



# SOLARIZE

## CHICAGOLAND

Village of Hoffman Estates, IL  
April 20, 2019





Why **SOLARIZE** ?  
CHICAGOLAND

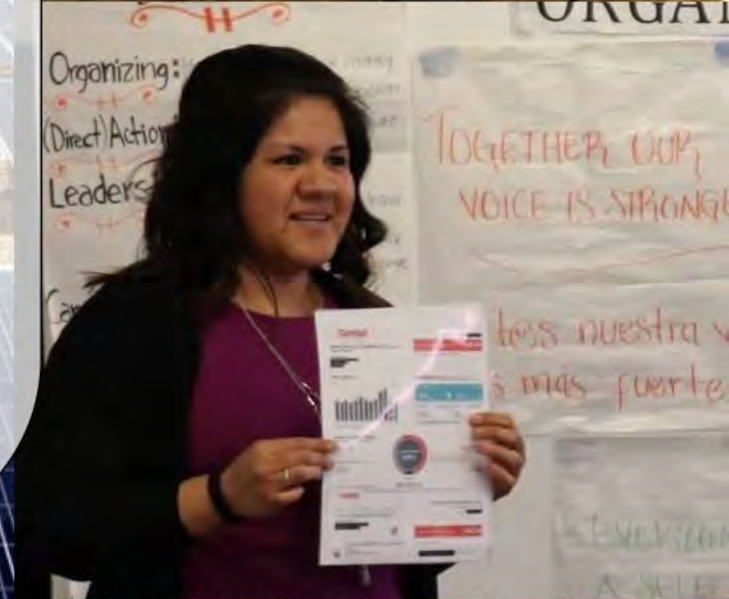
Create sustainable communities by  
making solar simple and more affordable





## Who is CUB?

- Represents Illinois utility ratepayers & advocates for **cheaper & cleaner energy**
- Has saved consumers more than **\$20 billion** by fighting proposed electricity, natural gas, and telephone rate hikes
- Advocated for the Future Energy Jobs Act – which put Illinois at the forefront of renewable energy in the Midwest!
- Operates a consumer hotline to help with utility complaints
- Holds **~500 public education events** per year!





## 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



# What is a group buy?

## Lower Prices through:

1. Competitive Contractor Selection
2. Community-Led Outreach
3. Strong Customer Education
4. Limited-time Offering
5. Economy of Scale

**Everyone wins.**





# Solarize Chicagoland Group Buy

- Focused on properties in Cook, DuPage, Kane, and Will counties.
- Start with a free, no-obligation site assessment.
- Turn-Key Solar Array. Program Pricing includes design, permitting, components, installation (all-in cost), and warranty (warranty).
- Based on successes here and in other cities
  - Solarize Cedar Rapids & Linn County, Milwaukee Solar Group Buys, Solar Urbana-Champaign, etc.
- Financing & American-made products will be available





# *Solar Benefits*







# Solar Installations To Date

- Nearly 60 GW of total solar capacity now installed
- Enough to power 11.3 million American homes.
- For the first time ever, solar ranked as the No. 1 source of new electric generating capacity additions brought on-line on an annual basis at 39% in 2016.



**A NEW  
SOLAR ARRAY  
IS INSTALLED  
EVERY  
84 SECONDS  
IN THE U.S.**



Solar Market Insight Report



# Home Values

A recent 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*

Solar systems should not increase your property taxes. Illinois offers a special assessment for solar energy systems, but your assessor may request a completed State of Illinois PTAX-330 property tax form.





