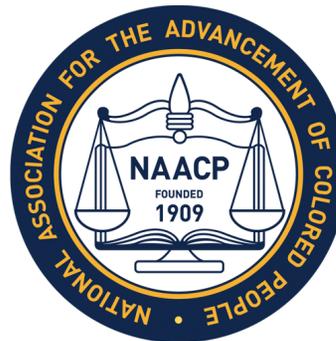
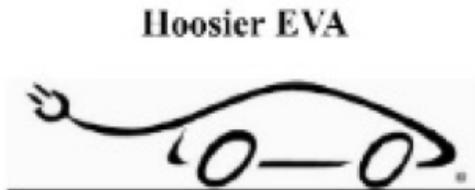
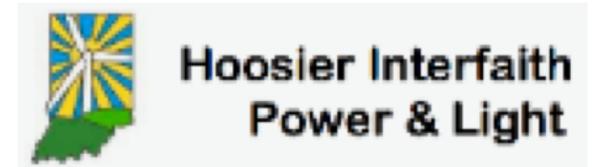




Indianapolis Solar Co-op Information Session



Thanks to our Partners & Volunteers!



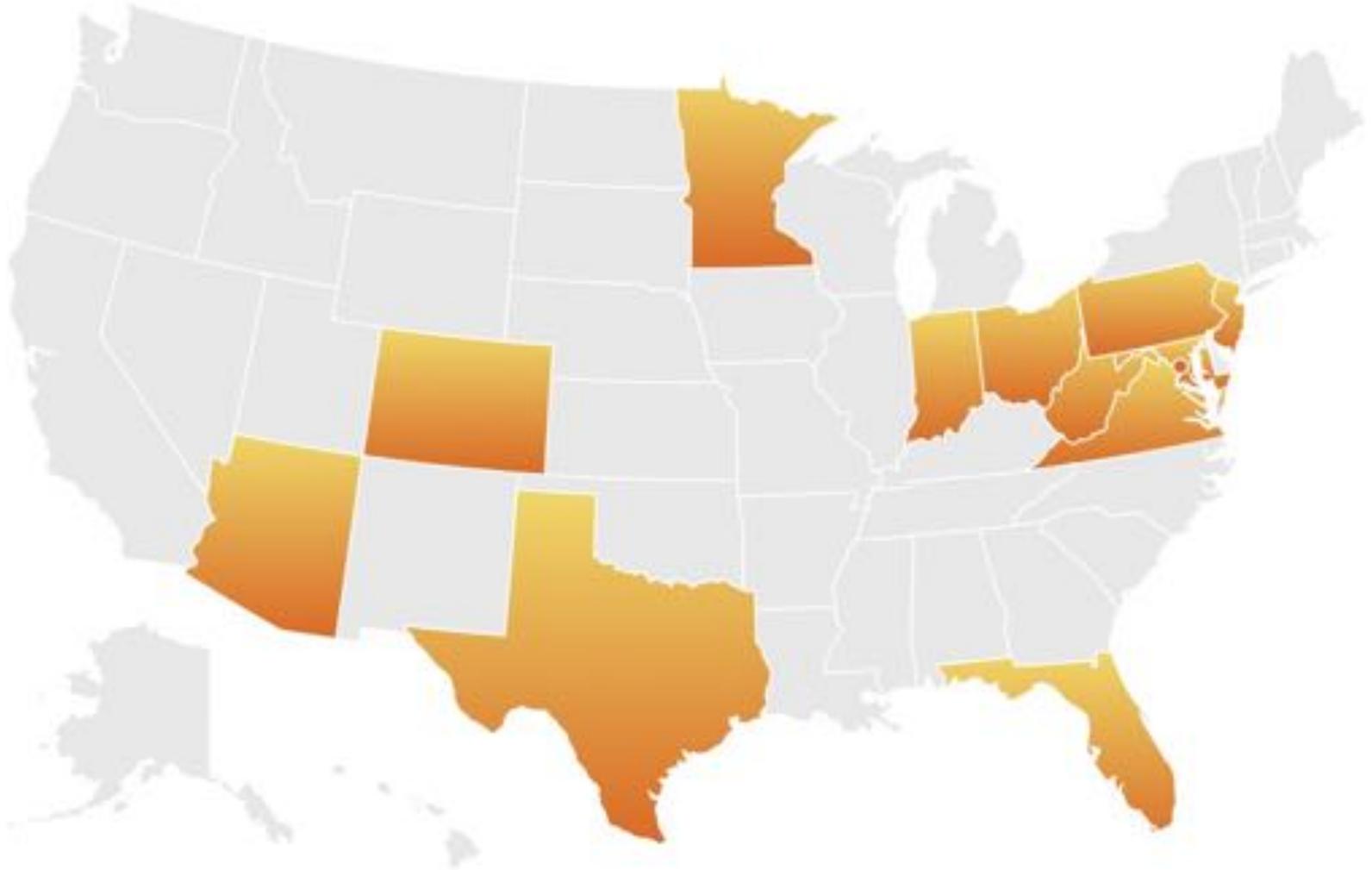


We're a community of people building a new energy system with rooftop solar at the cornerstone. We help people go solar, join together, and fight for their energy rights.

