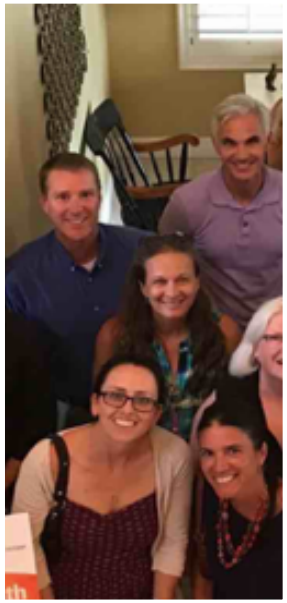
SOLAR UNITED NEIGHBORS

Indiana County Solar Co-op Info Session








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.


Presentation in three parts:

1. Solar technology
2. How solar co-ops work
3. Solar economics

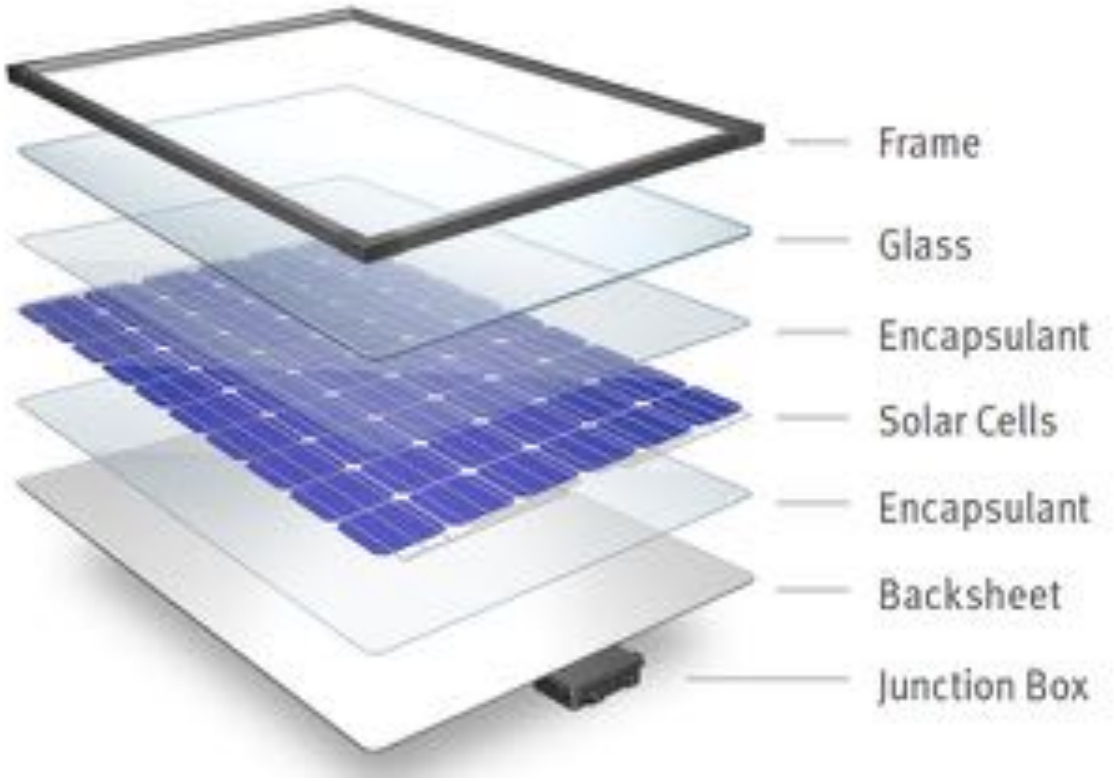
Part 1: Solar technology

Part 1: Solar technology

How does a solar panel work?

- Solar photovoltaic (PV)
- Converts solar energy to electricity

System Components: Panels



Panel / Module

Image Source: DuPont

Solar Array

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System Components: Inverters

String inverter

String inverter
& DC optimizers

Microinverters

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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