# Reduce Your Energy Bill

**\*EXAMPLE\***

## Solar Calculator Report Payback Period & Electricity Mix – continued





### Invest in the Environment

The amount of clean energy you generate in each year compared to conventional utilities would be equivalent to:



Avoiding 174,419  
Pounds of Coal from  
being Burned



Avoiding 378 Barrels  
of Oil from being  
Burned



Growing 4,164 Tree  
Seedlings for 10 years



Removing 34  
Passenger Cars from  
the Road for a Year



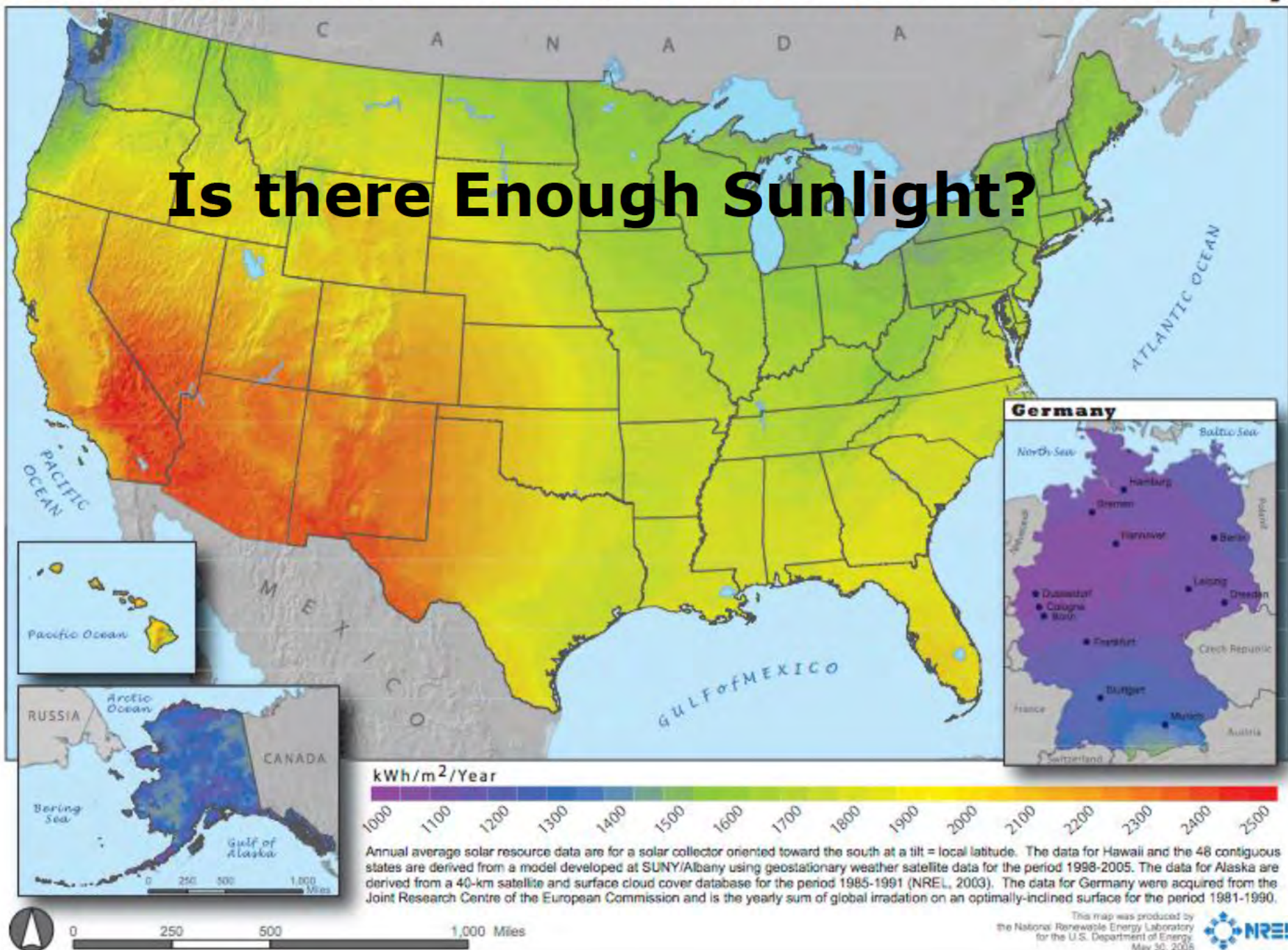


# Solar Basics



# Photovoltaic Solar Resource : United States and Germany

## Is there Enough Sunlight?





# Configuration: How It Works...



# Inverters - DC to AC Electricity

The heart of the solar array:  
the inverter converts  
Photovoltaic (PV) DC  
electricity to AC electricity