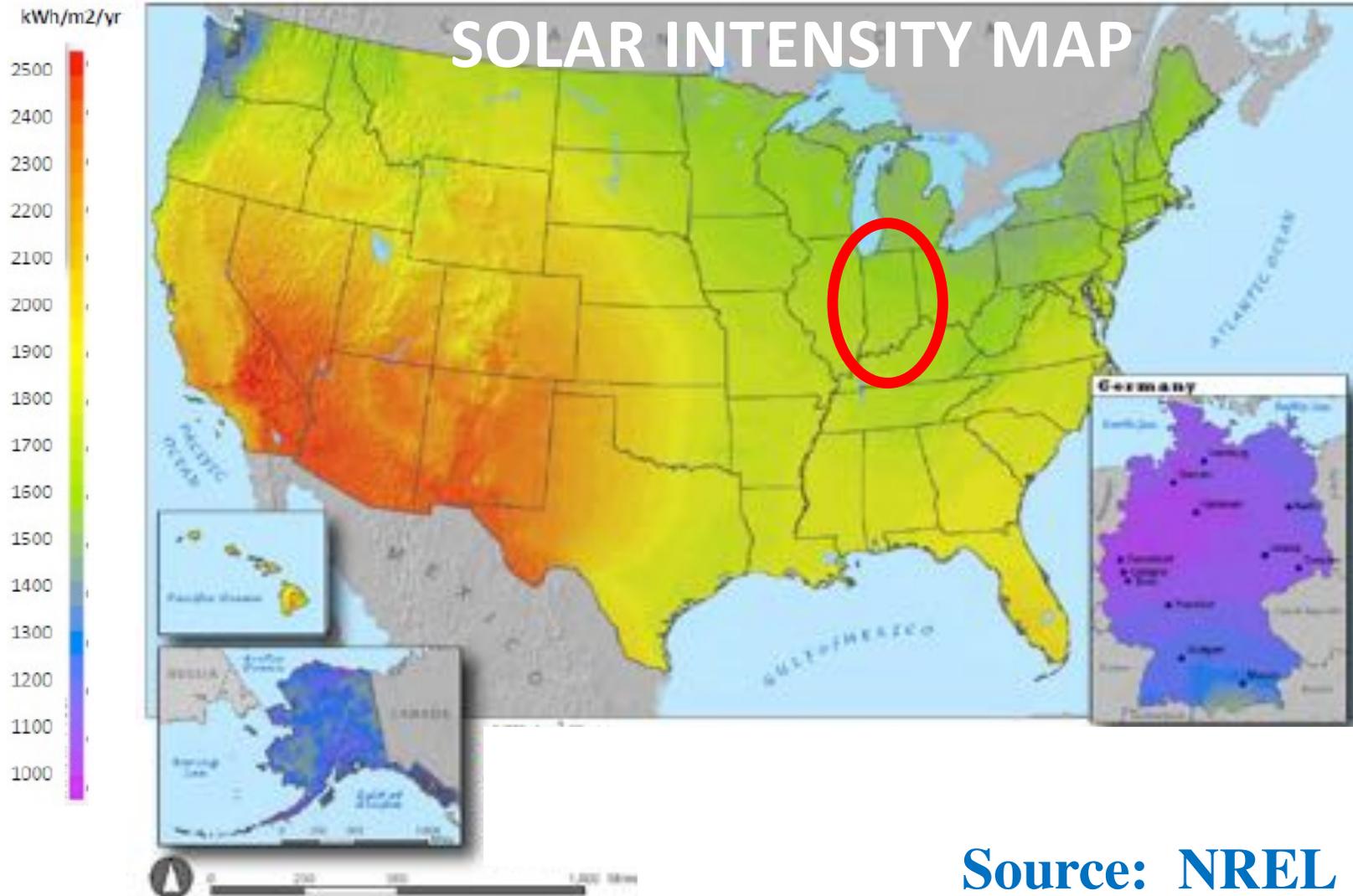


Solar United Neighbors today

Arizona
Colorado
D.C.
Florida
Indiana
Maryland
Minnesota
New Jersey
Ohio
Pennsylvania
Texas
Virginia
West Virginia



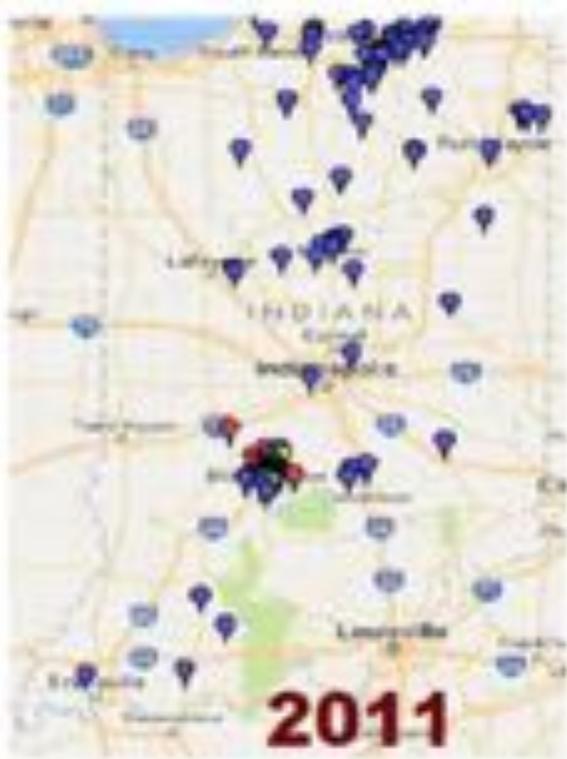
Indiana has ample solar resources



Indiana has more solar resources than Germany, one of the world's leaders in solar.

Source: NREL

Solar is growing in Indiana



**IURC expands
Net Metering.**



**Solarize Indiana
formed in response
to anti-solar bill
SEA 309.**

www.

Source: www.sirensolar.org

How we help you go solar

Co-op Membership

- Group process
- 50 – 100 neighbors
- 6-8 month process
- Group selects single installer
- Bulk negotiation for best pricing
- Sign individual contract
- Free 1-year membership!

Indianapolis Low Income Solar Subsidy

Low to moderate-income families may qualify for a grant to cover the cost of the solar system

Qualifying Income Levels are:

Family Size	Income Limits
1	\$44,750
2	\$51,150
3	\$57,550
4	\$63,900
5	\$69,050
6	\$74,150
7	\$79,250
8	\$84,350



Low Income Program Benefits

- Income-qualified participants are eligible for a system installation they fully own from day one at no cost.
- System will reduce electricity bill up to 100%
- Robust warranties, system monitoring, and operations and management at no additional cost
- Homeowners may qualify for 26% federal tax credit
- Increased property value and renewable energy property tax exclusion
- Lifetime membership with Solar United Neighbors



Presentation in three parts

1. Solar technology

2. How solar co-ops work

3. Solar economics

Part 1: Solar technology

How does a solar panel work?



Solar photovoltaic (PV)

Converts solar energy to electricity





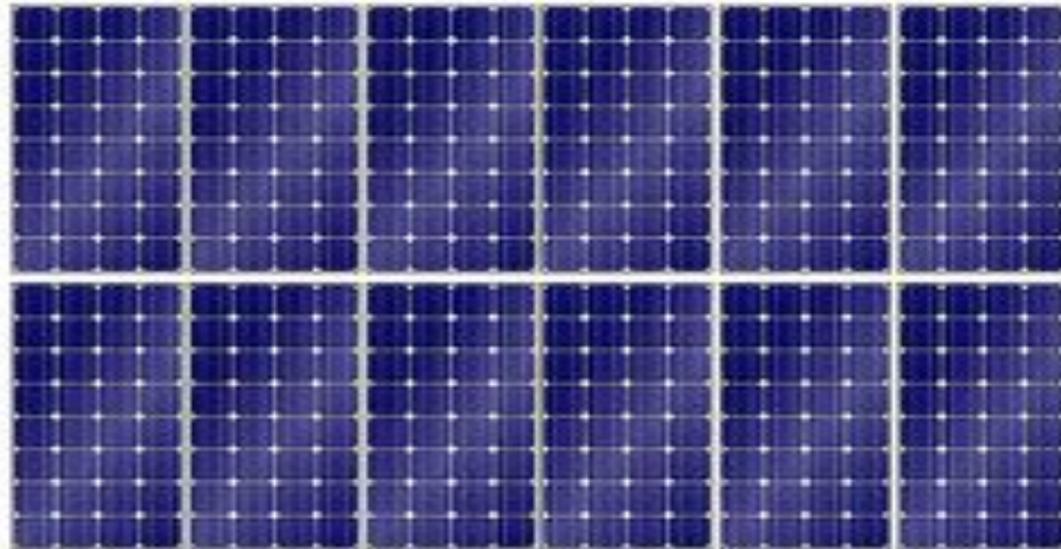
HOW SOLAR WORKS



- | | | | |
|-------------------------|----------------------------|------------------------------|---------------------------|
| 1
Solar Array | 2
Solar Inverter | 3
Electrical Panel | 4
Utility Meter |
|-------------------------|----------------------------|------------------------------|---------------------------|