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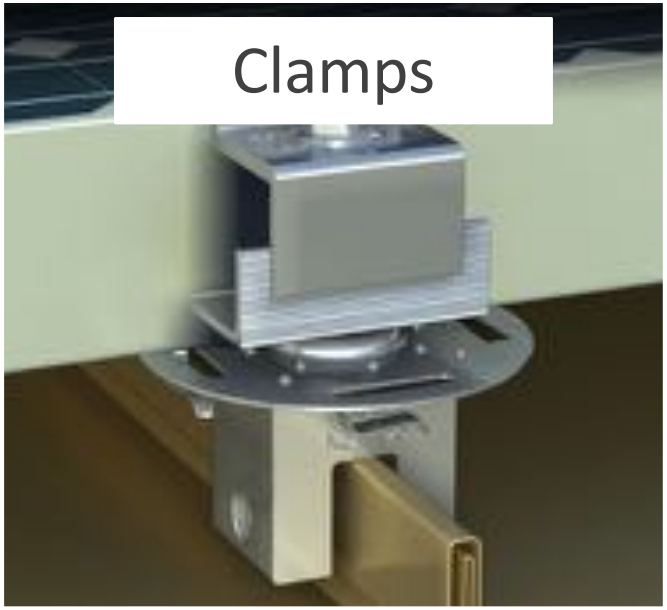
System Components: Racking

Attaching racking to roof

Shingle Roofs



Standing Seam Metal Roofs

Flat Roofs

Ground-mounted solar

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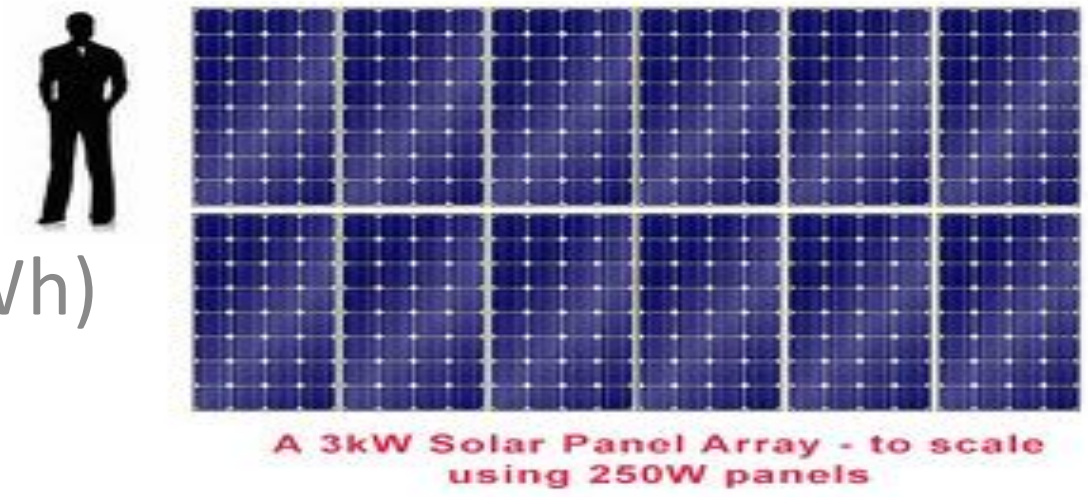
Part 1: Solar technology

Terminology

- Kilowatts (kW)
- Kilowatt-hours (kWh)



- System measured in kW
- Electricity production in kWh
- Most homeowners install between 4 kW – 12 kW

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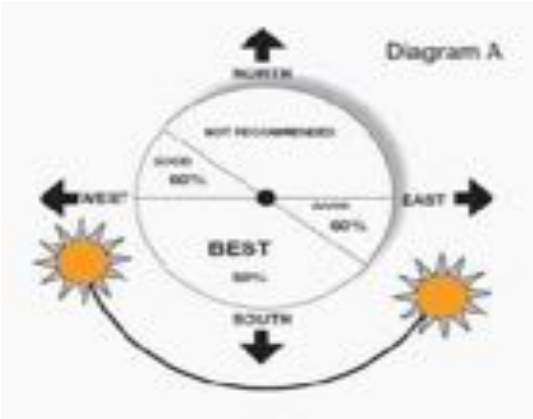
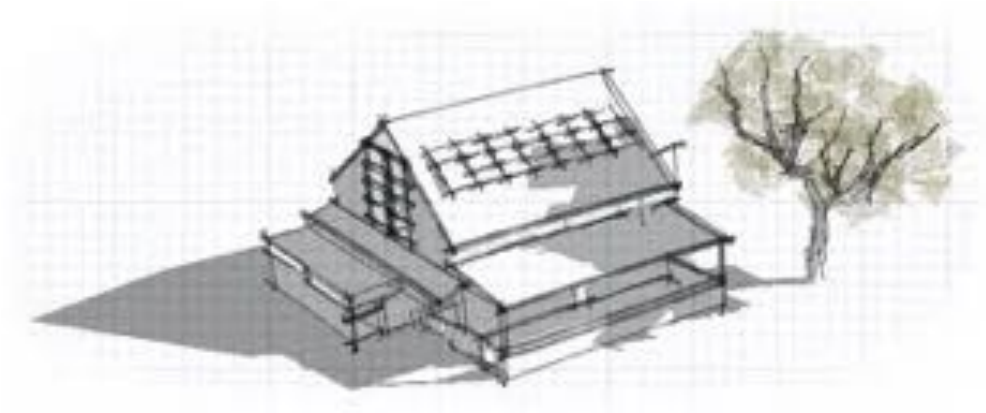
Part 1: Solar technology