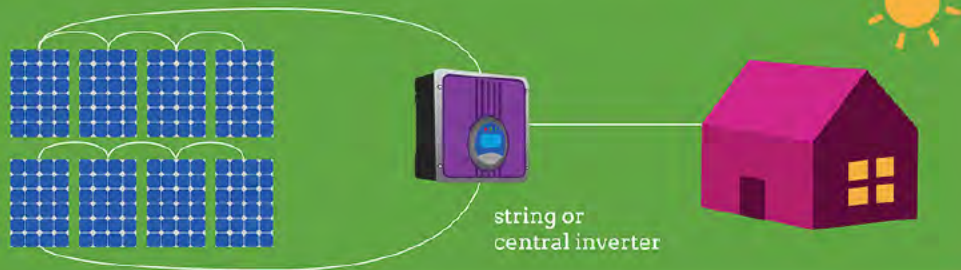
372.75 Wh 1.0.14	353 Wh 1.0.1	348.25 Wh 1.0.16
320.5 Wh 1.0.18	320.25 Wh 1.0.9	328 Wh 1.0.15
302 Wh 1.0.2	325.5 Wh 1.0.6	290 Wh 1.0.7
313.25 Wh 1.0.10	309.25 Wh 1.0.11	308.75 Wh 1.0.8
324.75 Wh 1.0.13	296 Wh 1.0.5	331.5 Wh 1.0.17
346.25 Wh 1.0.3	343.75 Wh 1.0.12	345.25 Wh 1.0.4

Inverters also monitor the solar array and report information to an online portal allowing you to view on your computer or mobile device.



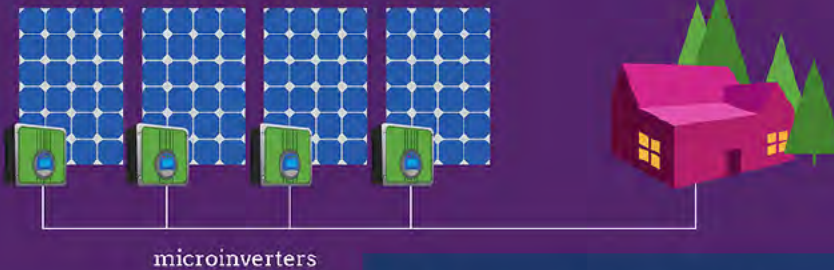
## String Inverters

- one or more 'strings' of solar panels
- work well when solar panels are on a single plane with no shading



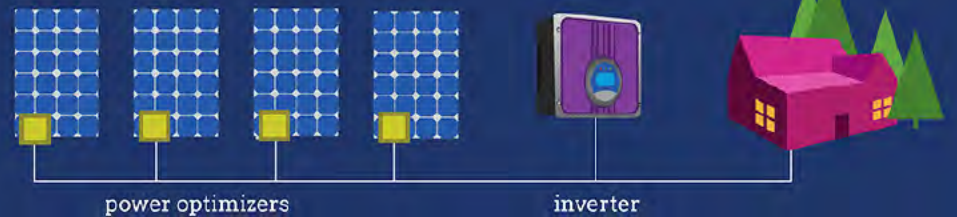
## Microinverters

- 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





# Location and Siting

South-facing with 9am-3pm sun exposure is ideal

East or West-facing roofs are also workable options  
(requires about 20% more modules)

Avoid shading: trees, buildings, poles



# 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
- Considerations
  - Snow / Hail
  - Wind Loading
  - Roof Condition (age of shingles)
  - Rodents