Important terminology

Kilowatts (kW) & Kilowatt-hours (kWh)



3.6 kW Solar System, to scale, using 300W solar panels

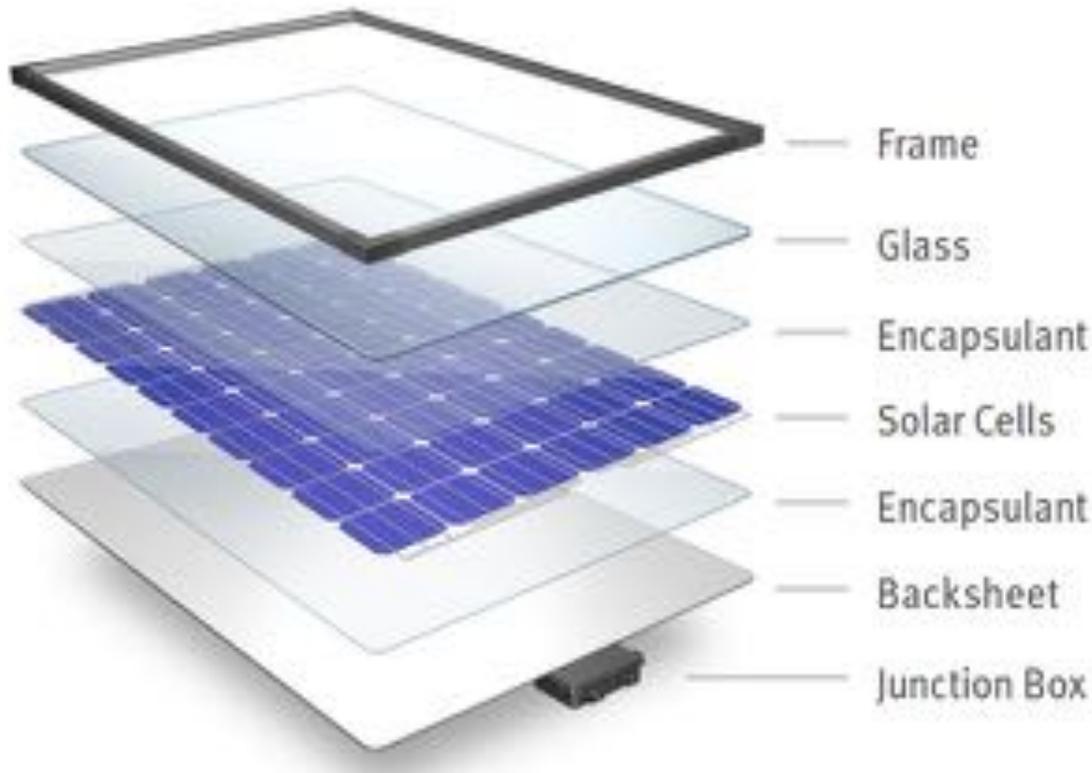
System measured in kW

Electricity production in kWh

Most homeowners install between 2 kW – 12 kW



System components: Panels



Panel / Module

Image Source: DuPont

Solar Array



System components: Inverters



String inverter



String inverter
& DC optimizers



Microinverters

System components: Electrical panel

How does my my solar connect to my electrical panel?