What makes a good site for solar?



Roof faces southerly direction



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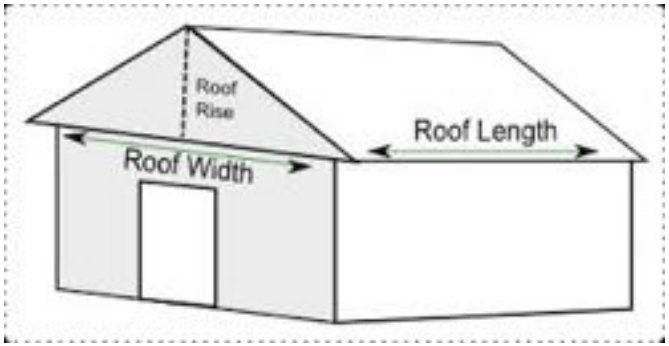

Enough space to mount panels

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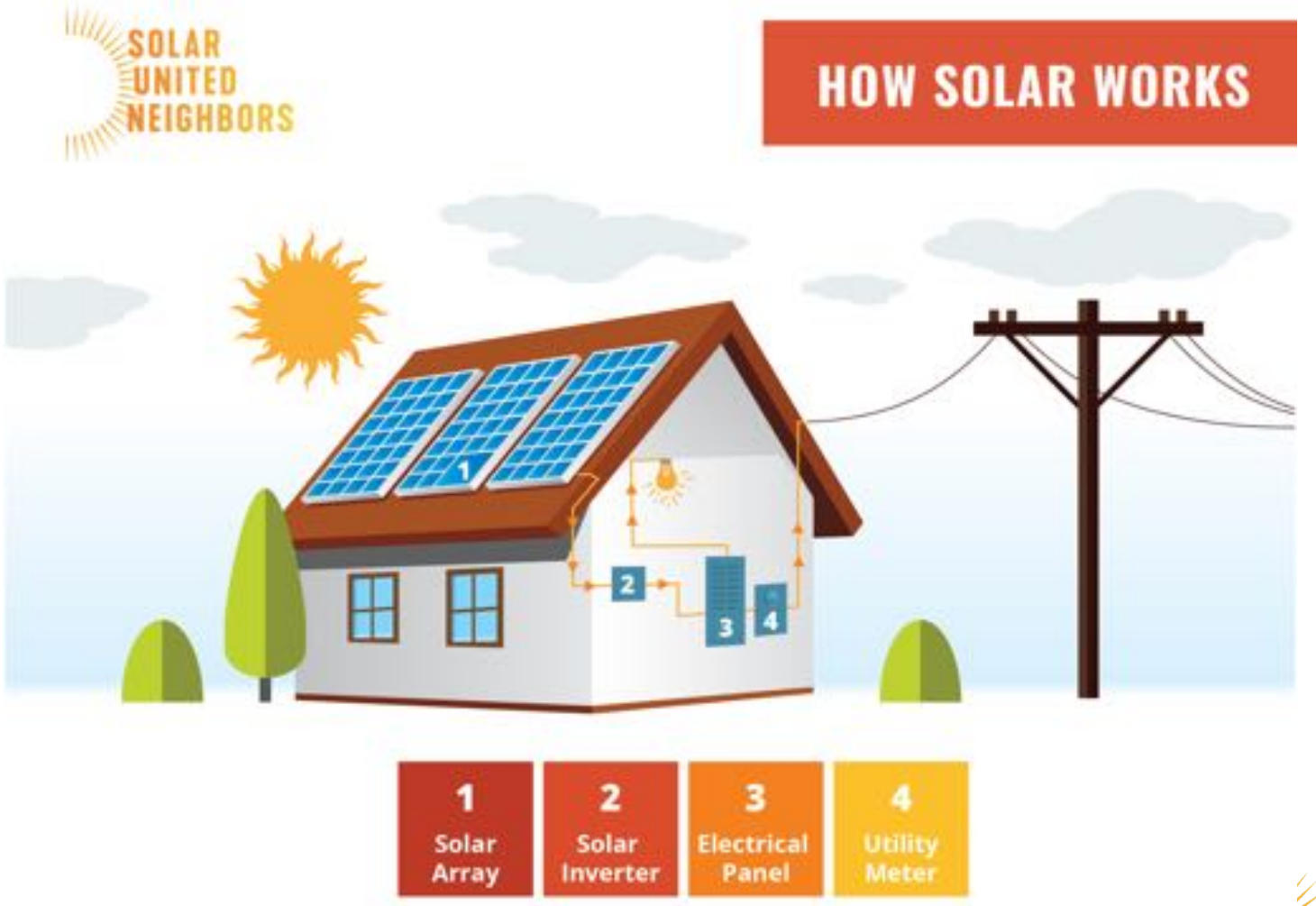
Part 1: Solar technology



