



# **GROW SOLAR**

ST. LOUIS

## **Welcome to Our Solar Power Hour!**

- Introduction to Zoom
- Sign up for a free site assessment by following the link in the chat



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# Today's Agenda

- What is Grow Solar STL?
- How does Solar Power work?
- Costs and incentives
- How to begin your solar journey

# Why are we here?

There are problems with the way you currently buy electricity.

1. Unpredictable rate increases
2. Not building equity
3. Pollution



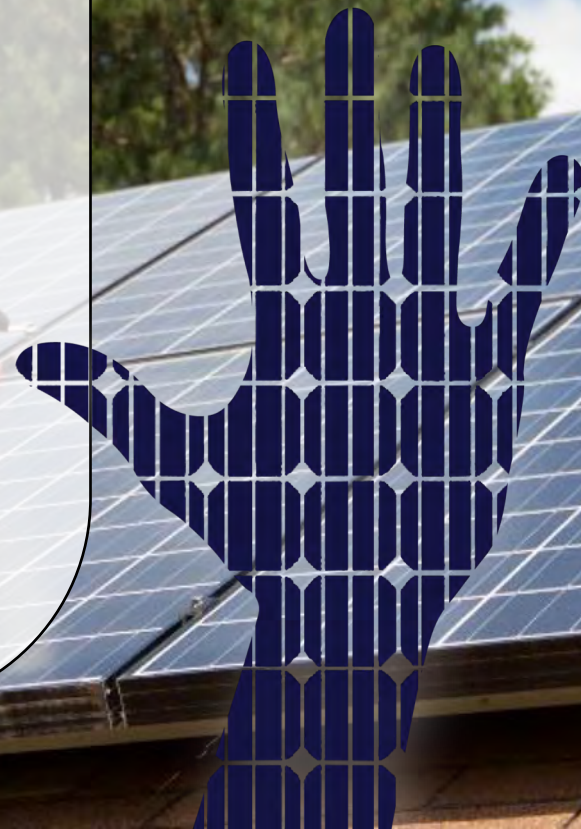
# What is a Group Buy?

## A Model for Lower Prices Through:

- Economy of Scale
- Education/Outreach About Solar
- Organize A Group Buy
- Competitive Contractor Selection
- Deadline: **limited time offer ending**

**August 31, 2021**

**Everyone wins!**



# 2020 Success



**244** people educated about their solar options

**62** homes and businesses went

**456 kW** of added solar capacity

**595,803 kWh** of annual solar energy generating capacity

In one year, the total solar installed during this Group Buy will offset CO<sub>2</sub> emissions equivalent to:



**476,563 lbs** of coal burned

**1,073,218 miles** driven by a passenger vehicle

**565 acres** of U.S. forests sequestration capacity

Source: EPA Greenhouse Gas Equivalencies Calculator

# *How Does Solar Work?*

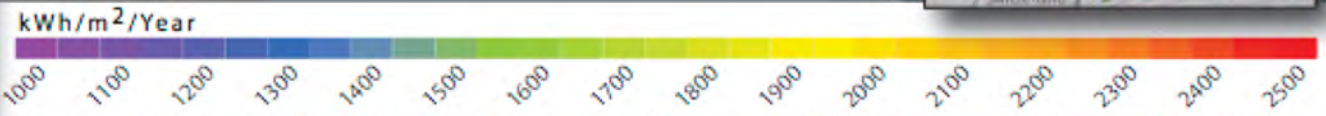


# Photovoltaic Solar Resource : United States and Germany

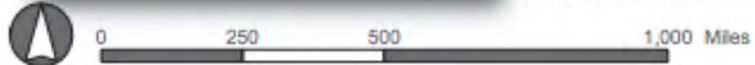
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## Is there Enough Sunlight?

### St. Louis = 89% of Miami's Sunshine!



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.







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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.