# Mounting: Ground Mount

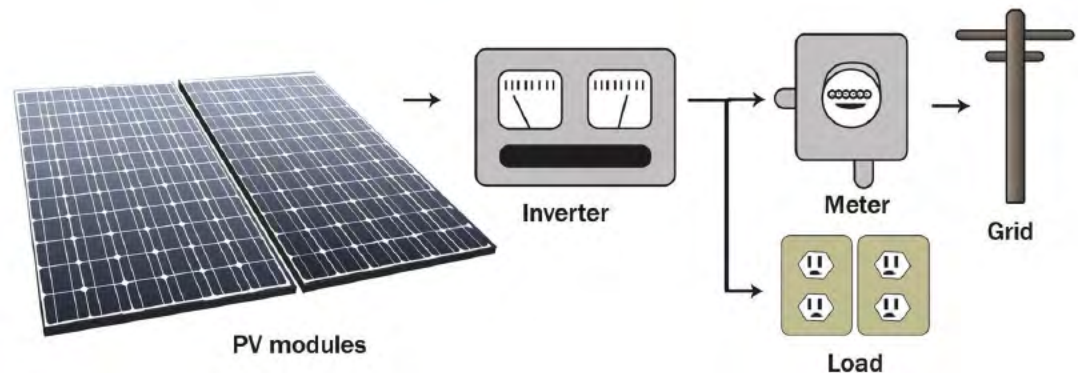
- Good for larger arrays and for properties where house roof is shaded
- Require large un-shaded area
- Take advantage of best solar window
- Anchor to ground mounts
- Easy to remove snow, dust





# System Type: Grid Tied

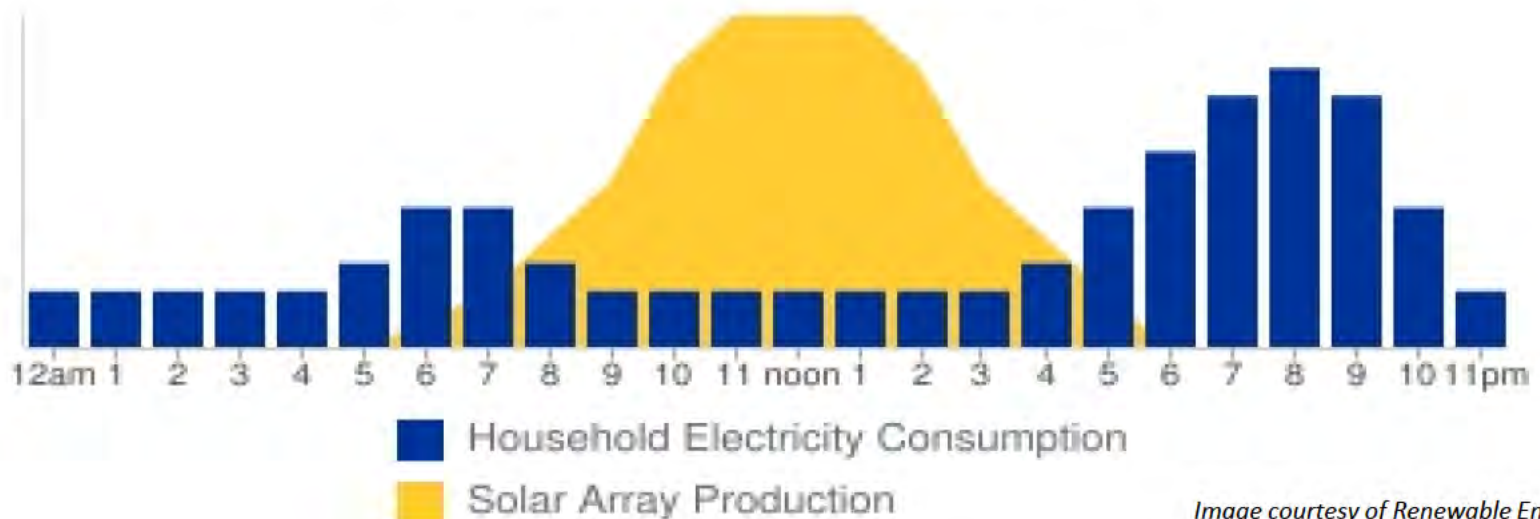
- Photovoltaic (PV) system connected to the utility grid
- Grid off = Solar off (limited power available)
- Utility supplies electricity above the system output



