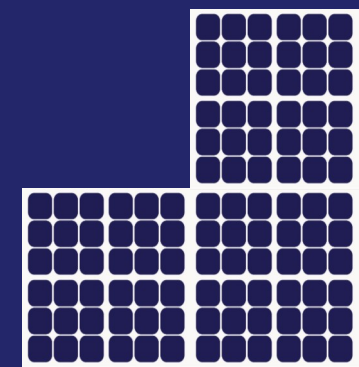




8-20-2026 to EPCAMR Board
Bobby Hughes-EPCAMR Executive Director and
Energy Leader for EI4PA



About the Energy Independence for PA Initiative

Energy Independence for Pennsylvania is a volunteer-assisted effort of Energy Leaders speaking to their community about imported energy issues. The program was created and is supported by nonprofits PA Solar Center and Solar United Neighbors (SUN), along with support from partners Energy Efficiency Alliance of Pennsylvania, PennFuture, Greenlight America, Pennsylvania Solar & Storage Industries Association, and Physicians for Social Responsibility.



We envision a world powered by energy that is reliable, affordable, and sustainable for all. Our mission is to provide trusted guidance to usher all Pennsylvanians into the clean energy economy to reach a sustainable and resilient tomorrow. www.pasolarcenter.org

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. <https://solarunitedneighbors.org/>



Agenda

- What goes into your electric bill
- How our energy system works
- Why electricity bills are going up
- Energy affordability solutions
 - Energy efficiency
 - Solar energy benefits everyone
 - Solar and farmland
 - Case studies from real solar owners
- Important policy drivers for solar deployment

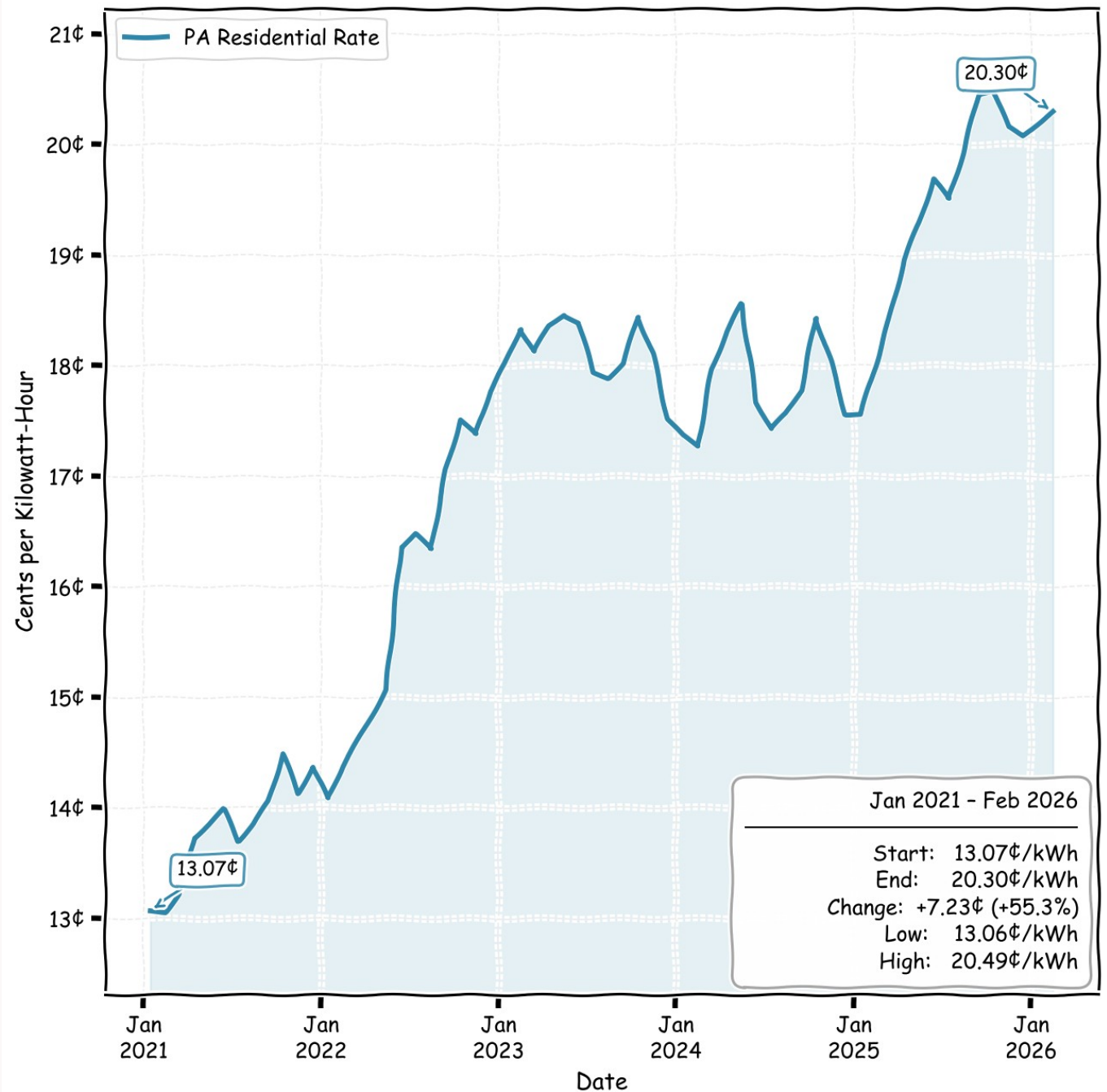




PA's Energy System: What Determines Your Electric Bill?



Your Electric Bill Went Up Significantly in the Past 5 Years



Data: EIA Electric Power Monthly (ELEC.PRICE.PA-RES.M)

Your Electric Bill

Price to
Compare (or
Default Service)

= (1)

Generation +

(2)

Transmission
(Energy Supply)

Charges From Penelec			
When contacting an Electric Generation Supplier, please provide the following.			
Customer Number: [REDACTED]			
Rate: Standard Residential PN-RESF			
Price to Compare Default Service	492 KWH	x 0.104740	51.53
Customer Charge			11.26
Distribution Charge	492 KWH	x 0.080732	39.72
Default Service Support Charge	492 KWH	x 0.008540	4.20
State Tax Surcharge			0.01
Current Consumption Bill Charges			106.72

(3) Distribution

Charges
(Energy delivery
charge from your
local utility)

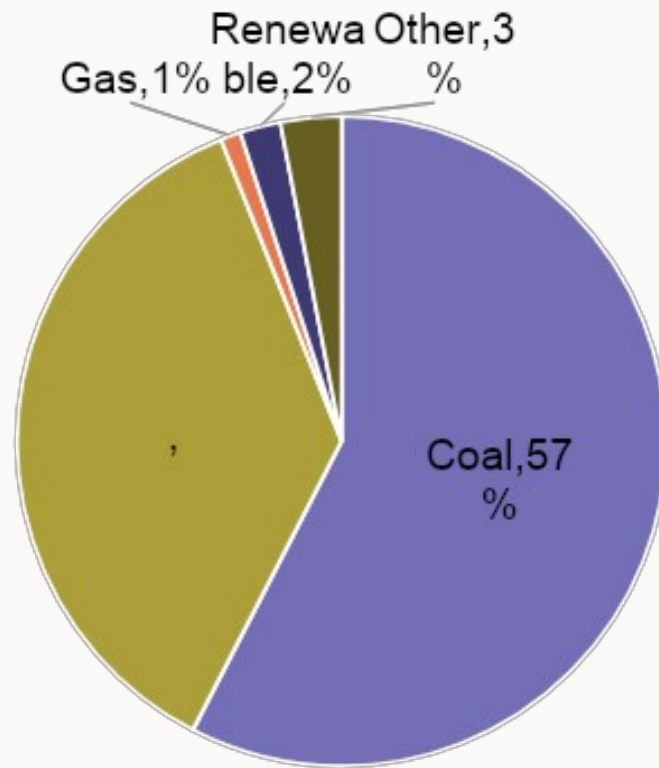


How are electricity prices determined?