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Part 1: Solar technology

What is Net Metering?

- Allows flow of electricity to AND from customer
- When generating is more than using, extra electricity flows back through meter
  - You get a credited on your power bill for that production
- Monthly electric bill:

  [Amount electricity used] – [Amount electricity produced]
- Utilities required by law to let you net meter

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Part 1: Solar technology

What happens when the power goes out?

- When grid is down, solar shuts off
- Safety mechanism
- Need **batteries** for power during outages
- Or an inverter with a "**secure power supply**" feature

source: www.pixgood.com

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Part 1: Energy Storage for Homeowners

You might want storage if…

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

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Part 1: Energy Storage for Homeowners

Example Upfront Costs (small system)

$9,000 : 6 kWh of storage
(lithium ion battery & installation)

+

$15,500 : 5.6 kW solar array
(optional)

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Part 1: Solar technology

Frequently asked questions

- Warranties?
- Homeowner's insurance?
- Maintenance?
- How long do systems last?
- Will HOA allow solar on my home?
- What if I'm in a historic district?

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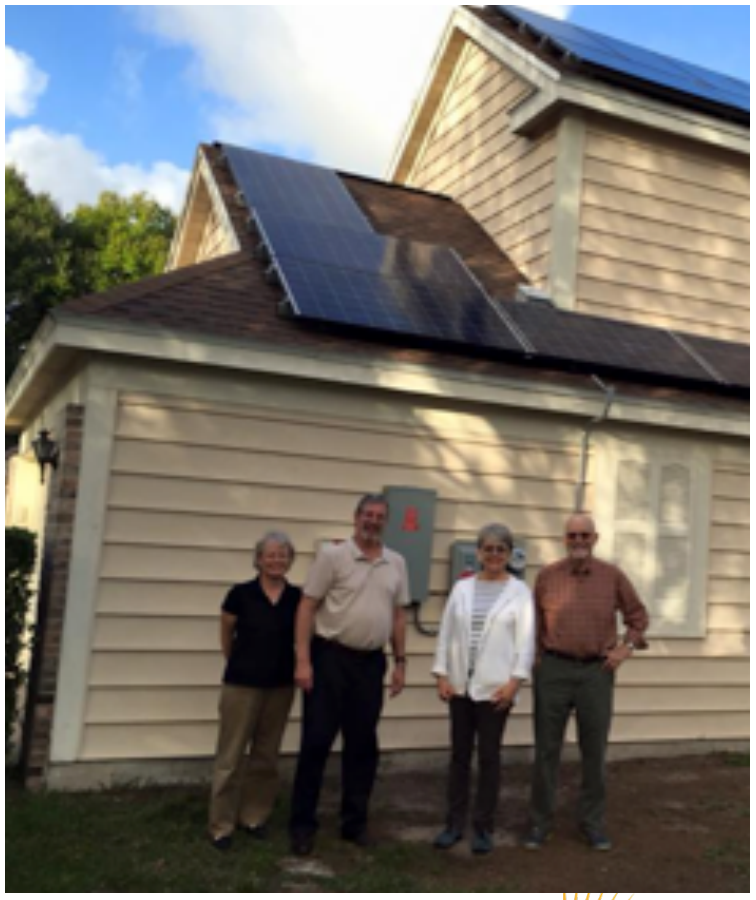
Part 2: How solar co-ops work

Part 2: Co-op process

Benefits of co-ops

- Get a better deal from installers
- Get technical support from SUN through the process
- Connect with fellow solar enthusiasts
- Become part of a growing solar movement



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MONTH 1 THRU 2

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!