Simple connection in panel

Most home electric systems don't need upgrades before solar



System components: Racking



Attaching racking to roof

Flashing



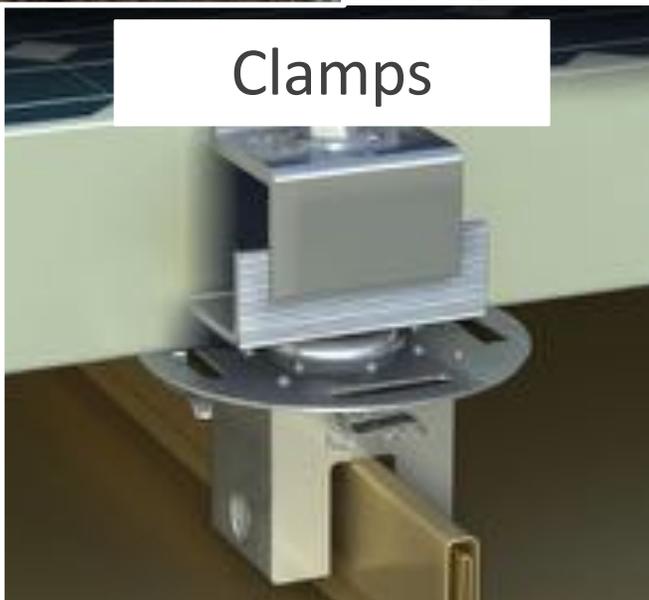
Ballast



Stand offs + beams



Clamps



Pitch pockets



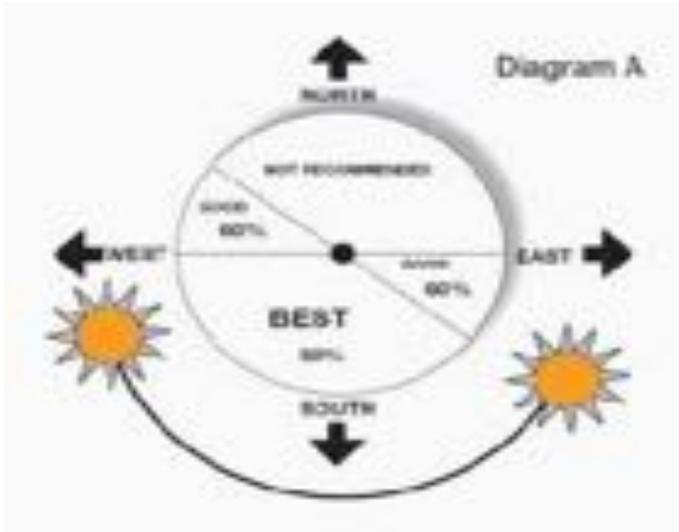
Standing seam metal roof



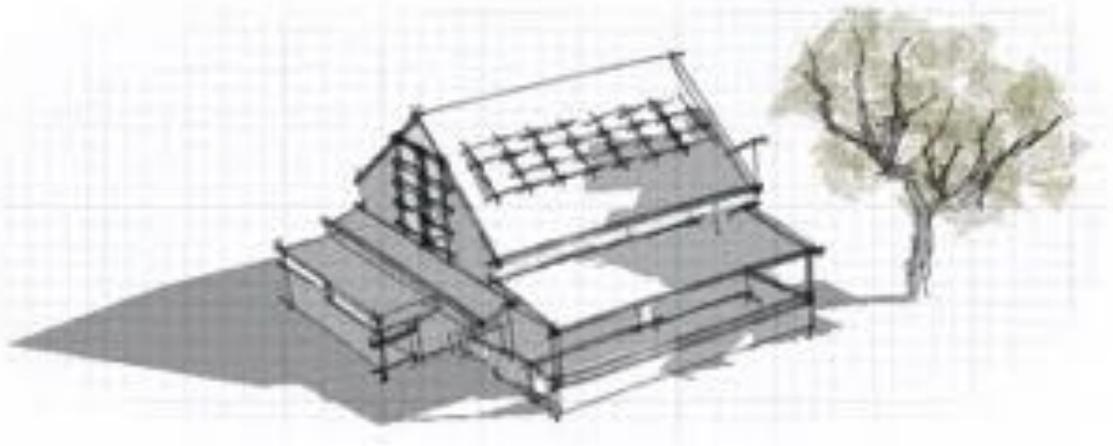
Ground-mounted solar



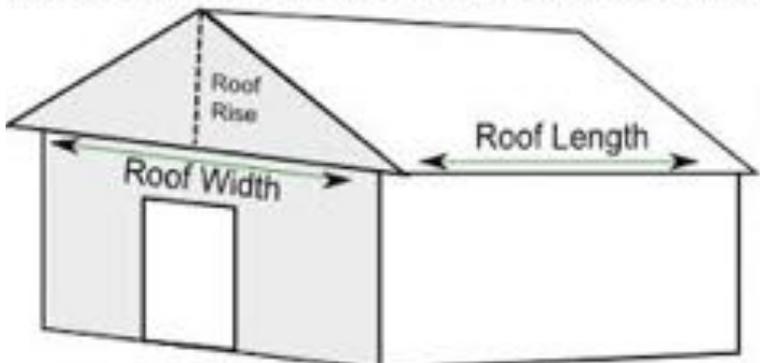
What's a good roof for solar?



Roof faces south



No shading



Enough space to mount panels



Roof in good condition



System components: Batteries

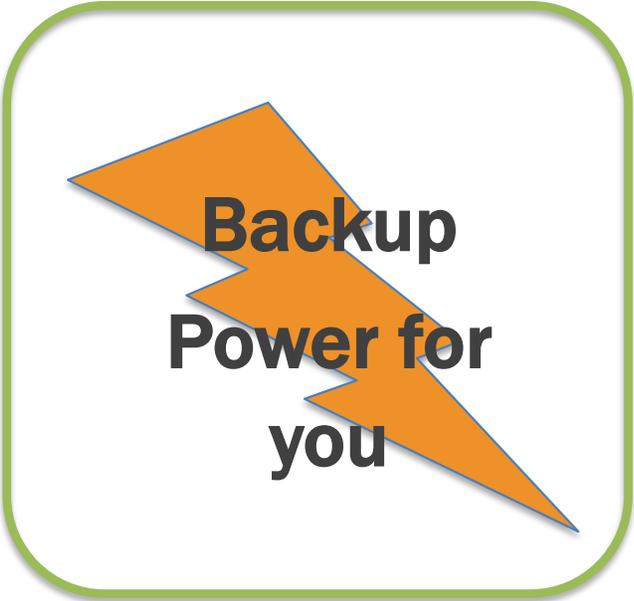
What happens when the power goes out?

When grid is down, solar shuts off (safety mechanism)

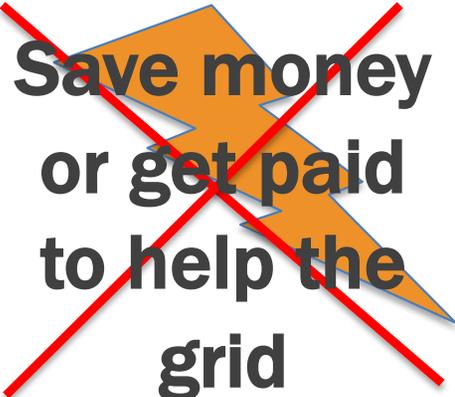
Need batteries if you want you want power during outages



Value of battery storage



**Backup
Power for
you**



~~**Save money
or get paid
to help the
grid**~~

You might want storage if...

- **Frequent utility outages**
- **Critical loads at home (ex. well pumps, medical equipment)**
- **Emergency/disaster preparedness**



**SOLAR
UNITED
NEIGHBORS**

Want to learn more?

Check out our new *Battery Storage for Homeowners* guide!

www.solarunitedneighbors.org/storage

SOLARIZE
Indiana

**SOLAR
UNITED
NEIGHBORS**
OF INDIANA



HOW SOLAR WORKS



- 1**
Solar Array
- 2**
Solar Inverter
- 3**
Electrical Panel
- 4**
Utility Meter

What is net metering?

Allows flow of electricity to AND from customer.