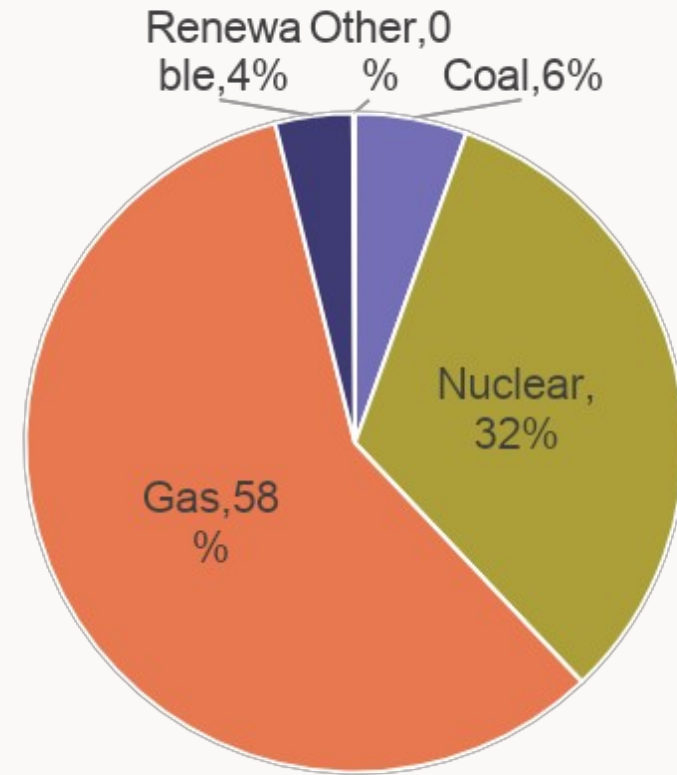
- **(1) Generation**
 - **Energy Markets**
 - **Capacity Market**
- (2) Transmission Costs
- (3) Distribution and Other Costs and Fees



Changes in Electricity Generation Mix

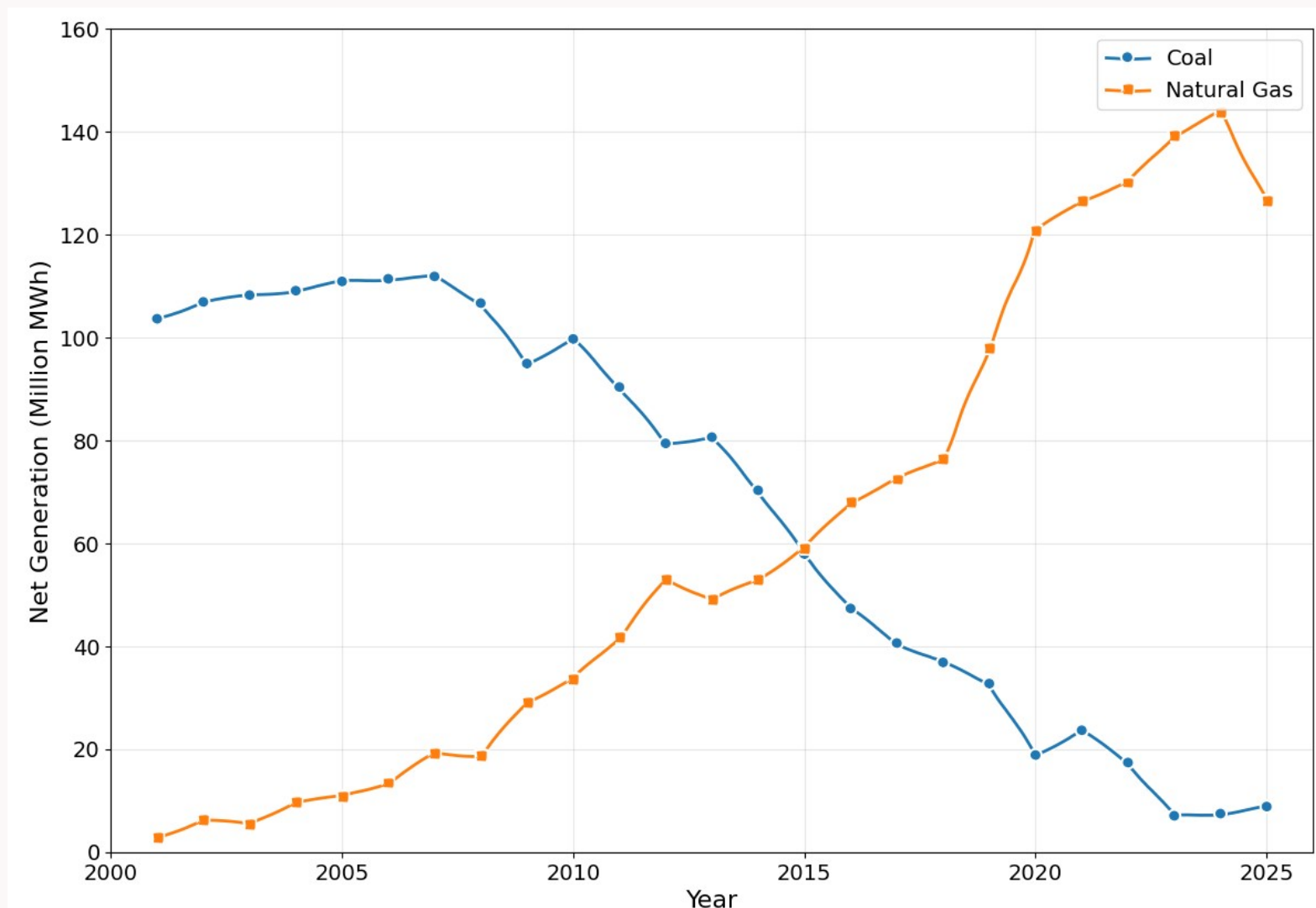


2000



2024

Natural gas has won the 'war on coal'



Source: PA Data, EIA Form 860 – Annual Electric Generator Report

PJM Interconnection

- PJM is the grid manager for 13 states and D.C.
 - Oversees **generation** and **transmission** activity in conjunction with the Federal Energy Regulatory Commission (FERC)
- They monitor the electric grid every second of the day, assuring that we have power whenever we need and want it.