## Net Metering

- Net metering means that any excess electricity produced by your solar system is exported to the utility grid and subtracted from the amount of electricity you import from the grid, reducing your overall electricity costs.
- Annual true-up with ComEd

Daily Household Power Production and Consumption  
(Home With Rooftop Solar PV)





# Energy Efficiency

- CFL, LED lighting
- Energy Star appliances
- Power strips
- Weatherization
- Electricity usage habits
- And more....



CERTIFIED  
PROFESSIONAL



# Typical installation



Pictured above is a 22 - module, or 6.5 kW, solar array.  
Estimated annual solar production = 8,983 kWh  
Production calculation: PVWatts (National Renewable Energy Lab)  
Photo Credit: 1 Source Solar





# IL Homeowner's Solar Rights Act

## Section 1. Short title. This Act may be cited as the Homeowners' Solar Rights Act.

Section 5. Legislative intent. The legislative intent in enacting this Act is to protect the public health, safety, and welfare by encouraging the development and use of solar energy systems in order to conserve and protect the value of land, buildings, and resources by preventing the adoption of measures which will have the ultimate effect, however unintended, of preventing the use of solar energy systems on any home that is subject to a homeowners' association, common interest community association, or condominium unit owners' association.

## Section 10. Definitions. In this Act:

"Solar energy" means radiant energy received from the sun at wave lengths suitable for heat transfer, photosynthetic use, or photovoltaic use.

"Solar collector" means:

(1) an assembly, structure, or design, including passive elements, used for gathering, concentrating, or absorbing direct and indirect solar energy, specially designed for holding a substantial amount of useful thermal energy and to transfer that energy to a gas, solid, or liquid or to use that energy directly; or

(2) a mechanism that absorbs solar energy and converts it into electricity; or

(3) a mechanism or process used for gathering solar energy through wind or thermal gradients; or

(4) a component used to transfer thermal energy to a gas, solid, or liquid, or to convert it into electricity.

"Solar storage mechanism" means equipment or elements (such as piping and transfer mechanisms, containers, heat exchangers, or controls thereof, and gases, solids, liquids, or combinations thereof) that are utilized for storing solar energy, gathered by a solar collector, for subsequent use.

"Solar energy system" means:

(1) a complete assembly, structure, or design of solar collector, or a solar storage mechanism, which uses solar energy for generating electricity or for heating or cooling gases, solids, liquids, or other materials; and

(2) the design, materials, or elements of a system and its maintenance, operation, and labor components, and the necessary components, if any, of supplemental conventional energy systems designed or constructed to interface with a solar energy system.

## Section 15. Associations; prohibitions.

Notwithstanding

any provision of this Act or other provision of law, the

**adoption of a bylaw or exercise of any power by the governing entity of a homeowners' association, common interest community association, or condominium unit owners' association which prohibits or has the effect of prohibiting the installation of a solar energy system is expressly prohibited.**

Section 20. Deed restrictions; covenants. No deed restrictions, covenants, or similar binding agreements running with the land shall prohibit or have the effect of prohibiting a solar energy system from being installed on a building erected on a lot or parcel covered by the deed restrictions, covenants, or binding agreements, if the building is subject to a homeowners' association, common interest community association, or condominium unit owners' association. **A property owner may not be denied permission to install a solar energy system by any entity granted the power or right in any deed restriction, covenant, or similar binding agreement to approve, forbid, control, or direct alteration of property.**