MONTH 3

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

MONTH 4 THRU 8

★ 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

Part 2: Co-op process

Who picks the installer? – Co-op participants

When someone joins a co-op, they select specific installer criteria from some or all of the following:

- Offer the best price
- Use higher quality equipment
- Have more experience
- Offer stronger warranties
- Are a local company
- Other - Please describe

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Part 2: Co-op process

What do past co-op participants think?

- 93% of past participants would recommend the co-op process to a friend
- 4/5 of past participants definitely or possibly would not have gone solar were it not for the co-op
- “Amazing process. I felt informed, confident in the information I was receiving and the entire process was smooth.“ *Florida co-op participant*
- “The coop made it do much easier to go solar. We did not have to shop around and interview installers.” *West Virginia co-op participant*

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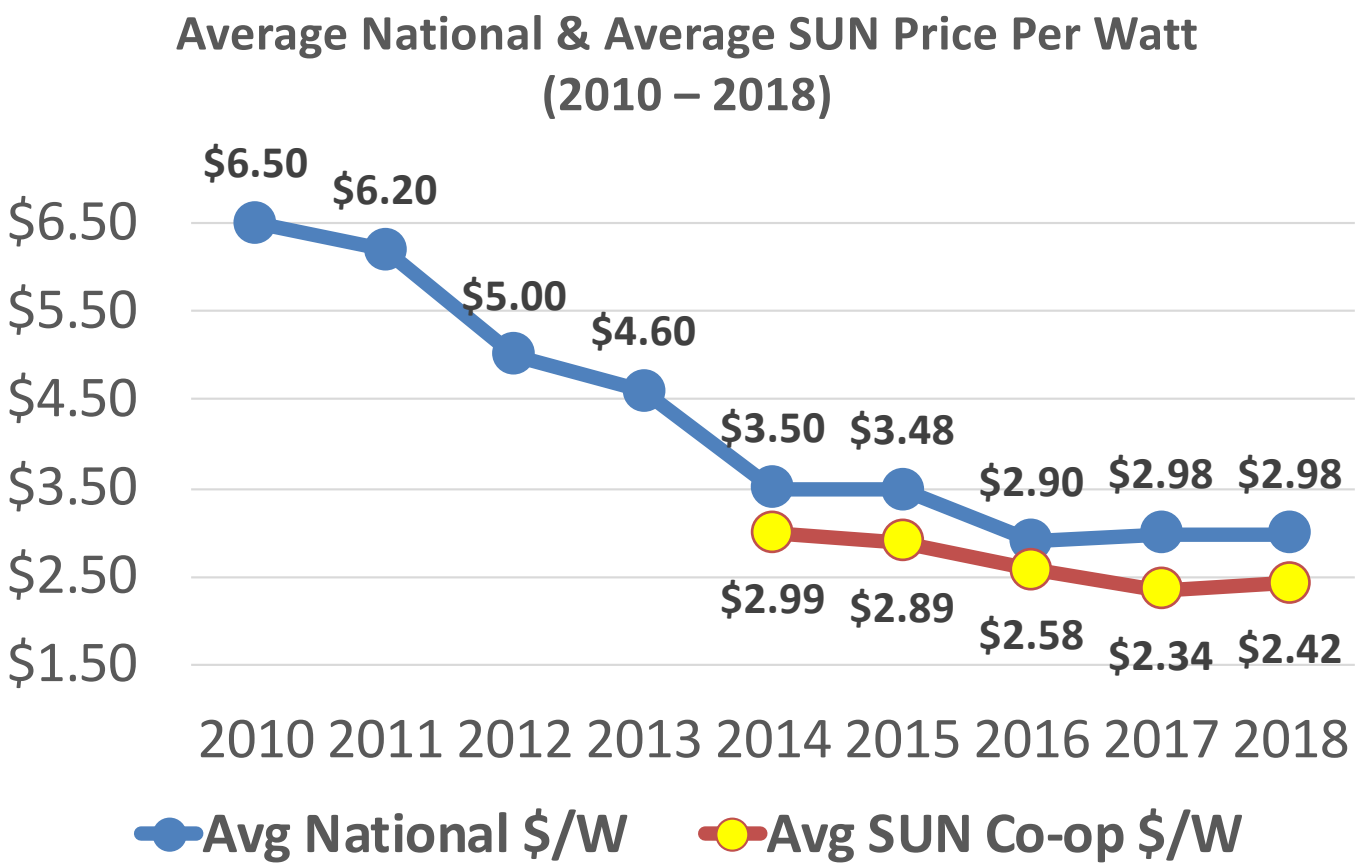
Part 3: Solar economics