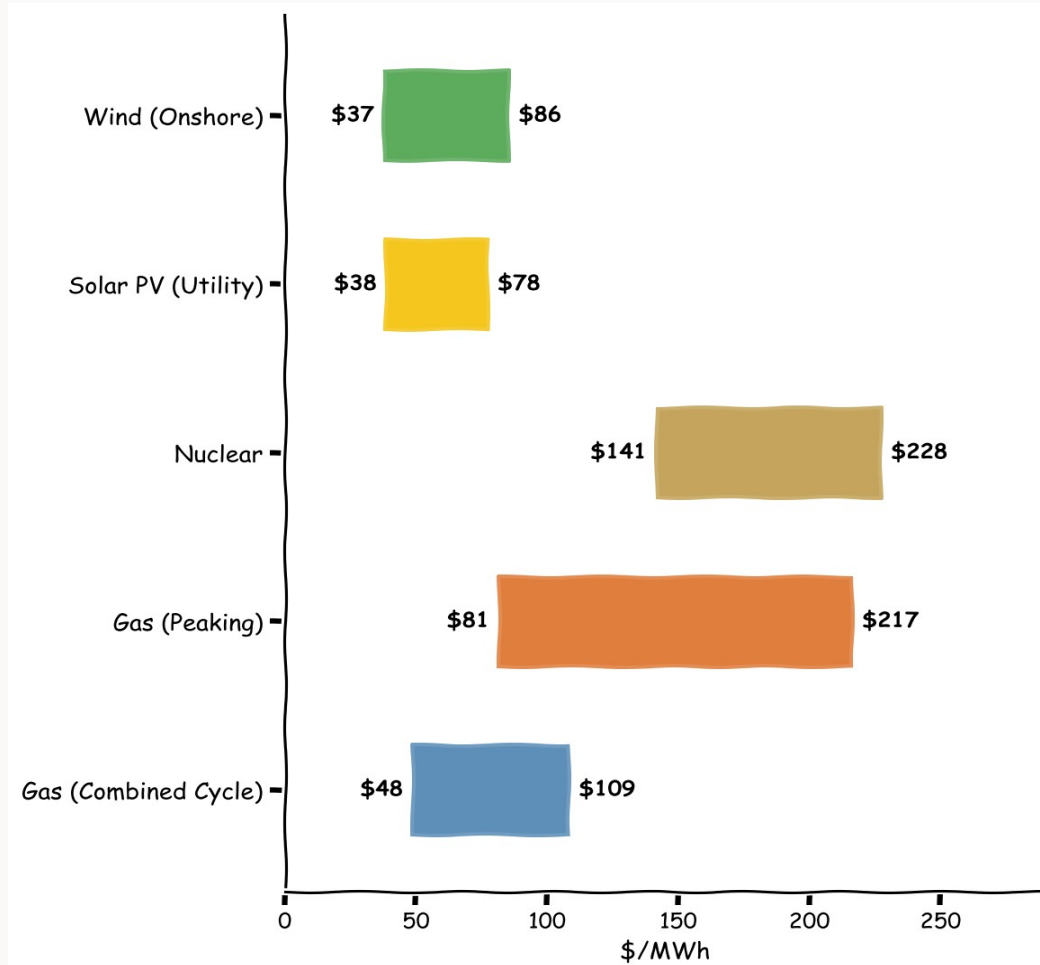


PJM Image



Energy Markets - Generation

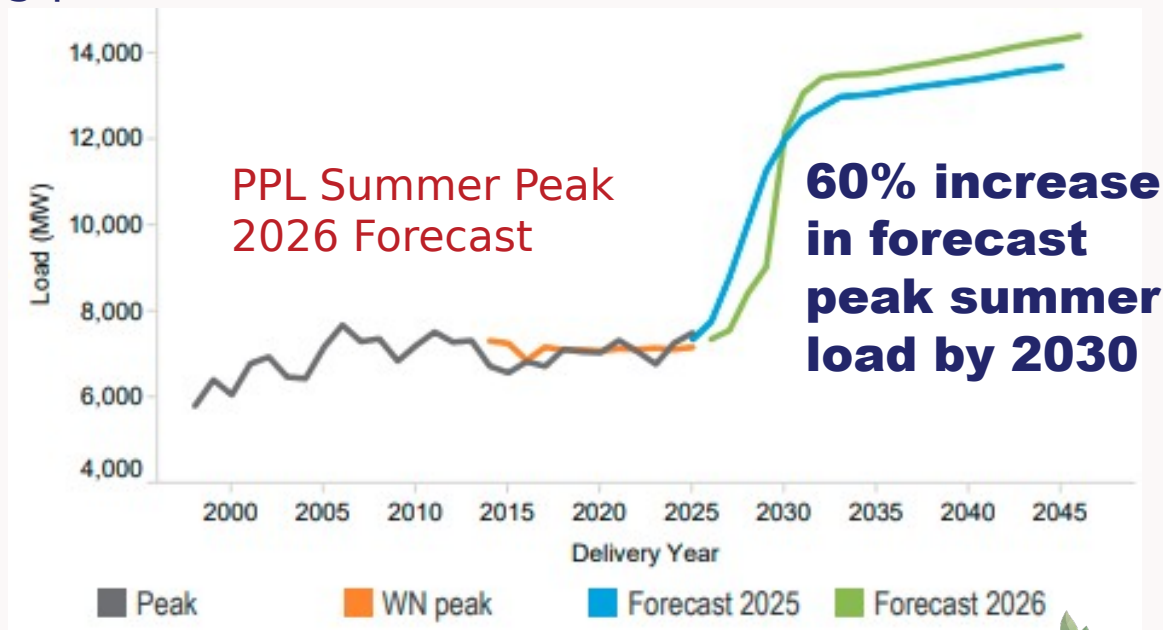
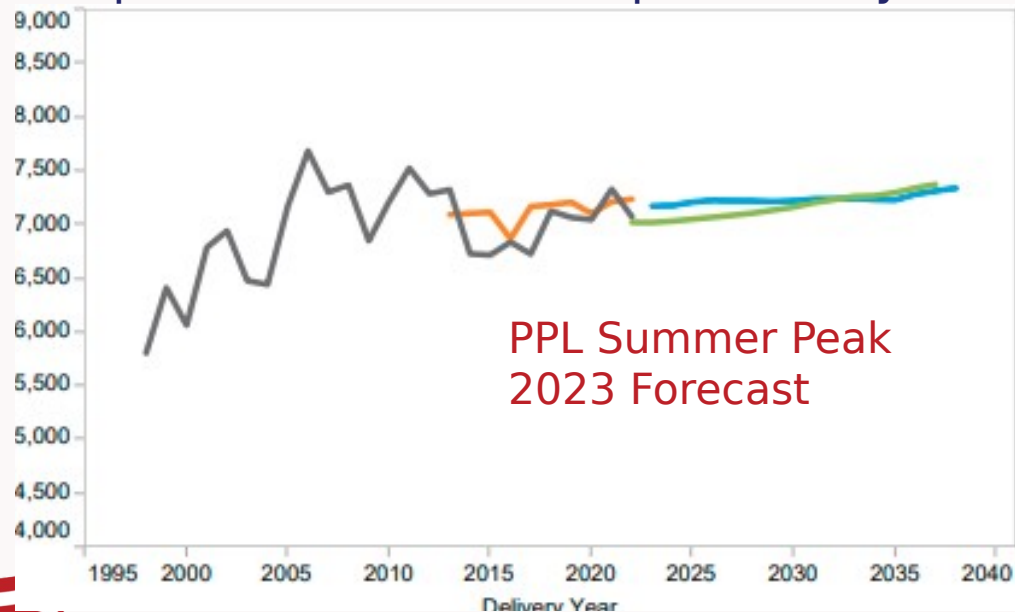
- Large power plants bid into the hourly energy market. The cheapest plants are selected first, moving to more expensive ones as demand rises. The price of the very last, most expensive plant needed to satisfy demand sets the price for that hour.
- Prices are also determined for the next day based on predicted demand for the following day, and adjusted every five minutes in the Real-Time market to balance actual grid conditions and congestion.
- Because wind and solar are almost always the cheapest resources, they hold down the price of electricity.