However, for purposes of this Act, the entity may determine the specific location where a solar energy system may be installed on the roof within an orientation to the south or within 45 degrees east or west of due south provided that the determination does not impair the effective operation of the solar energy system. Each homeowners' association, common interest community association, or condominium unit owners' association shall adopt an energy policy statement regarding the location, design, and architectural requirements of solar energy systems within 120 days after an association receives a request for a policy statement or an application from an association member. An association shall disclose, upon request, its energy policy statement and shall include the statement in its homeowners' common interest community, or condominium unit owners' association declaration.

Section 25. Standards and requirements. A solar energy system shall meet applicable standards and requirements imposed by State and local permitting authorities.

Section 30. Application for approval. Whenever approval is required for the installation or use of a solar energy system, the application for approval shall be processed by the appropriate approving entity of the association within 90 days after the submission of the application. However, if an application is submitted before an energy policy statement is adopted by an association, the 90 day period shall not begin to run until the date that the policy is adopted.

Section 35. Violations. Any entity, other than a public entity, that willfully violates this Act shall be liable to the applicant for actual damages occasioned thereby and for any other consequential damages. Any entity that complies with the requirements of this Act shall not be liable to any other resident or third party for such compliance.

Section 40. Costs; attorney's fees. In any litigation arising under this Act, the prevailing party shall be entitled to costs and reasonable attorney's fees.

Section 45. Inapplicability. This Act shall not apply to any building which is greater than 30 feet in height

## Public Act 096-1436



## 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 & Incentives*



# Cost Factors

- System size and design
- Module type
- Inverter type
- Slope, height of roof
- Complexity of electrical interconnection
- Type of roofing material
- Multiple PV arrays
- Structural Engineering