Part 3: Solar economics

A few considerations

- Solar is priced by the watt (not by panel)
- Solar is a long-term investment
- No moving parts & at least 25 year lifespan
- The more you spend on electricity, the quicker you'll make your money back

Solar is Increasingly Affordable



- 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*

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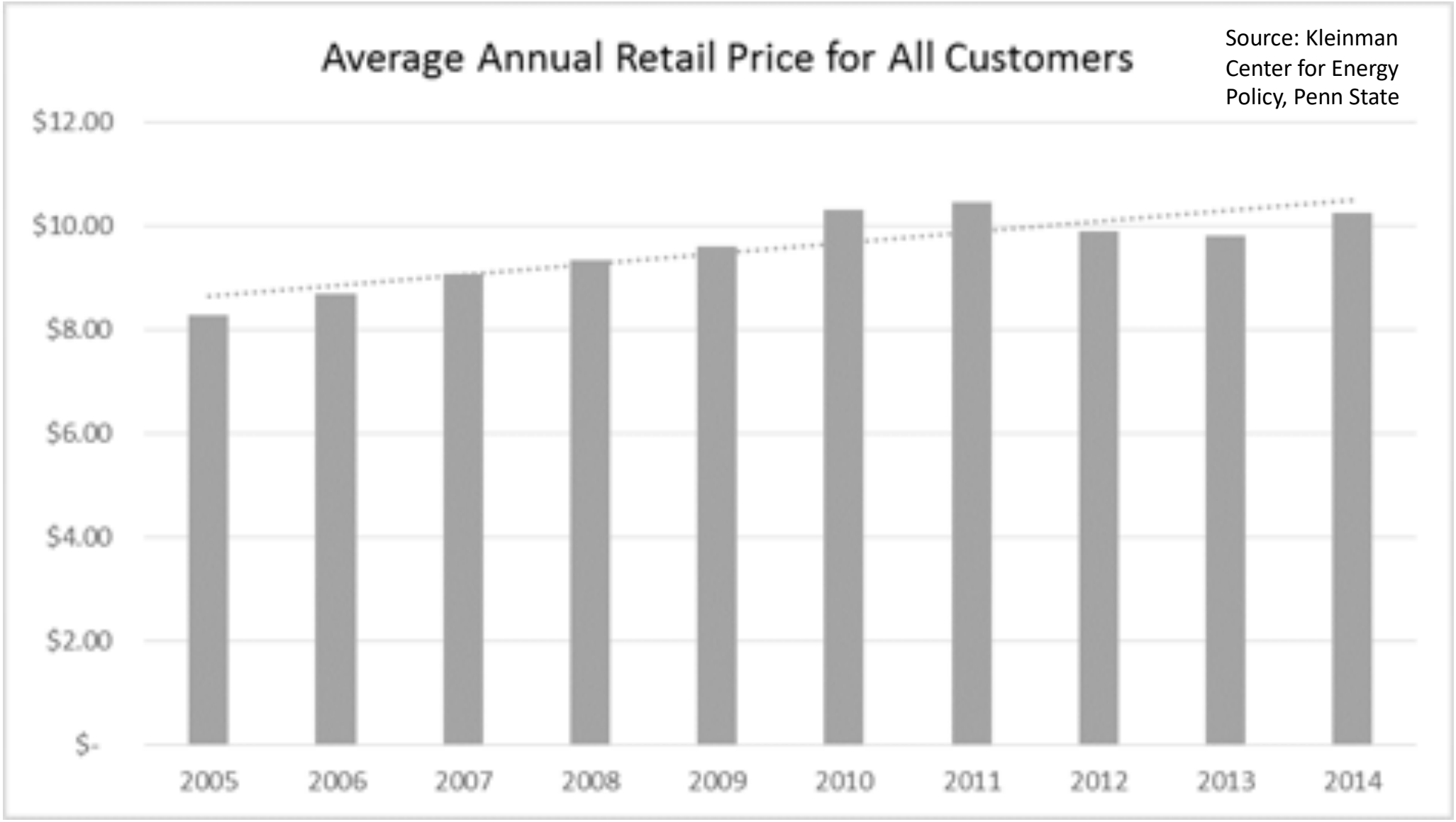
Part 3: Solar economics