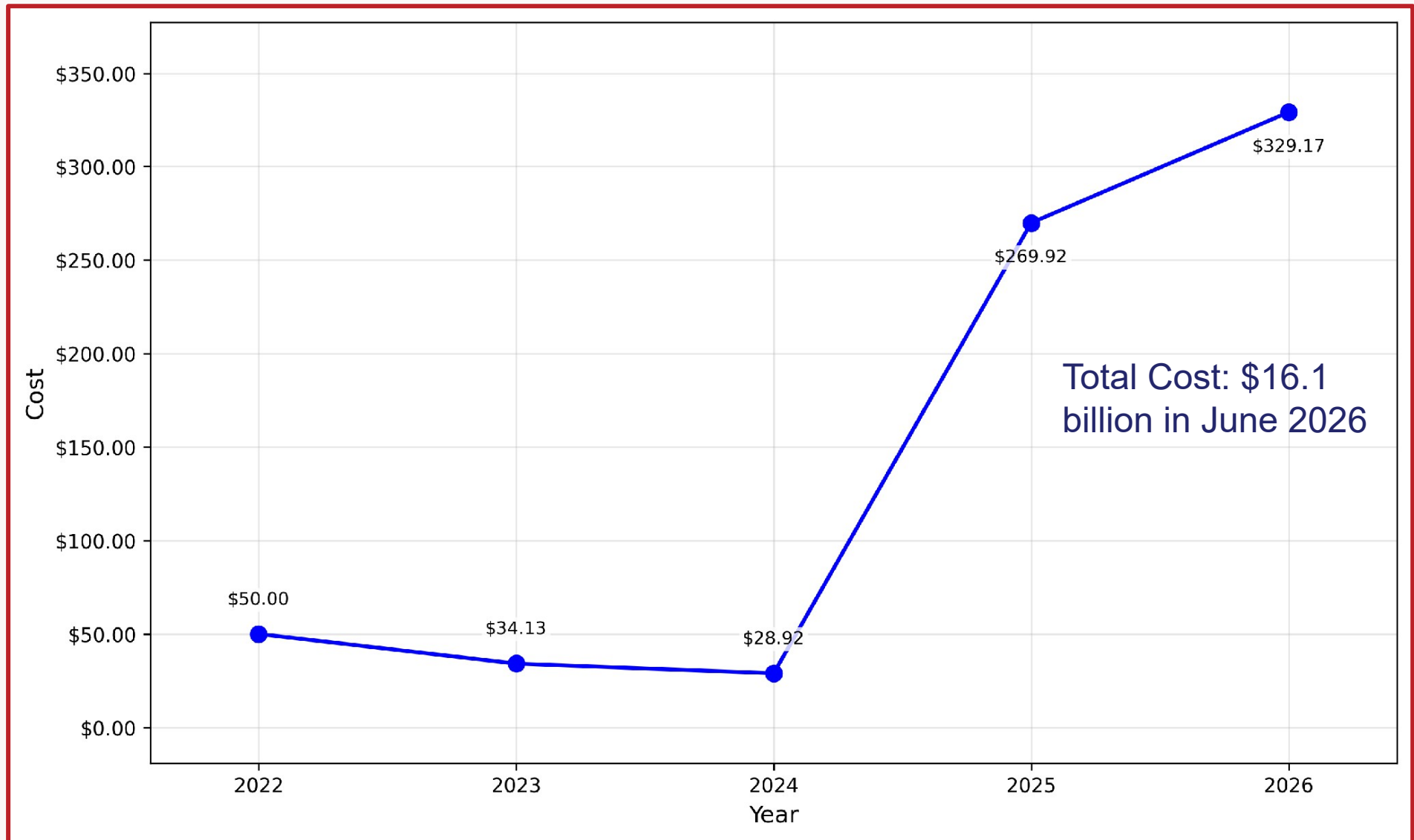
To lower electricity prices, we need to build more renewables and storage and increase energy

Capacity Markets - Generation

- PJM predicts future energy use (also called demand) and then plans to make sure there is enough generation to meet that demand, particularly during peak demand - a year or more in advance.
- To ensure there is enough power available for extreme summer or winter peaks, PJM holds capacity auctions that power generators are paid years in advance to guarantee they will provide power when needed, particularly during peak demand times.