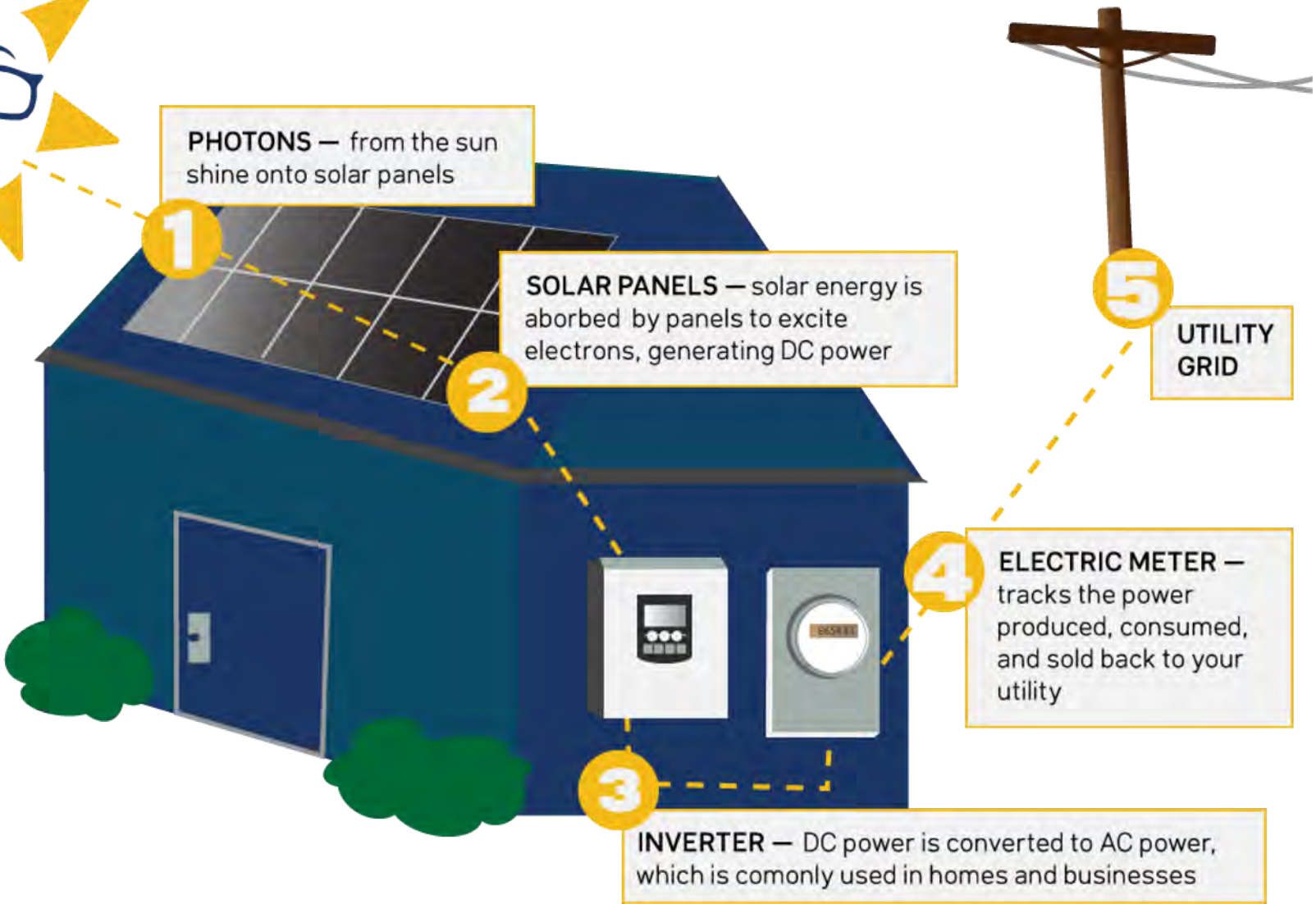
### **KILOWATT (kW)**

a measurement of capacity: how big your array is.



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

# Configuration: How It Works...





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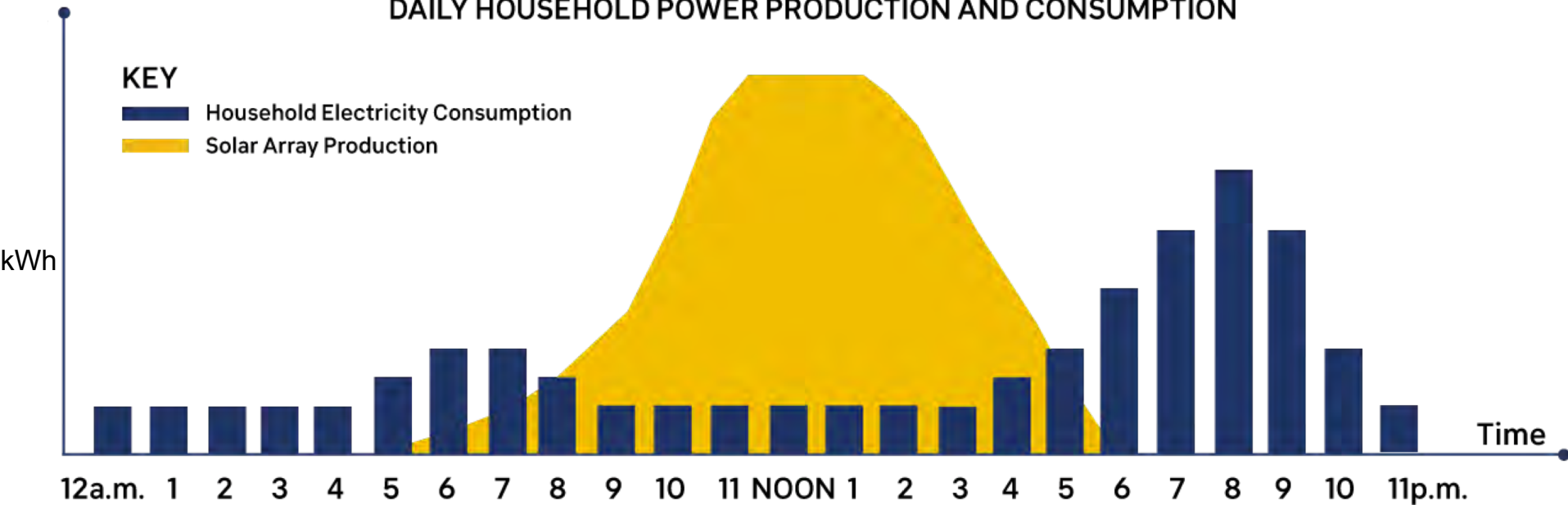
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**“Grid-Tied”  
“Net-Metered”**