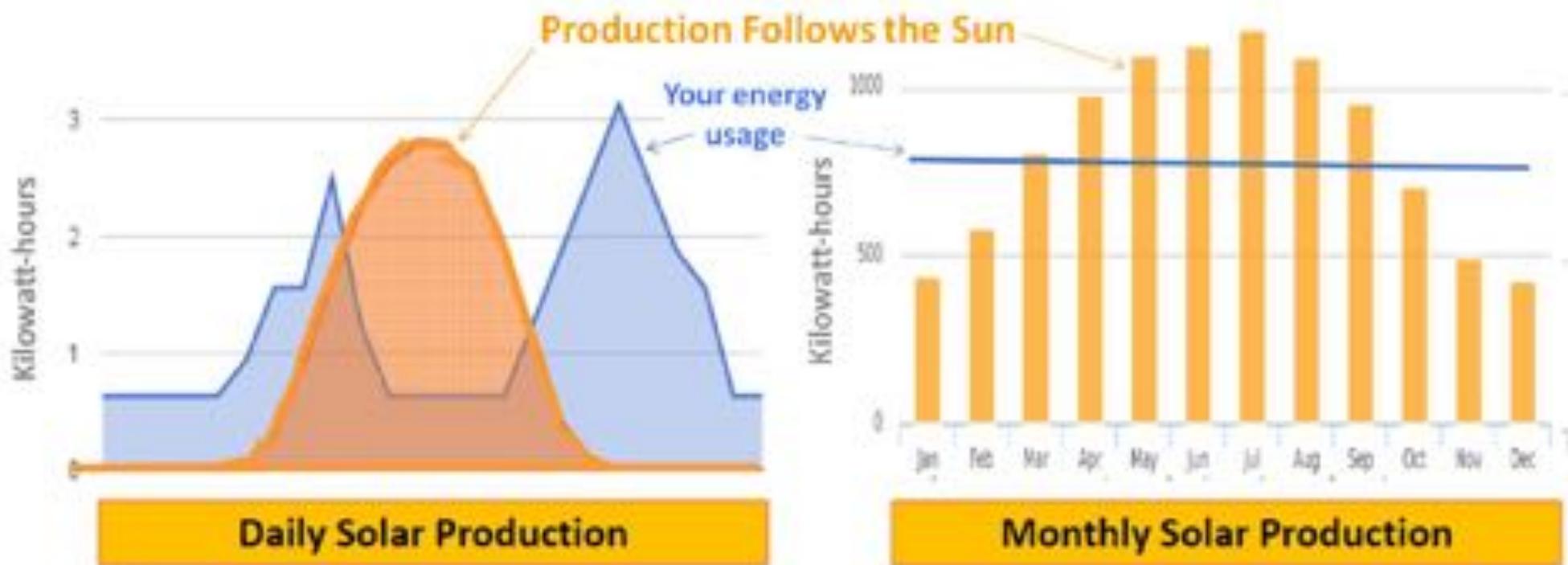
1kWh produced = 1kWh consumed

When you generate more than you use, extra electricity flows back through meter and you receive a credit on your electric bill for that excess production. That credit can roll over month to month.

**[Amount electricity used] – [Amount electricity produced]
= Your monthly electricity bill**

What is net metering?

Net metering creates a “solar offset” and generates credits that can be used throughout the year



Net metering in Indiana

Net Metering in Indiana is scheduled to phase out:

- **Systems installed by July 1, 2022 will receive net metering until 2032**
- Systems installed after 2022 will not receive net metering

When Net Metering ends:

- Instead of getting the full 1:1 net metering rate, homeowner will be credited at the marginal price (typically about 1/3 the cost of retail rate) + 25%



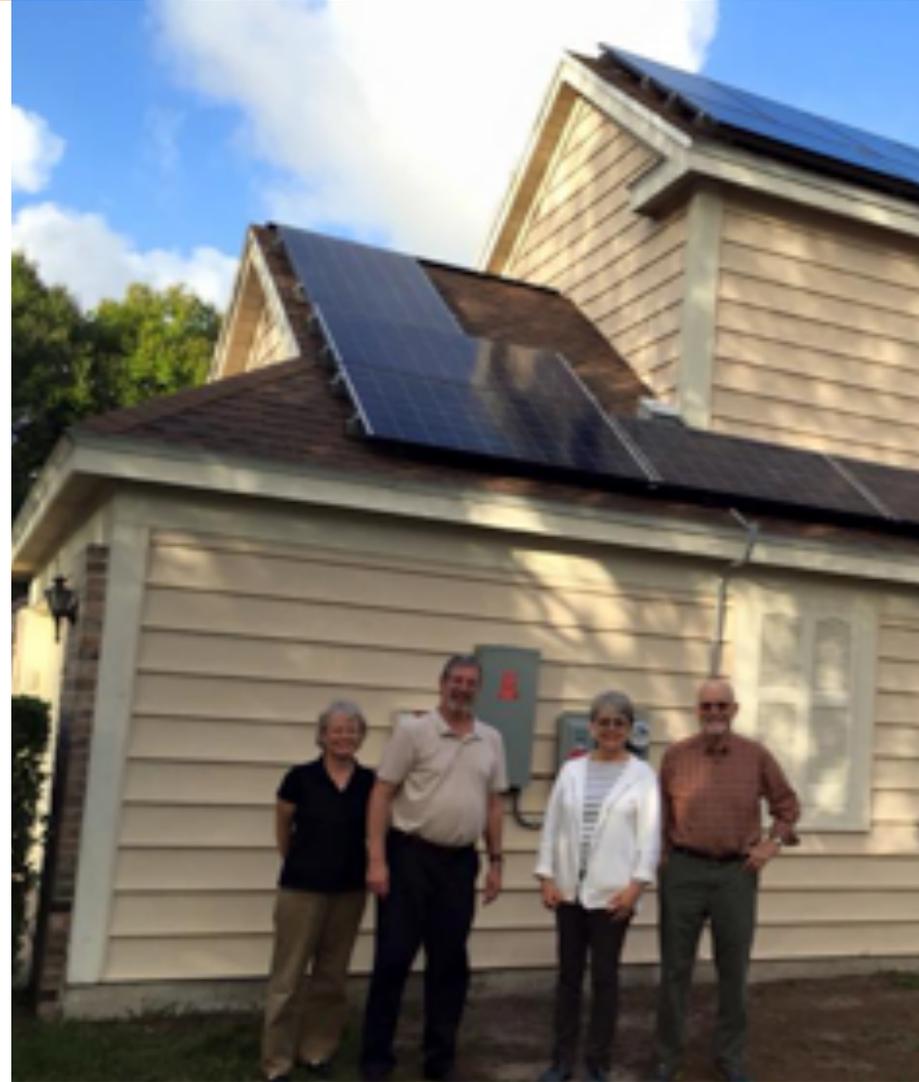
Frequently asked questions

- Warranties?
- Property value and taxes?
- Homeowners' insurance?
- Maintenance?
- Weather damage? Snow cover?
- How long do systems last?
- Will HOA allow solar on my home?
- What if I'm in a historic district?

Part 2: How solar co-ops work

Why go solar with the co-op?

- Best value on installation
- Support throughout the process
- Connect with fellow solar enthusiasts
- Become part of growing solar movement



1 LEARN

about the solar co-op

Attend an info session, visit our website

2 SIGN UP

online to participate in the solar co-op

There is a sign-up deadline usually in month 5 or 6.

3 GROW THE SOLAR CO-OP

tell your friends and neighbors!