Increase in Capacity Costs

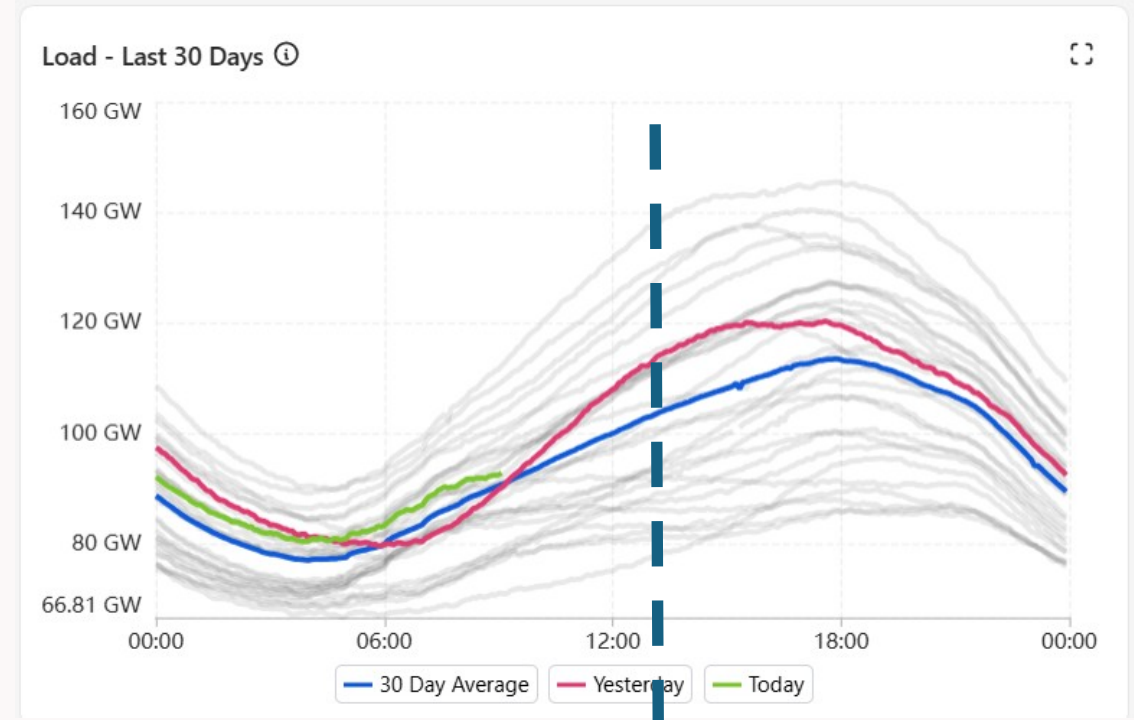


Peak Demand Reduction

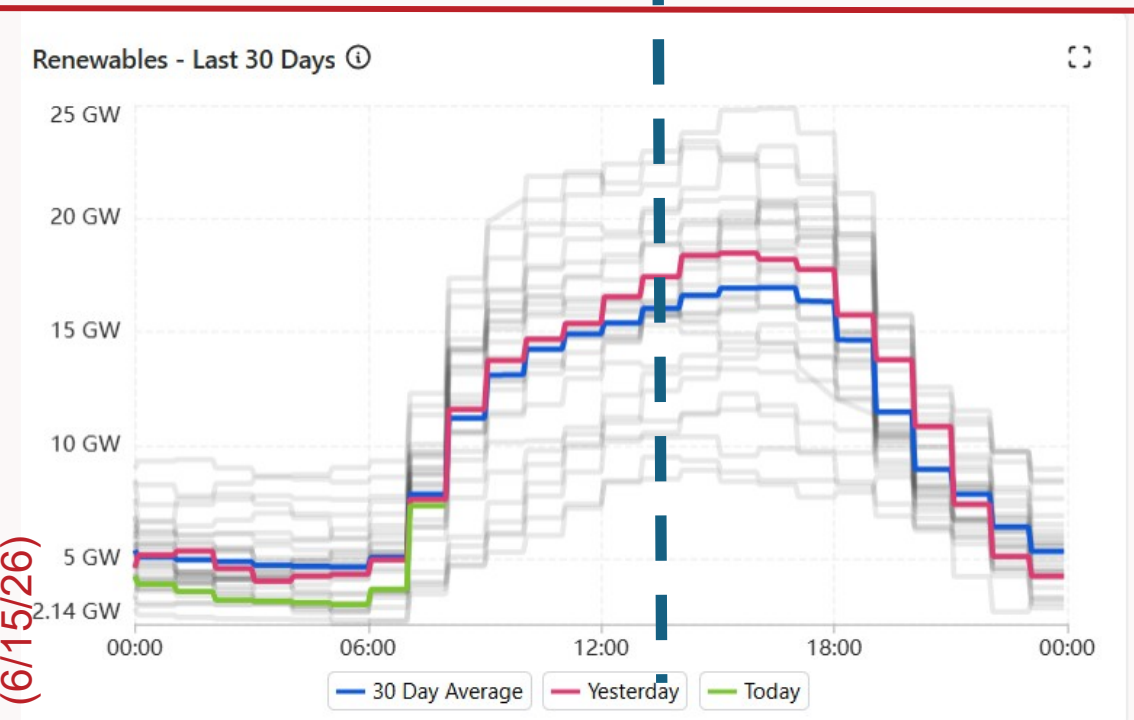
Renewables are key to reducing energy prices because they operate during high peak demand times - the most expensive time of the day - and reduce the need for more expensive power



Load demand in PJM past 30 days
by time of day (6/15/26)



Renewable production in PJM
past 30 days by time of day
(6/15/26)

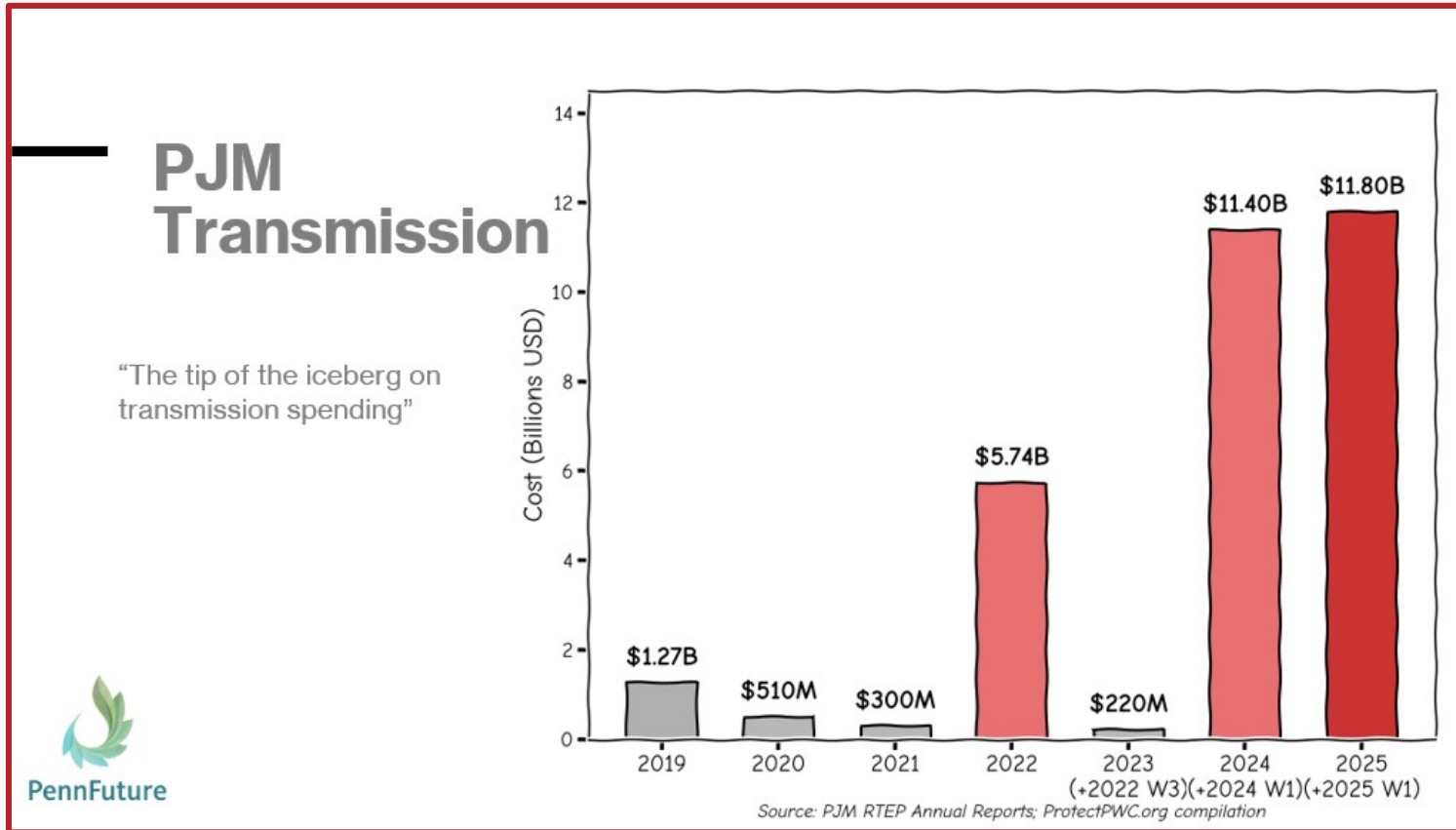


How are electricity prices determined?

- (1) Generation
 - Energy Markets
 - Capacity Market
- **(2) Transmission Costs**
- (3) Distribution and Other Costs and Fees



Transmission Costs



- Pennsylvania spent \$492 million in 2024

How are electricity prices determined?