***Grid Off = Solar Off\****

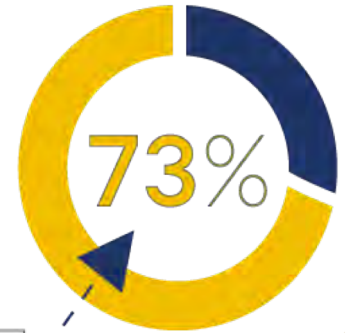
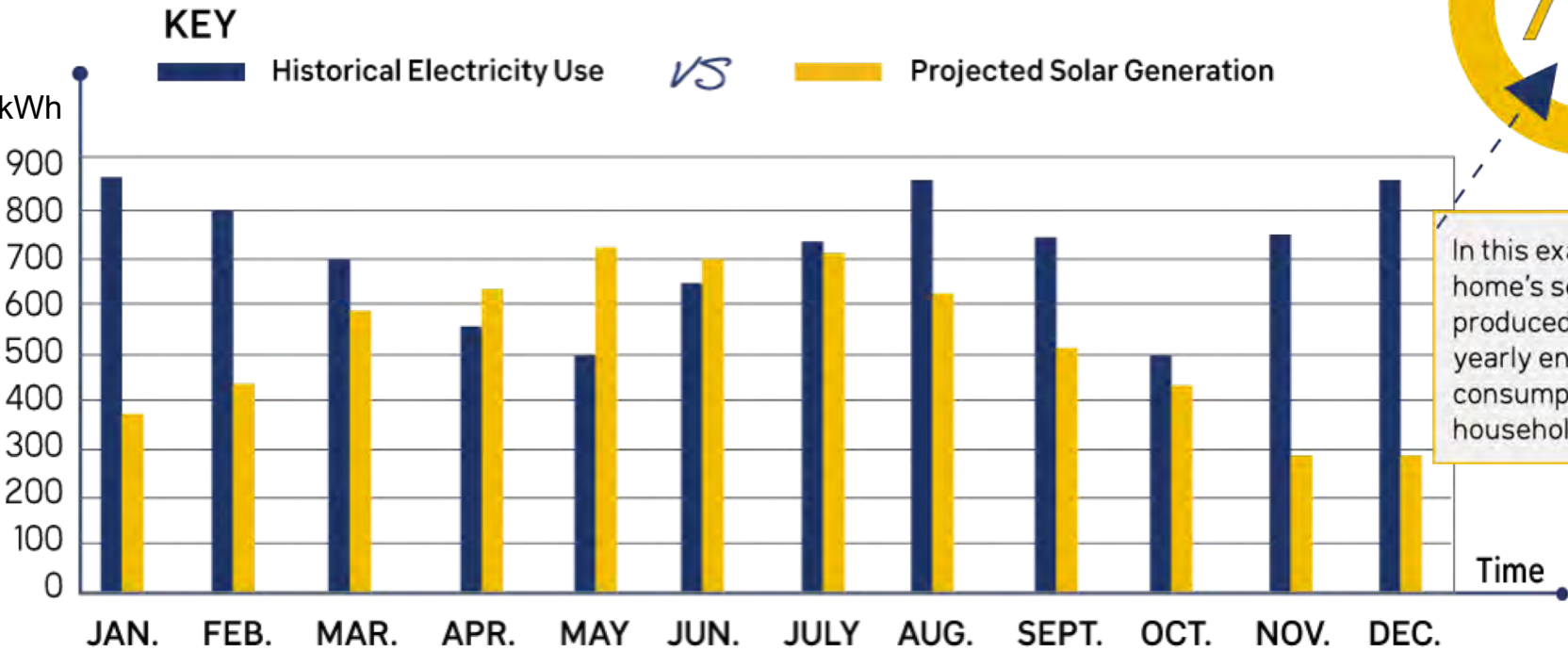

# “A Day in the Life” of a Grid-Tied / Net Metered Home

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

In this example, this home's solar array produced **73%** of the yearly energy consumption of the household.



- Pay by phone: 1.866.268.3729
- Pay by mail: PO Box 88068, Chicago, IL 60680-1068
- Pay online or manage your account: AmerenMissouri.com
- Customer Service: 1.877.426.3736

FOCUSED ENERGY. *For Life.*

**Electric Service Details** Service from 05/28/2020 - 06/28/2020 (31 days)

**Electric Meter Read**

METER NUMBER	SERVICE FROM - TO	NO. DAYS	USAGE TYPE	READING TYPE	CURRENT READING	PREVIOUS READING	READING DIFFERENCE	MULTIPLIER	USAGE
	05/28 - 06/28	31	Total kWh	Actual	43461.0000	42995.0000	466.0000	1.0000	466.0000
	05/28 - 06/28	31	kWh Out	Actual	28843.0000	28272.0000	571.0000	1.0000	571.0000

**Usage Summary**

Grid Energy Consumed

Solar Energy Generated

Total kWh	466.0000	Customer kWh to Utility	571.0000
Net Billable kWh	0.0000	Net Excess Gen kWh	-105.0000