4 SELECT

an installer once the solar co-op has 30 participants

Solar United Neighbors:

- Issues a competitive RFP on behalf of the solar co-op - open to all installers!
- Review bids, call references and check licensing, equipment and warranties

Solar co-op participants:

- come together to review bids, select a single installer

★ SIGN UP DEADLINE

Last chance to join the solar co-op

5 SCHEDULE

Installer site visit, receive customized proposal based on solar co-op pricing

6 SIGN A CONTRACT with the installer

7 INSTALL solar system

8 PARTY!

Meet your fellow solar neighbors and celebrate your successes

Who picks the installer?

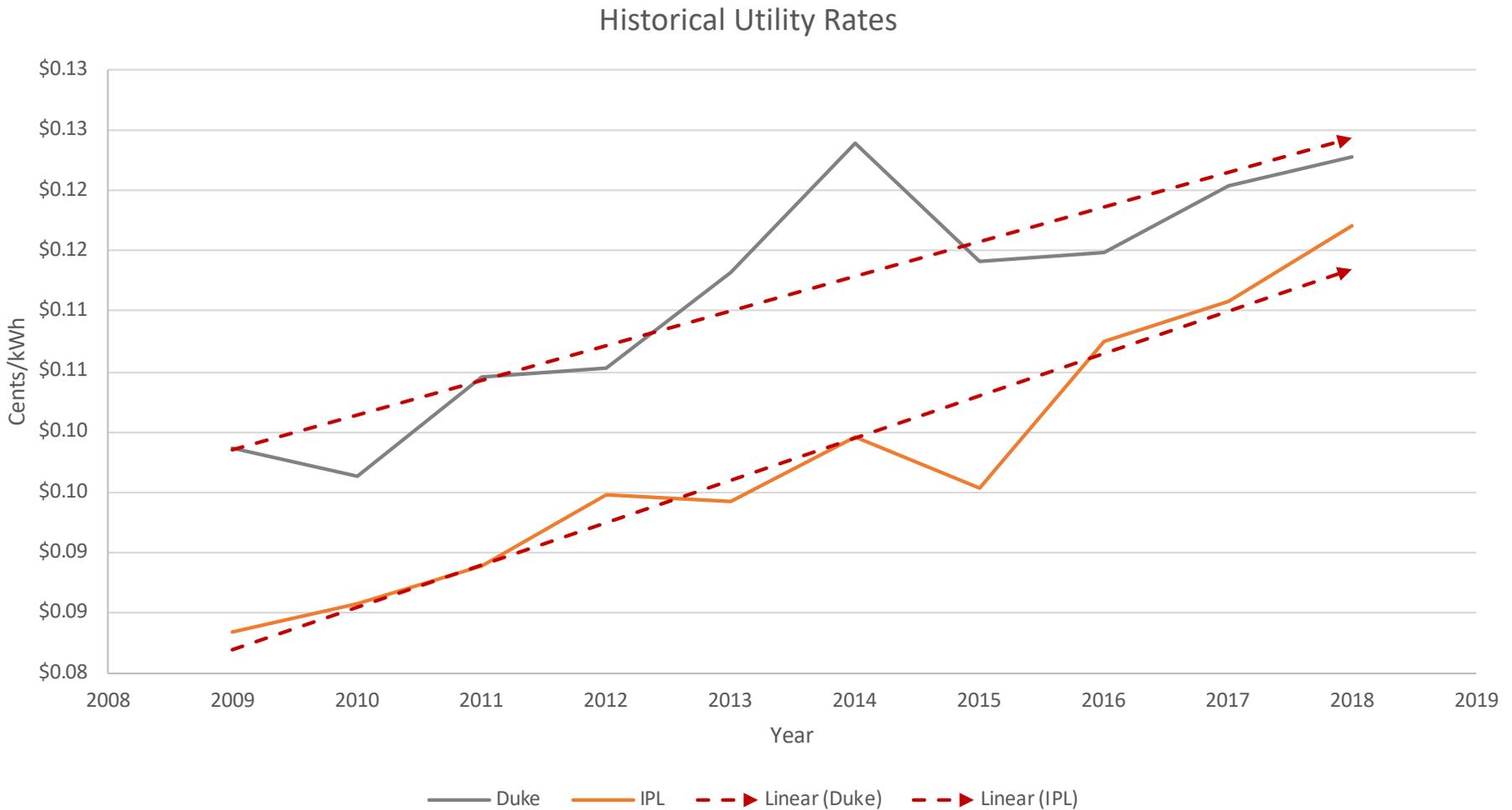
Co-op members!

Co-op members consider specific installer criteria including:

- Price
- Equipment quality
- Warranties
- Experience
- Business location

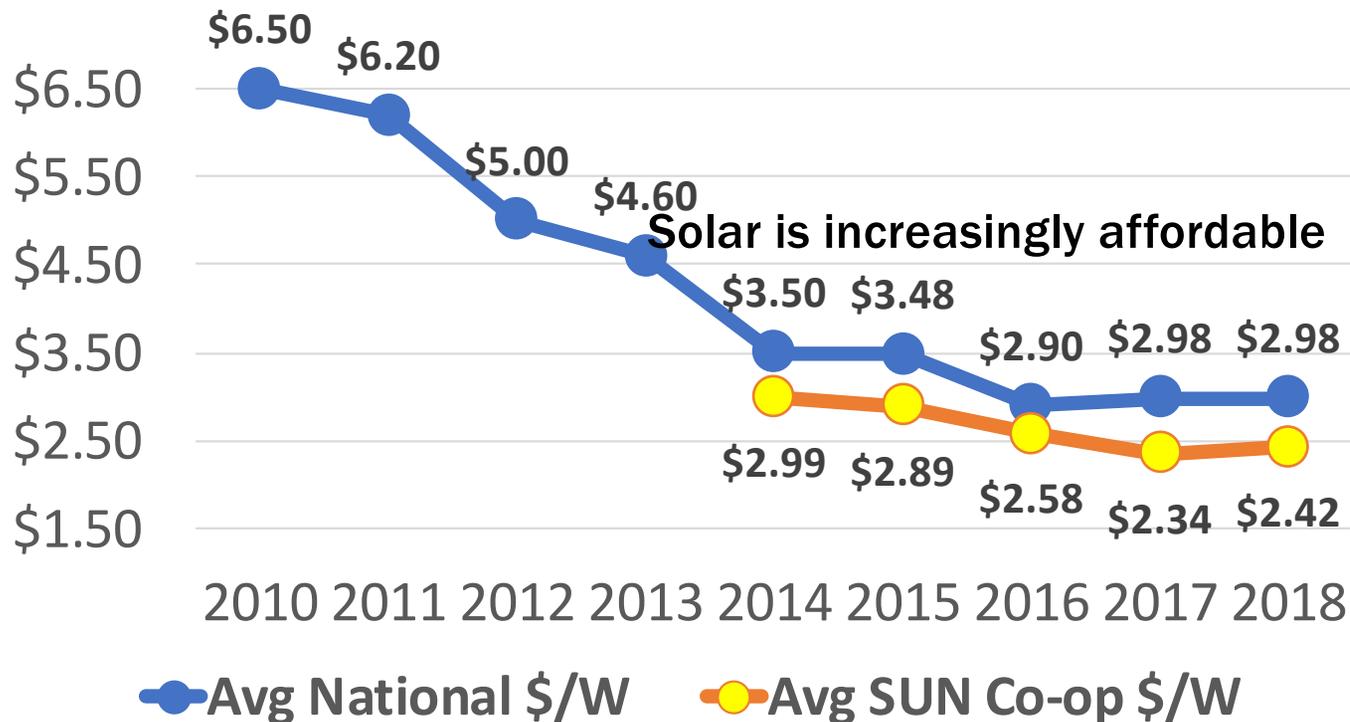
Part 3: Solar economics

Duke and IPL Historical Utility Rates



Solar is increasingly affordable

Average National & Average SUN Price Per Watt
(2010 – 2018)

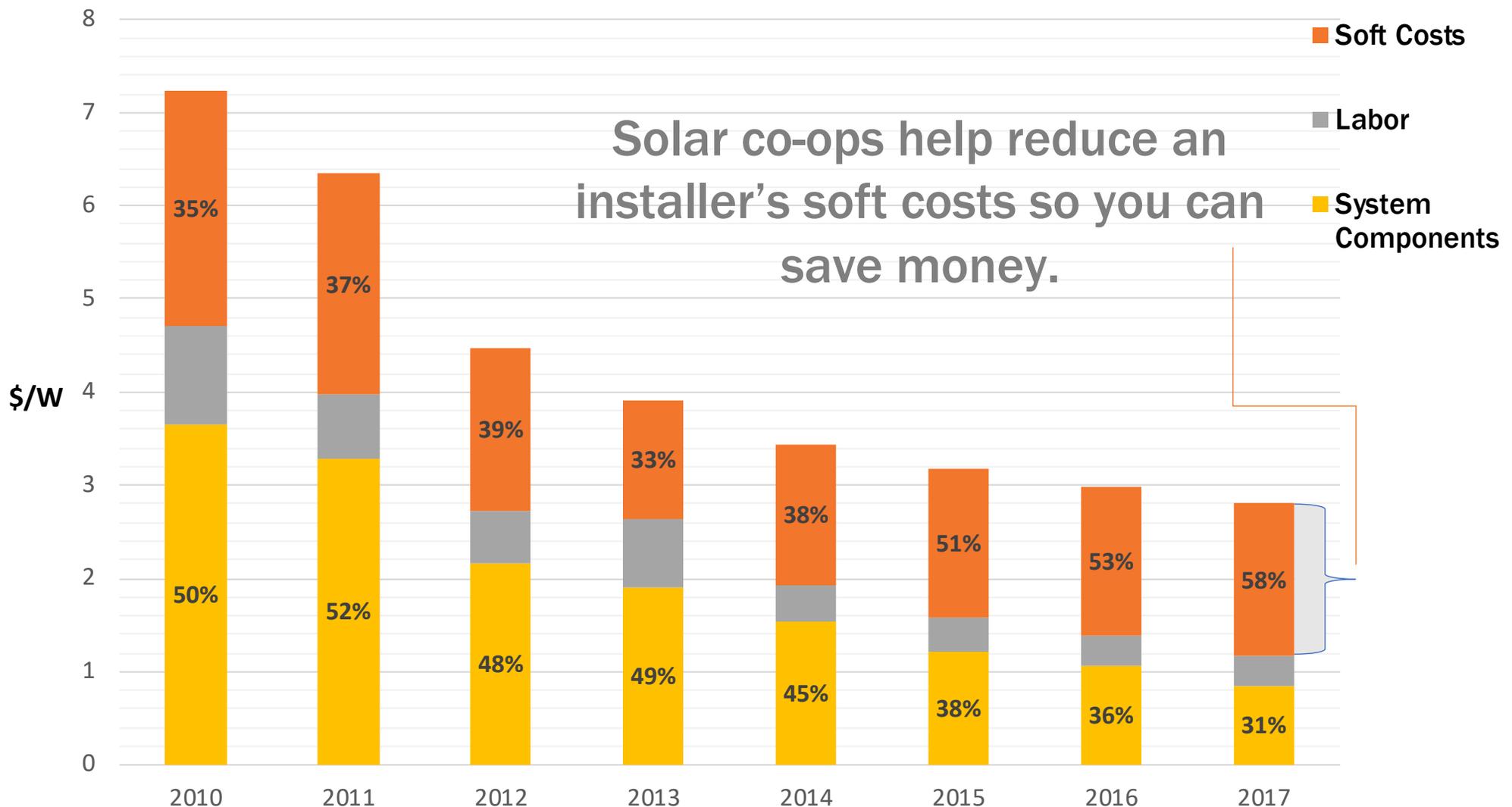


- Costs have fallen >50% since 2010
- Average cost of 5kW system in 2010: \$32,500*
- Average cost of 5kW system in 2014: \$17,500*
- Average cost of 5kW system in 2014 SUN co-op: \$14,950*
- Average cost of 5kW system in 2018: \$14,900*
- Average cost of 5kW system in 2018 SUN co-op: \$12,100*
- **gross cost

Sources: SEIA/Wood Mackenzie Power & Renewables "U.S. Solar Market Insight" reports & SUN metrics



Breaking down the cost of solar



Assumptions: 5.7 kW system size, adjusted for inflation, national data.

Citation: Fu, Ran, David Feldman, and Robert Margolis. 2017. "U.S. Solar Photovoltaic System Cost Benchmark Q1 2017." NREL/TP-6A20-68925. Golden, CO: National Renewable Energy Laboratory (NREL). <https://www.nrel.gov/docs/fy17osti/68925.pdf>.