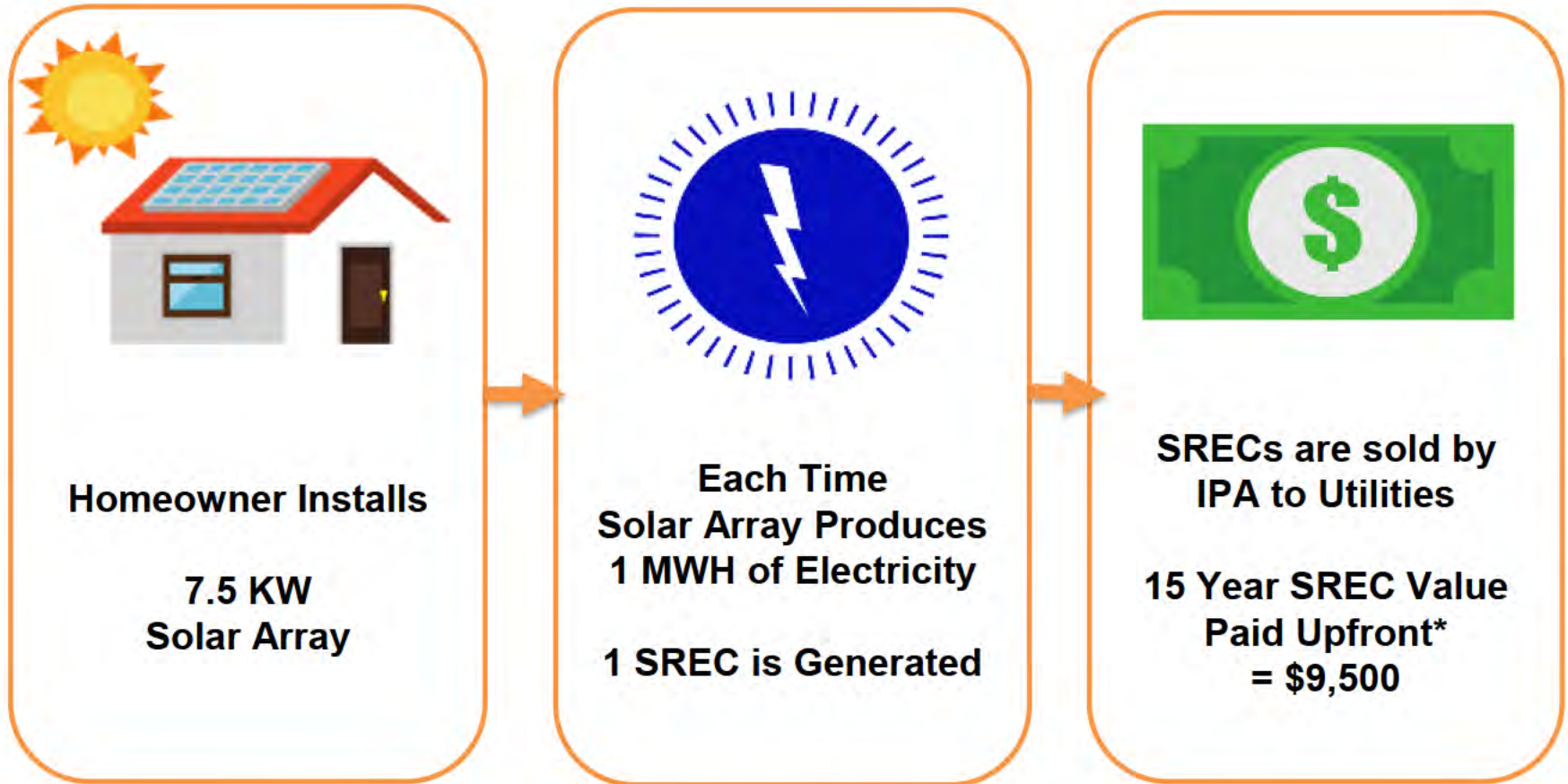
## Incentives

- ~35-40% State Solar Renewable Energy Credits (SRECs)
- 30% Federal Tax Credit
- Utility Net Metering Credits
- MACRS Depreciation (Businesses Only)



- Database of Incentives for Renewables & Efficiency (DSIRE) website, [dsireusa.org](http://dsireusa.org)

# Solar Renewable Energy Credits SRECS



- **15-Year Contracts Paid In Year 1 for <10 KW;**
- **15-Year Electricity Production Estimated, Based on Inverter Size;**
- **Rate-Payer, Not Tax-Payer Funded (But Is Taxable Income To You)**



# Residential & Commercial Renewable Energy Tax Credit (Federal)

- Tax credit of 30% 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



# Group Buy

## How It Works

The more people go solar, the lower the price:

**Competitive Base Price  
With Additional Discounts**

(assumes avg solar array = 6.5kW):

Group Buy Size	>50 kW	>250 kW	>500 kW	>1000 kW
Number of average size systems	~8 homes	~40 homes	~75 homes	~ 150 homes

On a 6.5 kW array, the maximum *additional* Group Buy discount is \$ X,XXX





# 6.50 kW Solar Array

## Solarize Chicagoland

<u>6.5 kW Residential Roof System</u>	
Installed Cost ( <b>\$2.85/Watt</b> )	\$ 18,570
Max Group Buy discount	(\$650)
Illinois SREC	(\$5,100)
Remaining	\$12,820
Tax Credit	(\$3,846)

## vs National Average

<u>6.5 kW Residential Roof System</u>	
Installed Cost ( <b>\$3.14/Watt</b> )	\$ 20,410
Illinois SREC (25% est.)	(\$5,100)
Remaining	\$15,310
Tax Credit	(\$4,593)
<b>Net Cost</b>	<b>\$ 10,717</b>

**Net Cost**

**\$8,974**





# Next Steps

1. Record your contact information before you leave. Please be sure to write legibly!!
1. Gather 12 months of electric usage from your energy bills. You can find this on your ComEd online account.
1. Solar installer will provide you with a free, no obligation quote.
1. Request a site visit. Solar installer will verify your quote and give you your contract.
1. Sign contract with solar installer by September 30th, 2019 to participate in Solarize Chicagoland. You'll have solar power by December 31! (pending permitting and program size)
1. Celebrate and enjoy clean energy! Tell your neighbors and friends!