- Generation
- Energy Markets
- Capacity Market
- Transmission Costs
- **Distribution and Other Costs and Fees**



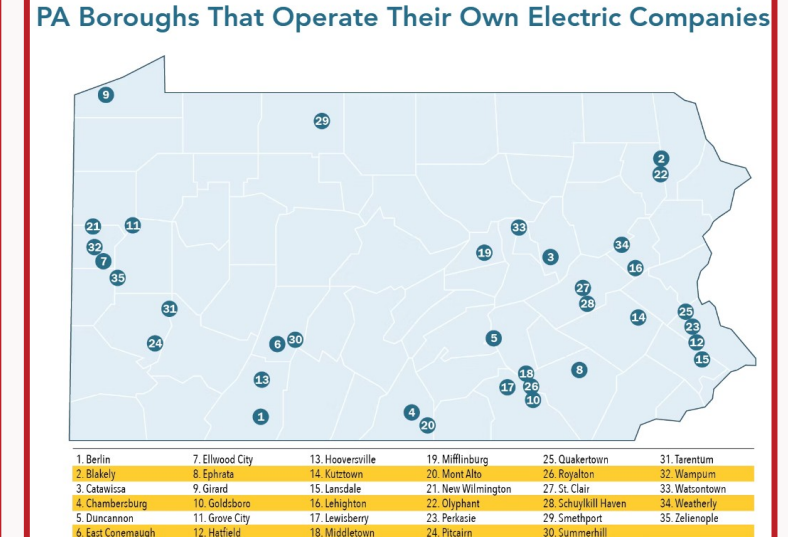
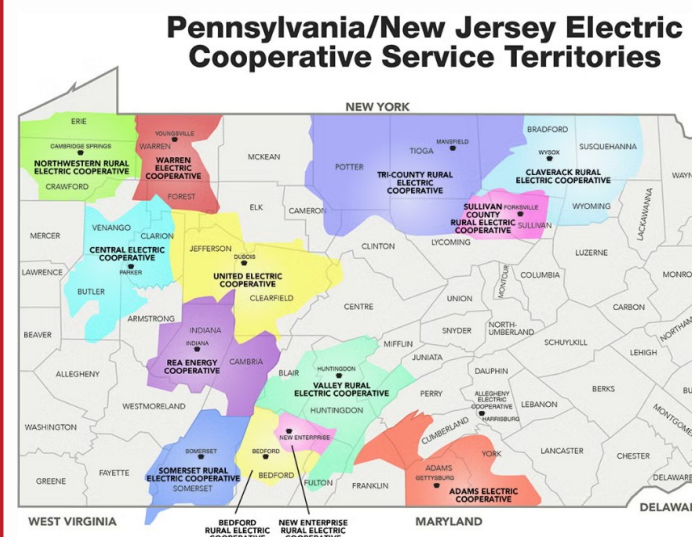
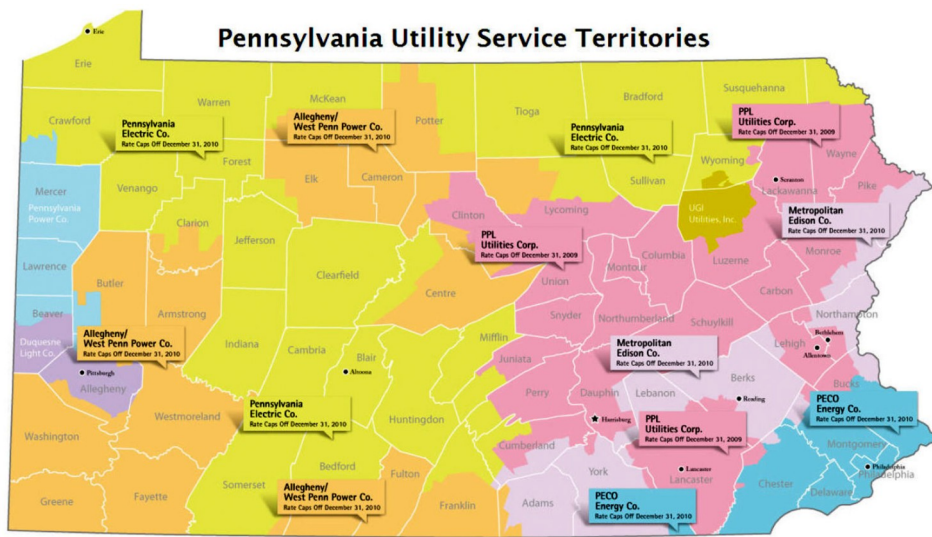
PA Utility Territories

Regulated by the Public Utility Commission (PUC)

- PA utilities manage the distribution grid but do not generate electricity.

They are sometimes referred to as 'wire companies,' because they are responsible for maintaining the electric lines that connect to buildings and communities.

There are also municipal-owned utilities and rural electric cooperatives that are not subject to the rules of the PUC.



Generation and Transmission Costs Went Up Again June 1, 2026** (per kWh)

Utility	Current	June 1	Change
Citizens' Electric (estimated)	13.209¢	13.215¢	0.05%
Duquesne Light (estimated)	13.75¢	14.14¢	2.84%
Met-Ed	12.965¢	13.951¢	7.60%
PECO (estimated)	11.024¢	11.572¢	4.97%
Penelec	11.747¢	13.142¢	11.88%
Penn Power	12.606¢	13.477¢	6.90%
Pike County L&P (estimated)	11.21¢	13.43¢	19.80%
PPL*	12.953¢	13.147¢	1.50%
UGI Electric	11.212¢	12.617¢	12.53%
Wellsboro Electric	12.352¢	12.556¢	1.65%
West Penn Power	10.947¢	12.075¢	10.30%

* In addition to the 4.9% increase

** Does not include distribution charges

SOURCE: PA Public Utility Commission

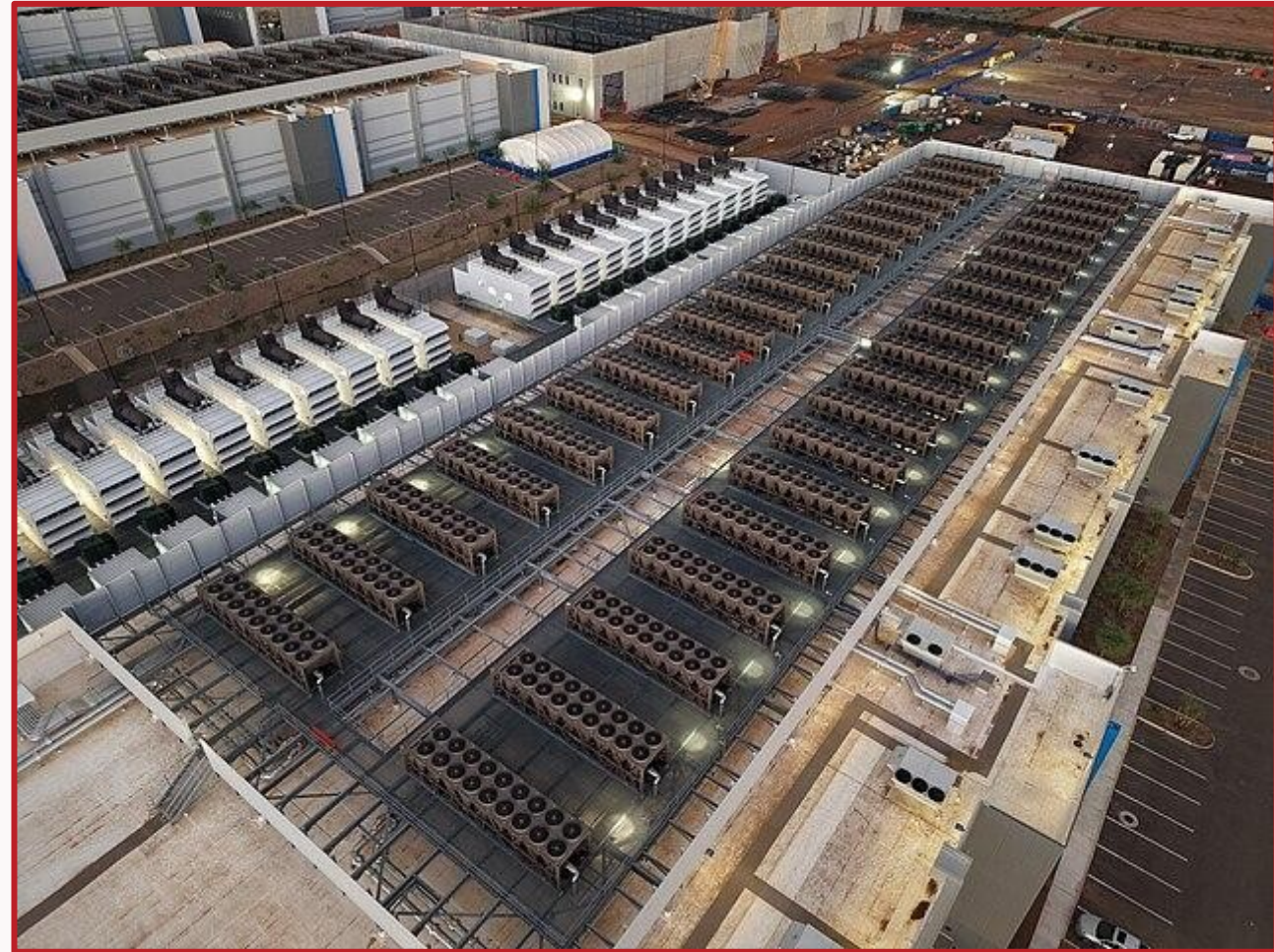
Supply and Demand Issues Influencing Prices?