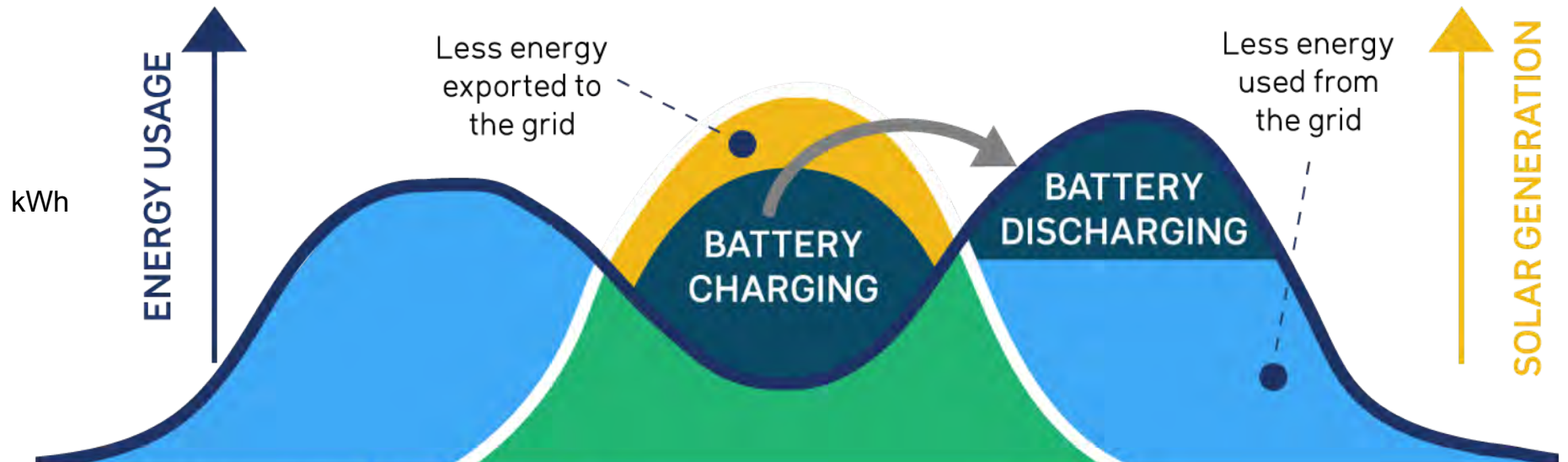
**Rate 1M Res Elect Service**

**Net Metering**

DESCRIPTION	USAGE	UNIT	RATE	CHARGE
Total Energy Charge	0.00	kWh	@ \$ 0.11810000	\$0.00
Customer Charge				\$9.06
Net Metering Purchase Credit	-105.00	kWh	@ \$ 0.03150000	\$-3.31
<b>Total Service Amount</b>				<b>\$5.75</b>
DESCRIPTION	USAGE	UNIT	RATE	CHARGE
Ballwin Annex Municipal Charge - Service	\$9.06		@ \$ 0.07527000	\$0.68
<b>Total Tax Related Charges</b>				<b>\$0.68</b>
<b>Total Electric Charges</b>				<b>\$6.43</b>

Net Energy (Billed)

# Solar + Storage



## FINANCIAL CASES FOR BATTERIES:

- **TIME OF USE (TOU)**— If your utility charges you different rates depending on the time of day that electricity is being used.
- **NET METERING** — If the excess generation from your solar array is credited at avoided cost rates (i.e. wholesale electricity prices).
- **DEMAND CHARGES** — Sometimes utilities have demand charges, meaning your electricity rate varies based on your peak demand, which is the period of time during the billing cycle that you use the greatest amount of electricity (usually calculated in 15 minute increments).

# 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



# Example proposal

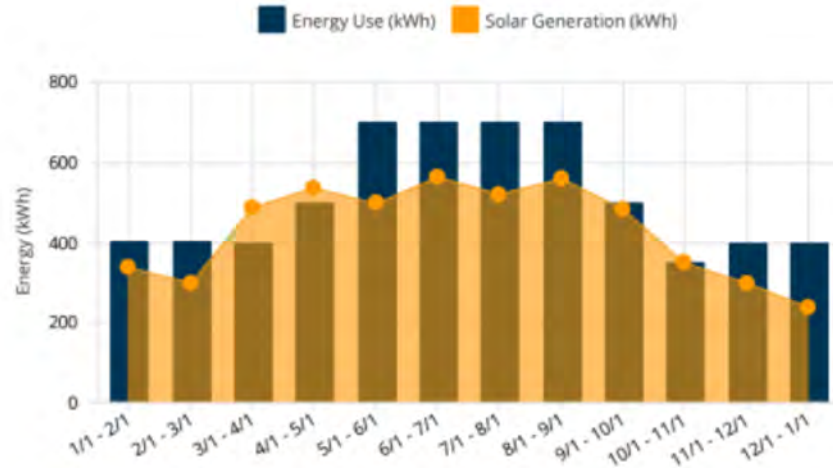
## Solar PV System Details

System Size & Generation:

4,160 W-DC      System Size (DC)

3,120.0 W-AC      System Size (AC)

5,167 kWh      1st Year Generation



This solar layout was created based on satellite imagery. When you move forward, our design and engineering team will conduct a site visit, then create a design package that will be submitted to your utility and the permitting authorities. Based on product availability and

Equipment:

(13) REC REC320NP Black      Solar panels

(13) ENPHASE IQ7-60-2-US      Inverter(s)

System Pricing & Incentives:

Solar PV System Cost

Ameren PV Rebate

Federal Tax Credit

**Net Solar PV System Cost:**



# *Why Go Solar?*



# Environmental Equivalencies for a 7.2 kW array (One Year)

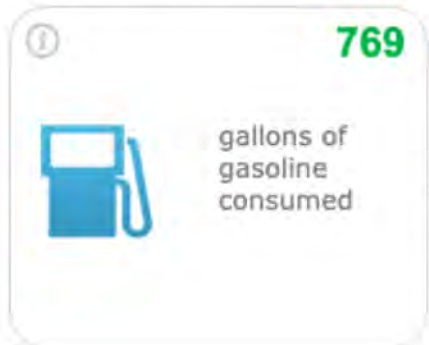
## Greenhouse gas emissions from



-or-



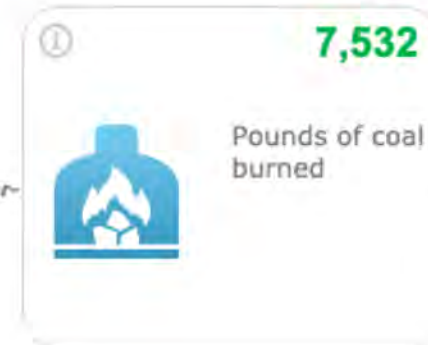
## CO<sub>2</sub> emissions from



-or-



-or-



# OneSTL Energy and Emissions Working Group

**Target = Reduce greenhouse gas emissions by 28% by 2025 and 80% by 2050 (2005 baseline).**

## Activities:

- Complete a regional Greenhouse Gas Inventory
- Support city efforts to expand energy efficiency programs and renewable energy projects
- Coordinate with partners on commercial and residential solar group-buy programs
- Convene a regional climate collaborative





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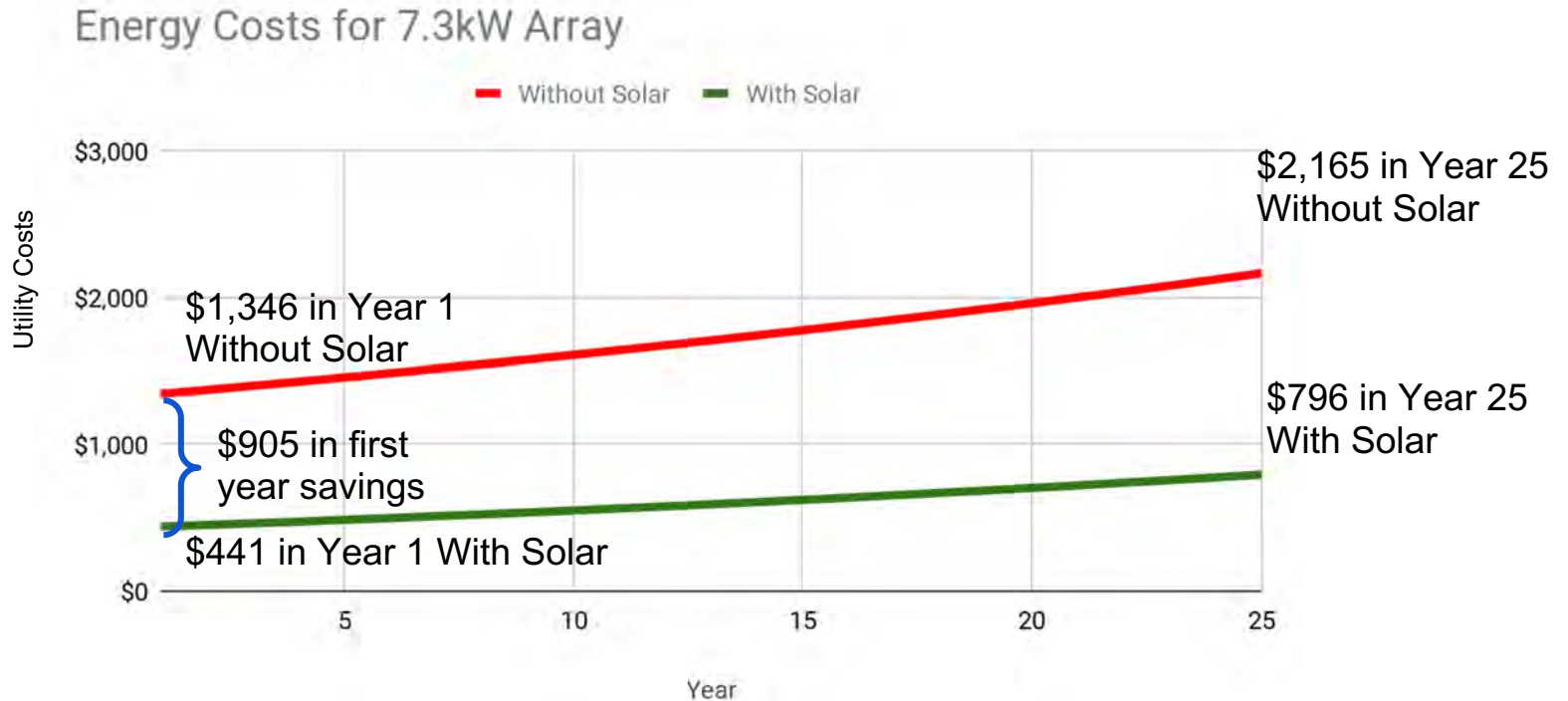
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# Solar Power is Surging!

- U.S. has 88 gigawatts of solar power, enough to power over 16.4 million homes. (SEIA -2020 data)
- Over 2.6 million solar installations across the U.S.
- A new solar project installed about every 2.5 minutes.