**Sign up:** [SolarizeChicagoland.com](http://SolarizeChicagoland.com)

Christina Uzzo - [cuzzo@citizensutilityboard.org](mailto:cuzzo@citizensutilityboard.org)







## **INSTALLATION TIMELINE (approximate)**

<b>Day 1</b>	<b>Sign Contract</b>
<b>Week 1-2</b>	<b>Design/engineer by solar installer and then on to Utility Company for review</b>
<b>Week 3-5</b>	<b>Getting approval for interconnect application from Utility Company</b>
<b>Week 6-9</b>	<b>Construction</b>
<b>Week 10-12</b>	<b>Waiting for final permit inspection/approval and Utility Company Permission to Operate</b>





# Stay informed – Join as an MREA Member

**Everyone who goes solar through the program gets a free MREA membership for one year!**

- Choose a Personal or Business Membership: starts at \$30 or \$75
- Receive great benefits including:
  - Free admission to The Energy Fair
  - Free access to online, on-demand courses
  - Newsletter covering policy updates
  - And more!





# Many ways to join:

- Sign up online at [www.midwestrenew.org](http://www.midwestrenew.org)
- Call MREA's Custer, WI office at 715-592-6595
- Contact Communications Director **Gina Miresse** at [ginam@midwestrenew.org](mailto:ginam@midwestrenew.org)

Member support allows us to continue offering free educational sessions like this one. Let's grow solar!

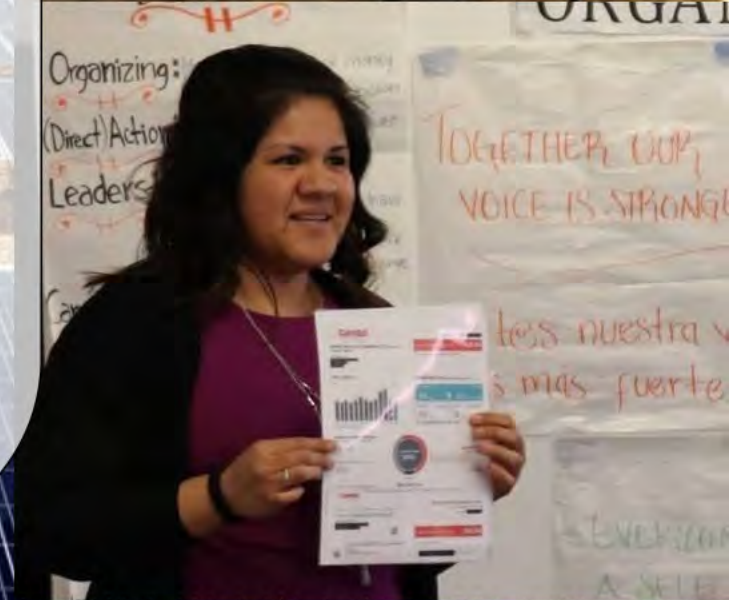






# CUB

- More events on our website
  - Bill Clinics
  - Clean Energy Town Halls
  - “Ways to Save” events
- Resources for energy efficiency & savings
- Information about new clean energy legislation in Springfield
- To Join or learn more visit:  
[www.CitizensUtilityBoard.org](http://www.CitizensUtilityBoard.org)







**THANK YOU!**  
**Before you go:**  
**Please sign up**  
**for updates!**

**Sign Up:** [SolarizeChicagoland.com](https://SolarizeChicagoland.com)

**Presenter:** Christina Uzzo, CUB  
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**Concerns?** Peter Murphy,  
MREA Solar Program Manager  
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