Demand:

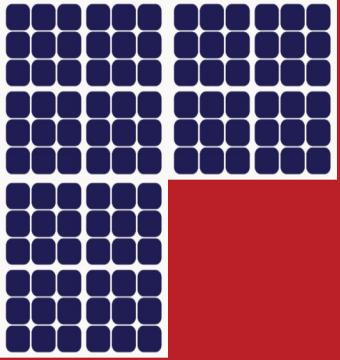
- Data Centers & AI
- Electric Vehicles?
- Other
Electrification?

Supply:

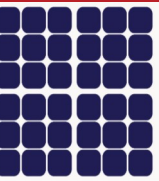
- Reliability
- Slow interconnection
- Broken market rules



SOURCE: Rsparks3, CC Zero Image



Finding Solutions to PA's Energy Issues: The Affordability of Clean Energy





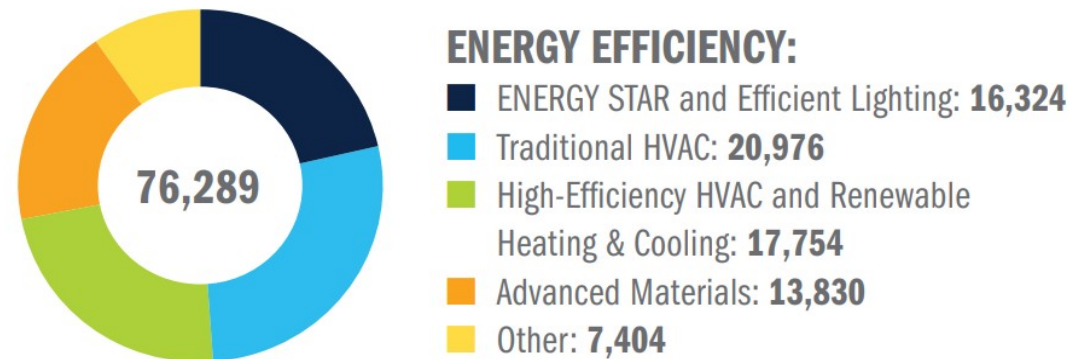
The First Step to Affordability: Energy Efficiency



Why Does Energy Efficiency Matter?

The Energy Efficiency sector **employs over 76,000** workers across the state, builds small businesses, and has been growing!

**FIG 1 // PENNSYLVANIA CLEAN ENERGY
EMPLOYMENT by sectors**

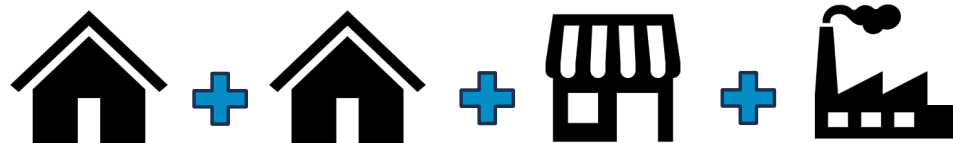


Source: E2: Clean Jobs Pennsylvania 2025 https://e2.org/wp-content/uploads/2025/11/E2-FS-Clean-Jobs-PA-2025_final.pdf