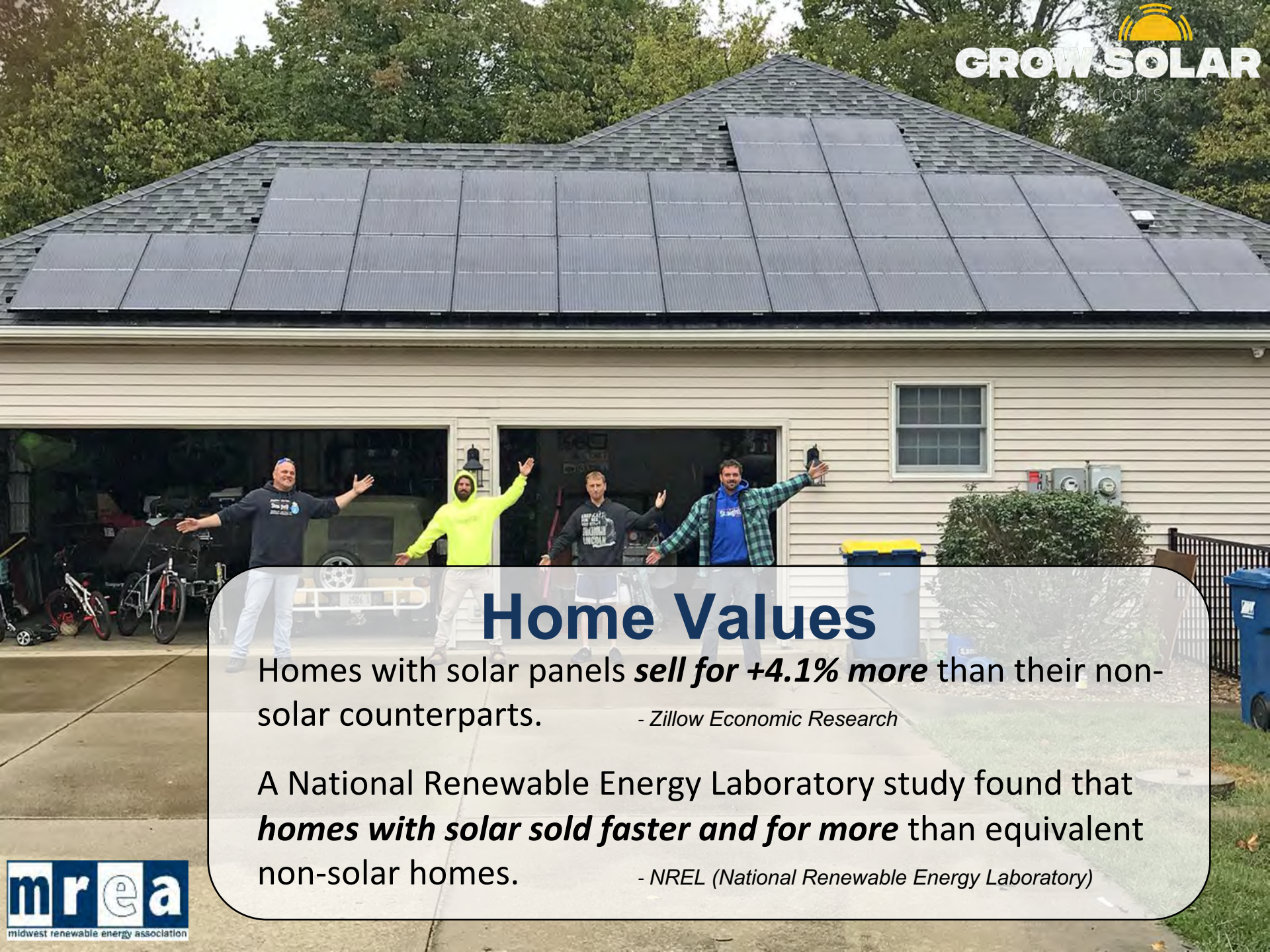
# Reduce Your Energy Bill



Estimated electric bill over 25 Years: 9.5 cents/kwh + 2.0% annual increase

**25-year electricity cost post-solar: 4.7 cents/kWh**

***Estimated 25-Year Savings: \$28,056!***



## Home Values

Homes with solar panels **sell for +4.1% more** than their non-solar counterparts. *- Zillow Economic Research*

A National Renewable Energy Laboratory study found that **homes with solar sold faster and for more** than equivalent non-solar homes. *- NREL (National Renewable Energy Laboratory)*