Pennsylvania electric prices rise 1-2% per year

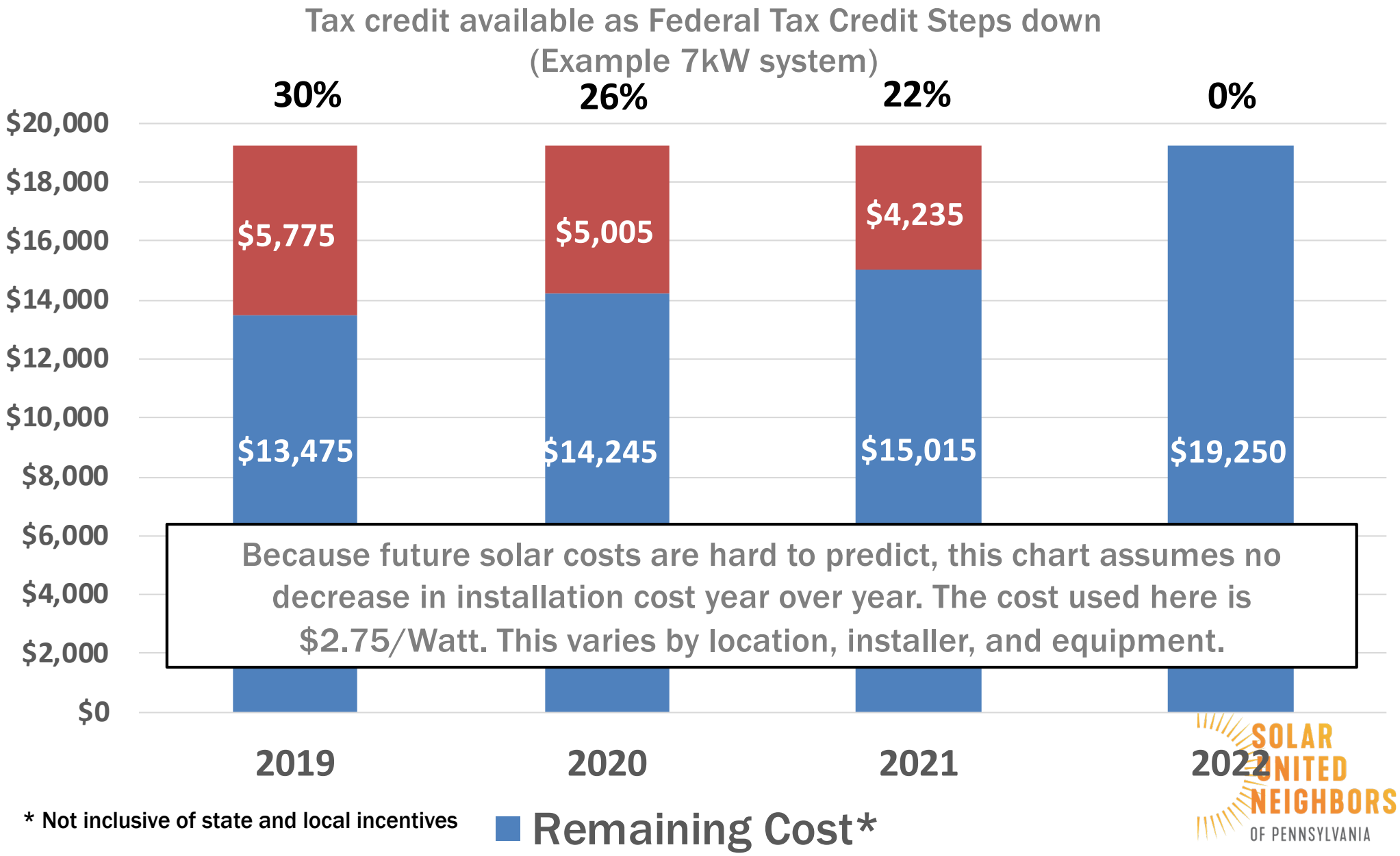


Part 3: Solar economics

SAMPLE CASH PURCHASE:

EXAMPLE PRICING ONLY. ACTUAL SYSTEM SIZE WILL VARY.	4kW	8kW
Average solar co-op pricing ($2.55/Watt)	$10,200	$20,400
26% Federal tax credit (calculated before SREC sale)	-$2,652	-$5,304
Net cost	**$7,548**	**$15,096**
Solar Renewable Energy Credit (first 5 years) (5 year fixed-rate at $30/SREC)	$730	$1,460
Estimated year 1 electricity savings*	$496	$992
Estimated year 10 savings (cumulative)*	$5,307	$10,613
Estimated lifetime savings (25 years)*	$14,894	$29,788
Net Profit	**$8,076**	**$16,152**

Federal tax credit is decreasing



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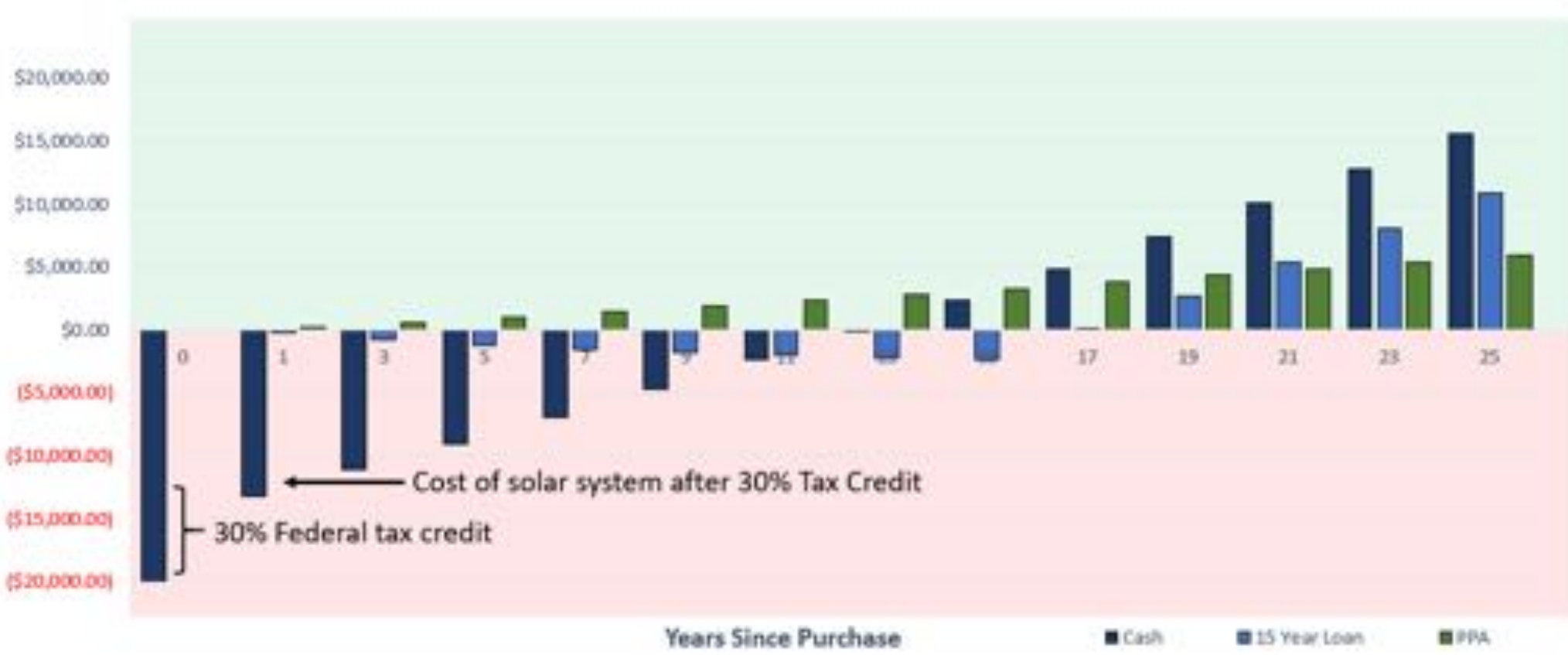
Cumulative Savings with Solar



Assumptions

SRECs not included, 2% energy increase per year, 7kW System Size, Base Price $2.75/W, 1336 yearly production of 1kW, $0.1243 starting electricity rate, -0.5% panel degradation per year, 4% Interest rate on loan, 70% of cost covered by loan , $0 Operations and Maintenance over system lifetime, Pay 80% of normal electricity cost with PPA

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More questions?

Email

PAteam@solarunitedneighbors.org

What's next?

Join the co-op!

solarunitedneighbors.org/IndianaCounty

solarunitedneighbors.org/Westmoreland

Take a yard sign!
And tell your friends!