Example pricing

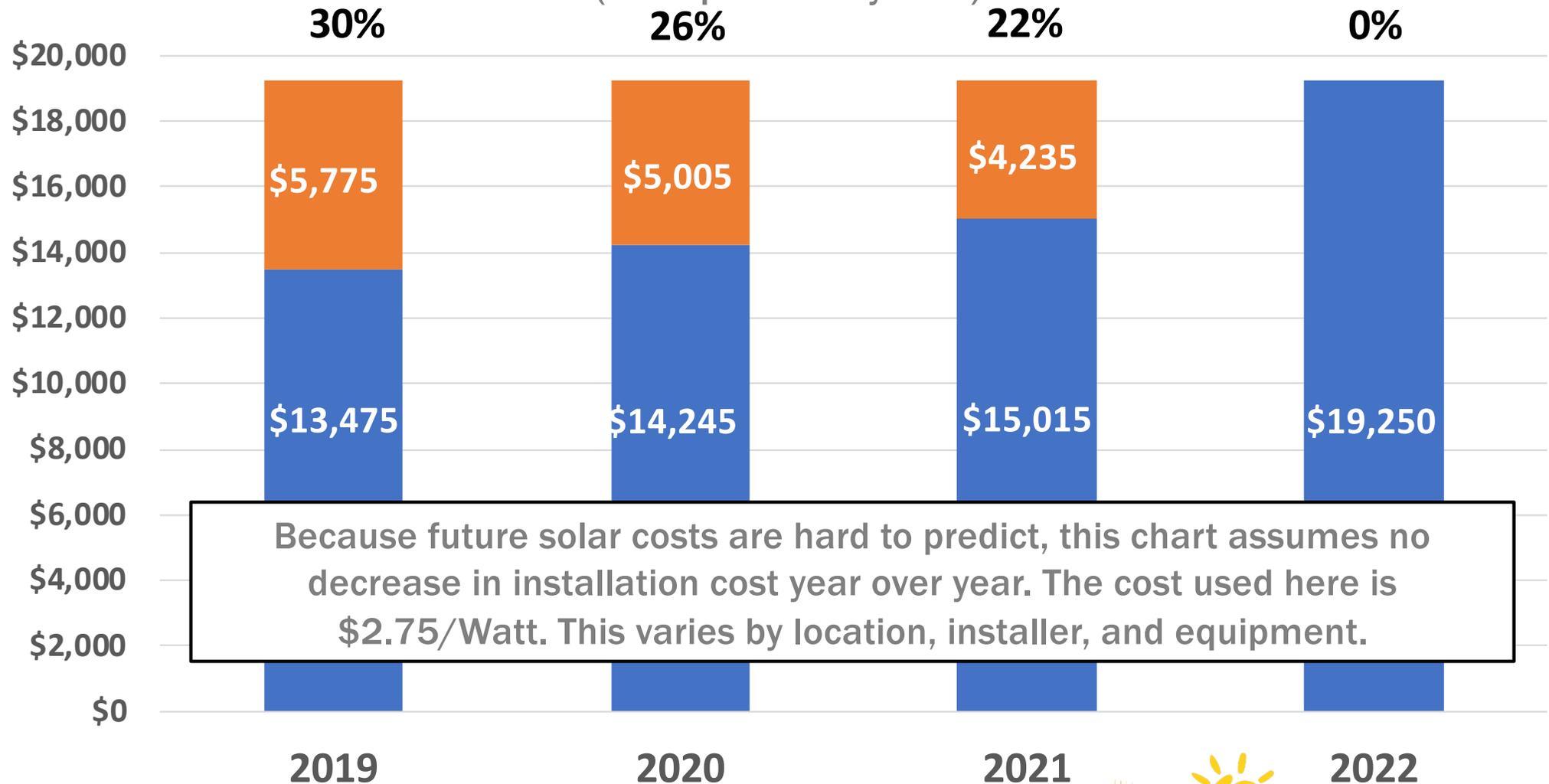
SAMPLE CASH PURCHASE:		
EXAMPLE PRICING ONLY. ACTUAL SYSTEM SIZE WILL VARY.	4kW	8kW
Average IN solar pricing (\$2.56/Watt)	\$10,240	\$20,480
26% Federal tax credit	-\$2,662	-\$5,325
Net cost	\$7,600	\$15,200
Solar Renewable Energy Credits (SRECs)	?	?
Estimated year 1 electricity savings*	\$600	\$1,200
Estimated year 10 savings (cumulative)*	\$6,300	\$12,700
Estimated savings by 2032 (year 13)*	\$8,400	\$16,900
Net Profit	\$800	\$1,700

*Please note that this is a conservative estimate based on the currently available information in Indiana. A solar energy system installed today will benefit from full retail rate net metering through 2032, but your system will continue to offset a portion of your electric bill for the entirety of the system's lifespan.



Federal tax credit is decreasing

Tax credit available as Federal Tax Credit Steps down
(Example 7kW system)



Because future solar costs are hard to predict, this chart assumes no decrease in installation cost year over year. The cost used here is \$2.75/Watt. This varies by location, installer, and equipment.

* Not inclusive of state and local incentives

■ Remaining Cost*



Financing Options

Loans

- Standard loans
- Solar loans & bridge loans
- HELOC

Grants

- USDA Rural Energy for America Program (REAP)

What's next?

What's next?

Join the Indianapolis Solar Co-op:

www.SolarUnitedNeighbors.org/Indianapolis

Tell your friends and neighbors!



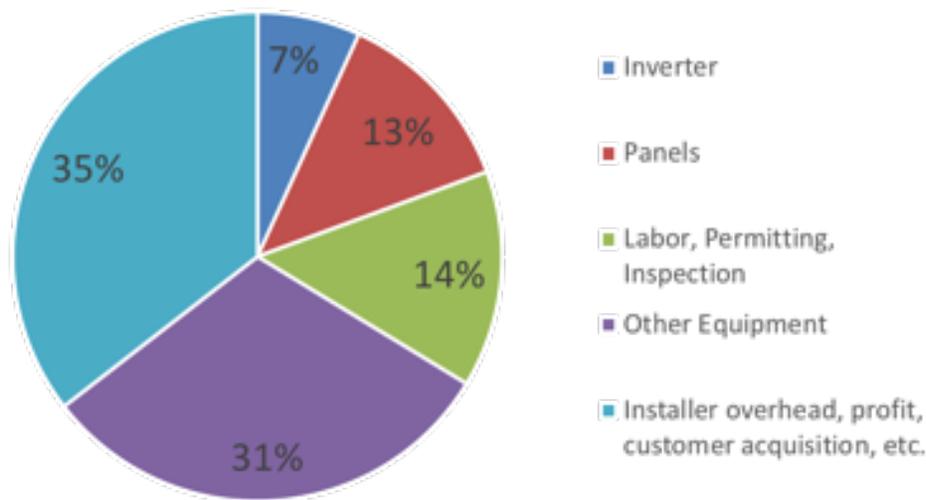


Thank you!

Zach Schalk, Program Director
Solar United Neighbors of Indiana
INteam@solarunitedneighbors.org

Solar Panel Tariff

Residential Solar Pricing Breakdown



Source: NREL

- 30% tariff on imported solar panels
- Only about 10-15 cents/watt (estimated)
- Average 7kW system = \$1,050 – \$735 after tax credit

Tariff drops down over next four years

- 2018 – 30%
- 2019 – 25%
- 2020 – 20%
- 2021 – 15%