# *Home Energy Efficiency*





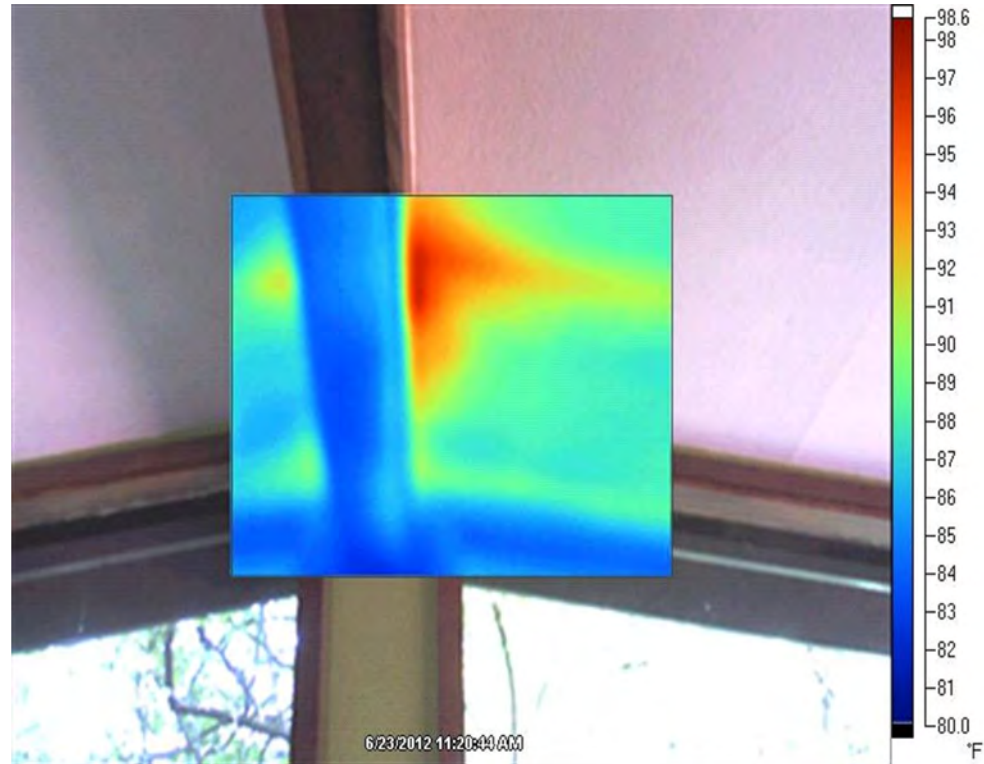
# Energy Efficiency

- LED lighting
- Dimmer switches -- saves energy and allows your spaces to evolve with the day
- Heat pump hot water heater
- Low-flow showerheads and sink aerators
- Energy Star appliances
- Insulating crawl spaces
- Programmable thermostats and smart thermostats
- Replace HVAC filters
- High Efficiency Heating and Cooling (HVAC)
- Power strips
- Air sealing & insulation
- Electricity usage habits (turning off lights, unplugging devices, etc)



# Incentives

- Ameren's efficiency incentive program can be found at [AmerenMissouriSavings.com](http://AmerenMissouriSavings.com)
- StraightUp Solar will reimburse customers **\$300** for completing an energy audit prior to installation\*.



*This thermal image, taken during an energy audit, shows a roof with an energy leak.*

*\* To receive this incentive, the customer must select a home energy auditor certified by the Building Performance Institute or the Missouri Department of Natural Resources Division of Energy*

# About StraightUp Solar



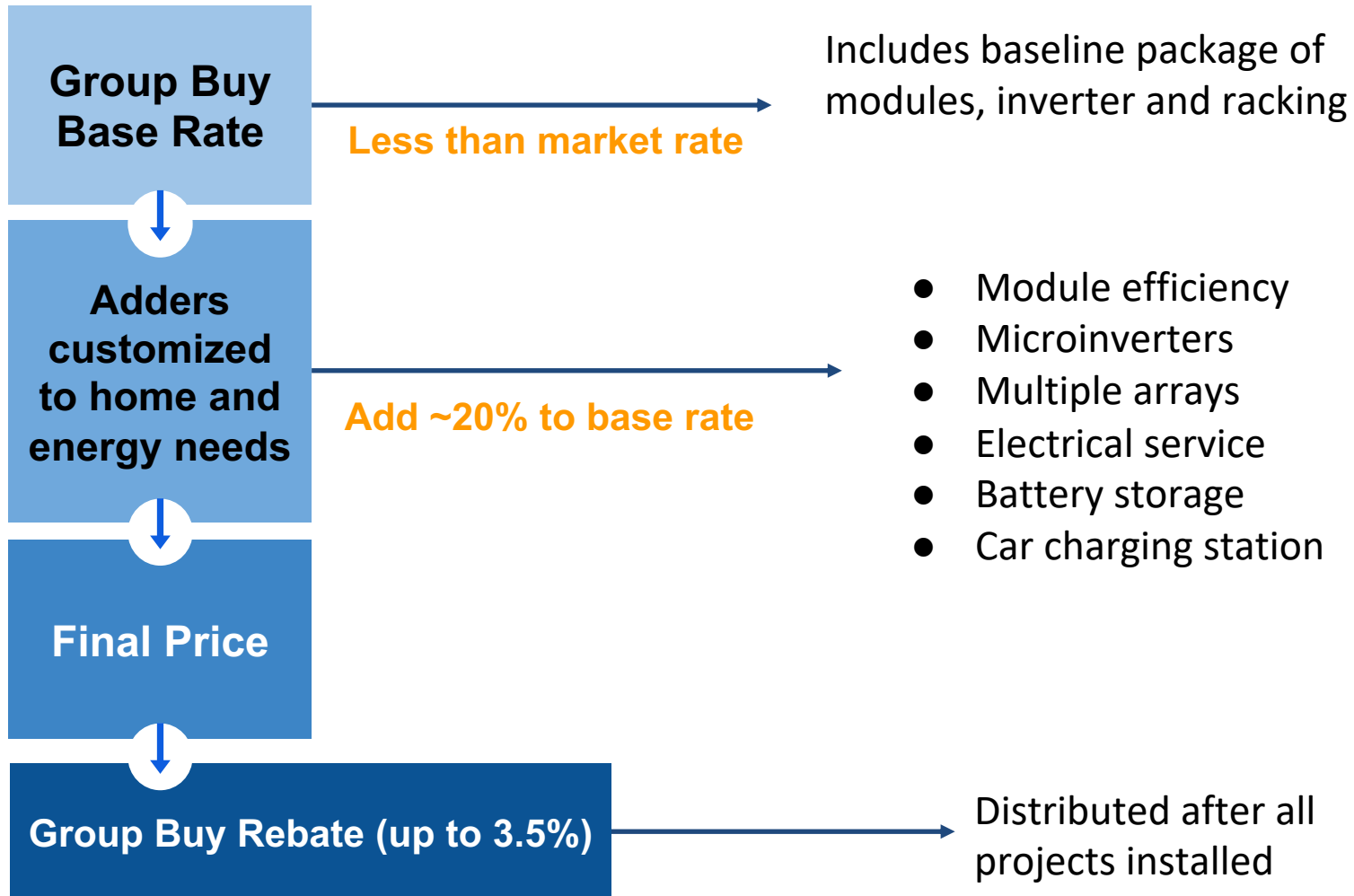
- Founded in 2006, Serves IL & MO
- 1,700+ Installations to Date
- 85+ Employees; 46% with NABCEP Certification
- Certified B Corporation
- Winner of 14 group buy programs
- Amicus Solar Cooperative Member
- REC Premium Installer
- 10 Year Workmanship and Production Warranty



