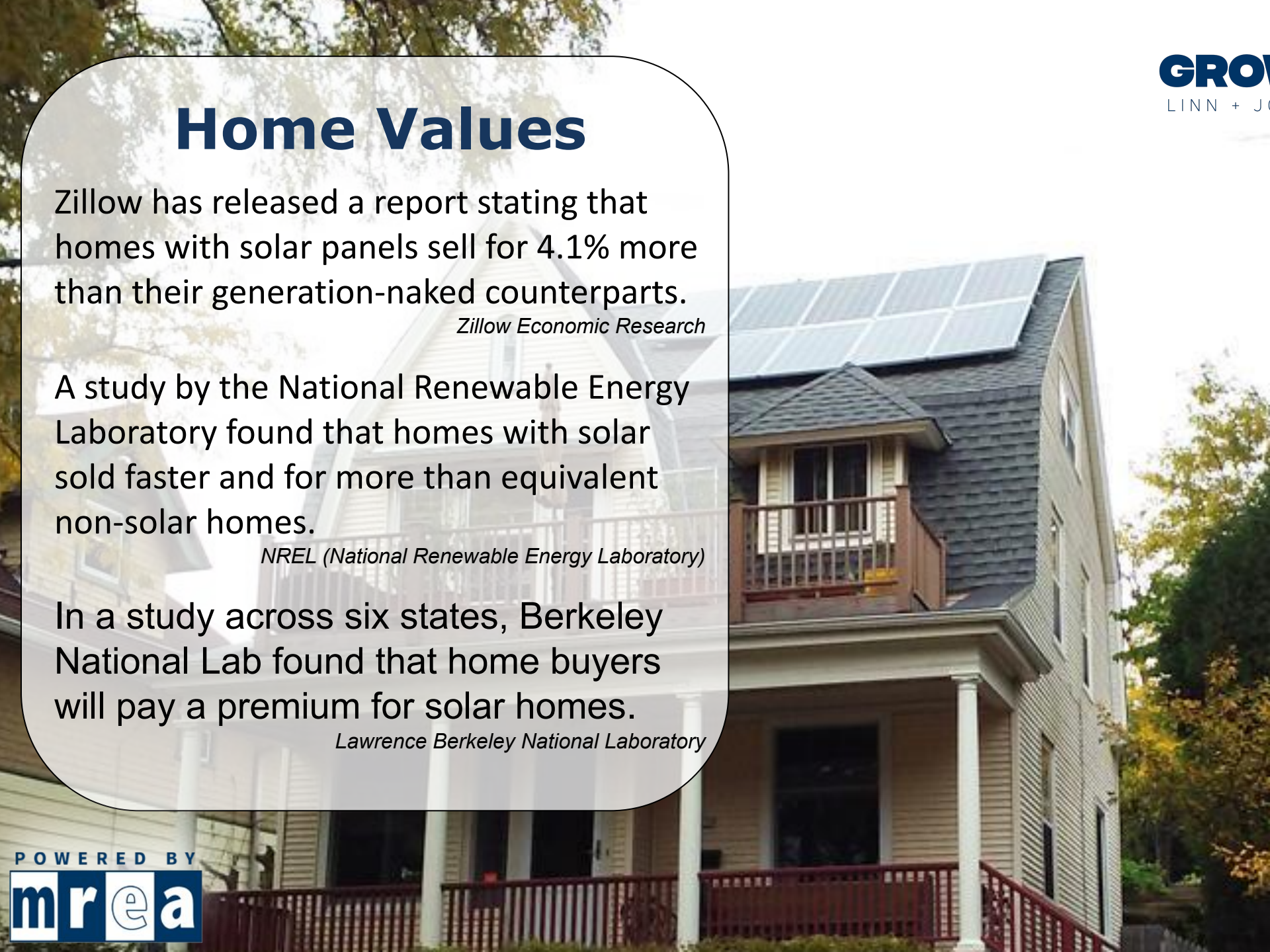
Zillow Economic Research

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



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Environmental Benefits

Over the life of a 5 kW system, the electricity produced is equivalent to 163 tons of carbon dioxide (CO_2).

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.**

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CLEAN ENERGY
CREDIT UNION

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

•Check with your local lenders for your options!

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INSTALLATION TIMELINE (approximate)

Day 1	Sign Contract
Week 1-2	Engineered design by Eagle Point Solar submitted for permitting and interconnection applications
Week 3-7	Getting approval for interconnect application from Utility Company
Week 8-9	Construction
Week 10-14+	Waiting for inspection/approval and Utility Company Permission to Operate

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Next Steps

1. **Fill out the form** we're sending to you in the chat AND in a follow-up email right after this webinar.

2. Eagle Point Solar will follow up to get started on a free, no obligation preliminary Solar Analysis. **Prepare to supply a copy of your recent utility bill along with the last 12-months of your electrical usage data.**

3. Eagle Point Solar will set an appointment to review your **free, no obligation preliminary Solar Analysis**. This report can be delivered via online meeting, phone or in person.

4. **Request a detailed site assessment.** Eagle Point Solar will verify your design, update your quote and give you your contract.

5. **Sign contract and pay down payment** with Eagle Point Solar by **August 31, 2021**, to participate in Grow Solar Linn + Johnson Counties.

6. Celebrate and enjoy clean energy! Tell your neighbors and friends to participate!

https://www.growsolar.org/linn-johnson-counties/

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Become a member of MREA!

Your support as a member makes a long lasting impact.

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

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!

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www.midwestrenew.org/membership

When there's a huge solar energy spill, it's just called a "really nice day"

Contact: Ann Huberty at Eagle Point Solar
Ahuberty@eaglepointsolar.com or (877) 357.2555

Presenter: Tom Wieseler - tom.wieseler@gmail.com

Support: Marta Monti - Marta@midwestrenew.org
Solar Program Manager, MREA

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