# *What Are The Costs?*



# Solar Pricing Structure



# Group Buy

## How It Works

The more people go solar, the lower the price:

Total KW	>50 kW	>150 kW	>300 kW	>500 kW	>750 kW	>1,000 kW	>1,250 kW
# Homes	7-10 homes	21-30 homes	40-60 homes	70-100 homes	110-150 homes	150-200 homes	180-200 homes
Total Rebate	.5%	1%	1.5%	2%	2.5%	3%	3.5%

**Totals for Grow Solar St. Louis and Grow Solar  
Metro East combine for the benefit of all!**

# Solar System Price Spectrum



**\$25,000**  
One Array; Home, 5-7kW

**\$40,000**  
Ground-mount, 10+kW

**\$15,000**  
One Array, Garage 4-5kW

**\$30,000**  
Two Arrays,  
One Roof, 7-9kW



# *What Are The Incentives?*





# Residential & Commercial Renewable Energy Tax Credit (Federal)

- Federal Renewable Energy Tax Credit available on qualified expenditures in 2021
  - 26% of costs of solar PV system
  - 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, but requires you have tax appetite
- A home must be owned by the taxpayer but does not have to serve as the principal residence
- Incentive details at [energystar.gov](https://energystar.gov) or [irs.gov](https://irs.gov)

# Ameren Missouri \$.25/W Rebate

Systems operational starting July 1, 2019 - December 31, 2023 are eligible for a \$0.25 per watt rebate.

- Maximum solar system size for a solar rebate for a Residential customer is 25 kW
- Maximum solar system size for a solar rebate for a Commercial or Industrial customer is 150 kW.
- Maximum solar system size to qualify for net metering is up to the load of the facility or 100 kW.

# 7.0 KW Residential System

	Market price	Grow Solar
Base Price	\$25,270	\$21,490
Adders	\$3,000	\$3,000
<b>Total Price</b>	<b>\$28,270</b>	<b>\$24,490</b>
Ameren Rebate	\$1,750	\$1,750
26% Federal Tax Credit	\$6,895	\$5,912
Group Buy Rebate at 3.5% Max	\$0	\$857
<b>Total Cost</b>	<b>\$19,625</b>	<b>\$15,971</b>

**Example: 2-Story Asphalt Roof with 5/12 pitch**



# *Solar Finance*

# Solar Financing Options

## Clean Energy Credit Union

- 100% clean energy loans - 1st of its kind launched 2017
- Partnership with Amicus Solar members
- Two loans in one combination package:
  - 12-18 month loan for 26% of system cost (covers the 26% Federal Tax Credit)
  - 12-, 15- or 20-year 4.75%-5.25% loan up to the remaining 74% solar electric system cost



# Five Easy Steps to Solar





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## **KEY INFO TO REMEMBER:**

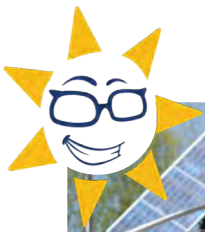
- **August 31**: Deadline to sign a contract for this reduced rate!
- Consider an energy audit for your home.
- Sign up for a free site assessment today!



## **REFERRAL BONUS**

- The first 25 people to refer someone who signs a contract will receive \$500 from StraightUp Solar





# 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!**

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



[www.midwestrenew.org/membership](http://www.midwestrenew.org/membership)

When there's a huge solar energy spill, it's just called *“A really nice day!”*

**Learn More:**

- Visit our learning modules

**Schedule a Site Assessment:**

- Contact **Jim Dixon** for an appointment at:  
[jim.dixon@straightupsolar.com](mailto:jim.dixon@straightupsolar.com) or call 314-620-5540

**Sign Up:**

- [GrowSolarSTL.org](http://GrowSolarSTL.org)

**Follow Us On Facebook!**

- Search for “Grow Solar St. Louis”

**Issues, Comments, Questions?**

- [marta@midwestrenew.org](mailto:marta@midwestrenew.org)