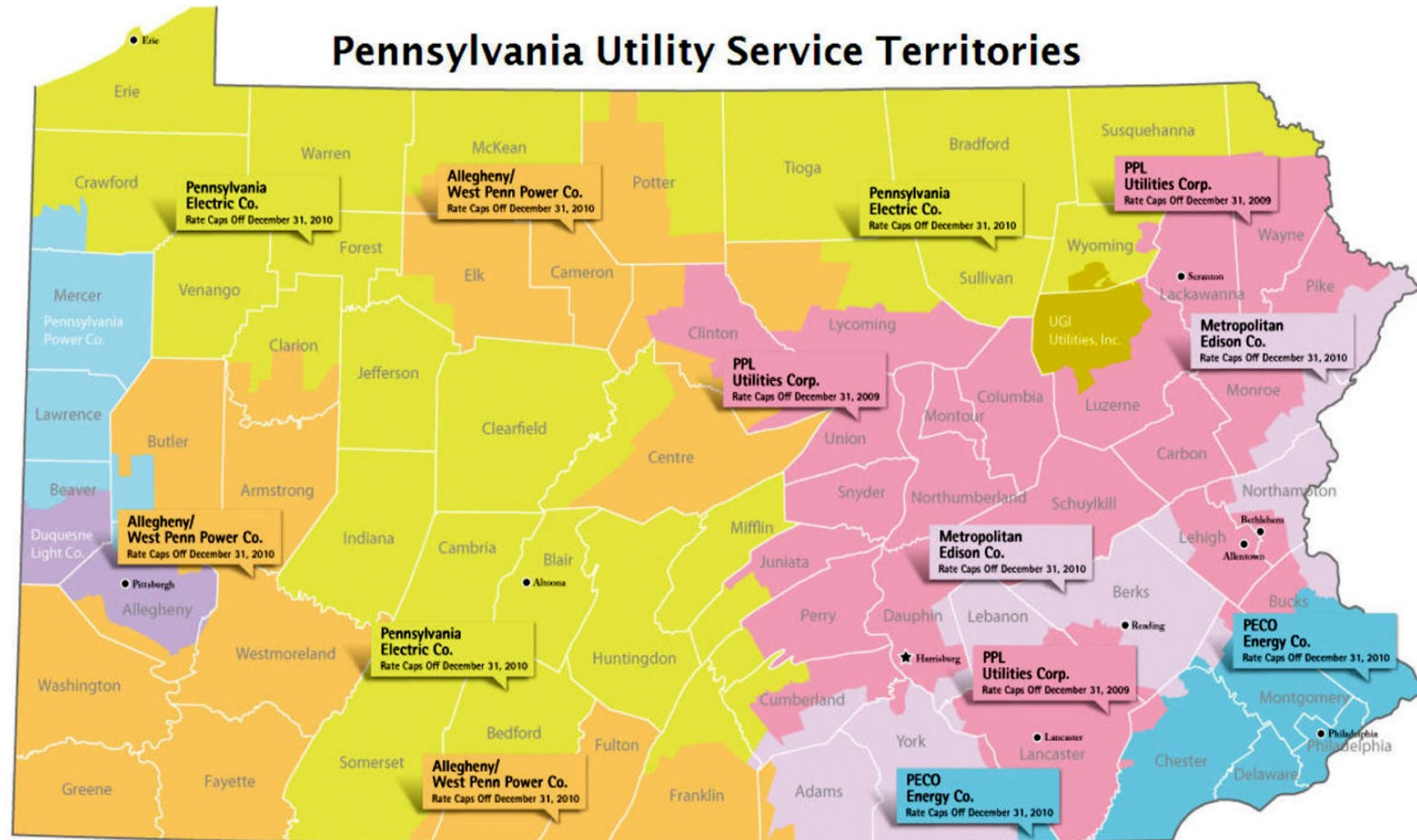
Act 129

Pennsylvania's Flagship Utility Energy Efficiency and Conservation Programming

- Act 129 was established through legislation in 2008 and requires **ONLY electric utilities** with **100,000+ customers** to offer comprehensive efficiency and conservation programs for all customer in every class - residential, low income residential, commercial, and industrial ratepayers (i.e. customers)
- In the most recent measured year of Act 129 (23-24), **every dollar spent on energy efficiency resulted in \$1.44 in energy benefits**, including avoided energy costs and operation and maintenance savings.
- Act 129 includes Demand Response, **which takes pressure off the grid at times of peak demand**. That helps to keep the power on when we need it!
- Act 129's first three phases delivered **\$9 billion+ in energy benefits** for Pennsylvanians and expanded the Commonwealth's energy efficiency industry to almost 73,000 jobs.
- By the time Phase IV ended in May 2026, the programs operated under Act 129 will have **saved over 20 million megawatt-hours since its 2009 inception** - enough to power *1.9 million homes for a year*.



Electric Distribution Companies That Must Comply with Act 129



PECO Energy

PPL Utilities Corp.

Metropolitan Edison

Pennsylvania Power

Pennsylvania Electric

West Penn Power

Duquesne Light

Your Utility Act 129 Resources

- Duquesne Light Company
 - <https://duquesnelight.com/energy-money-savings#>
- FirstEnergy (Allegheny/West Penn Power, Pennsylvania Power, Pennsylvania Electric Co, Metropolitan Edison Co)
 - https://www.firstenergycorp.com/save_energy/save_energy_pennsylvania.html
- PECO
 - https://www.pecoeportal.com/peco/s/rebatesdiscounts?language=en_US
- PPL
 - <https://www.pplelectric.com/site/Ways-to-Save/Rebates-and-Savings-Programs>

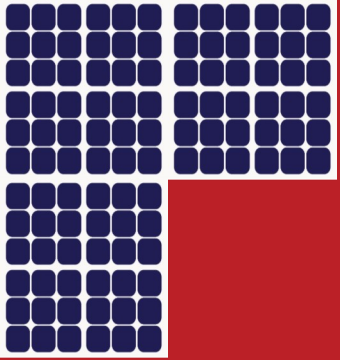
What is the Whole-Home Repairs Program?

- Helps residents afford to continue living in their home while making it a safer and healthier space.
- Program run by the PA Department of Community and Economic Development (DCED)
 - Grant funding up to \$50,000 per home to homeowners under 80% area median income
 - Loans available to small landlords renting out affordable housing
- What does it cover?
 - Habitability concerns
 - Improving energy efficiency
 - Improving water efficiency
 - Upgrading accessibility for people with disabilities

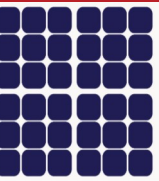


Solar Energy: Another Key to Energy Affordability

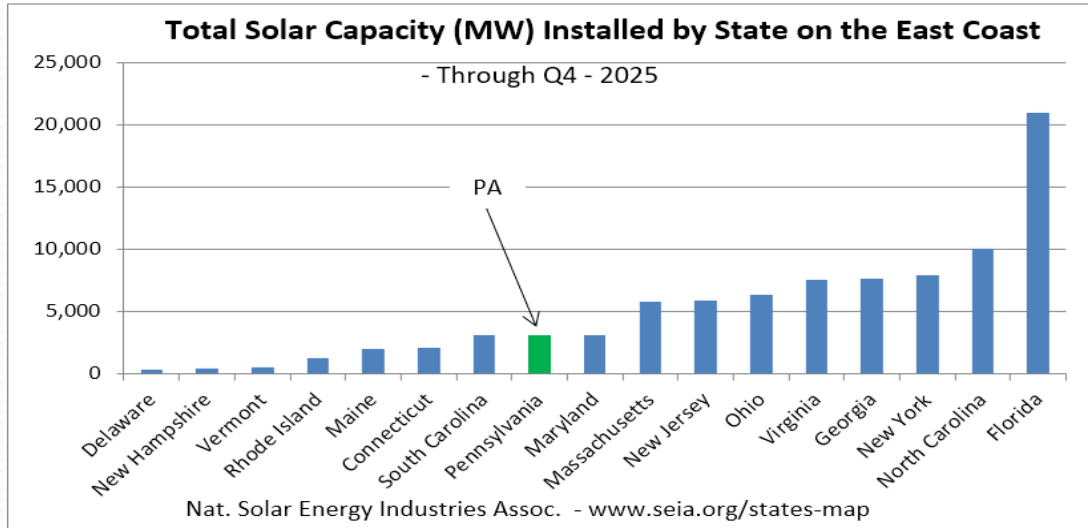




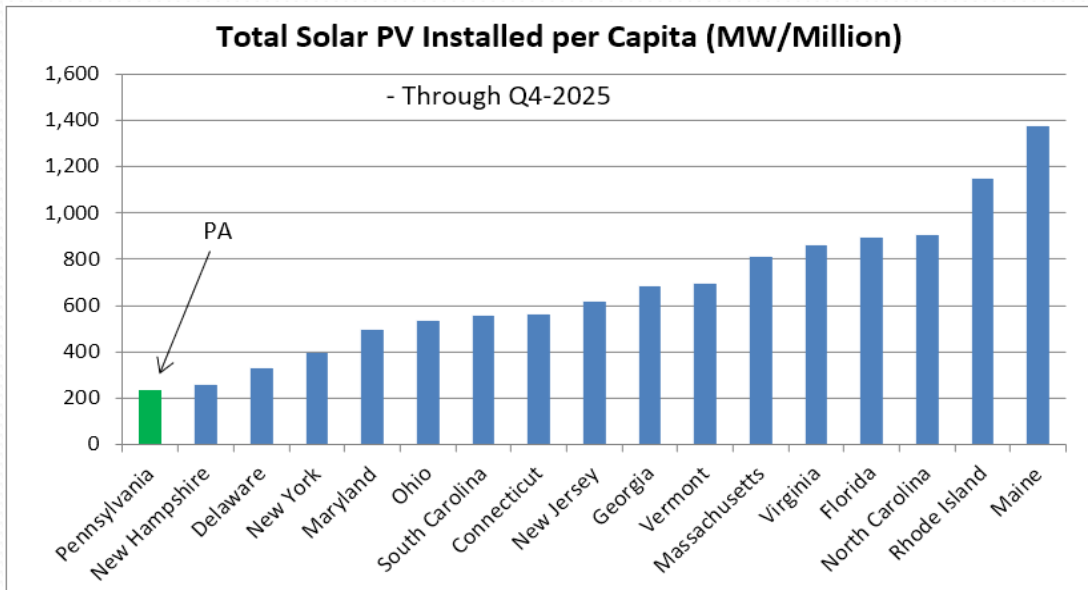
State of Solar in PA



State of Solar in PA



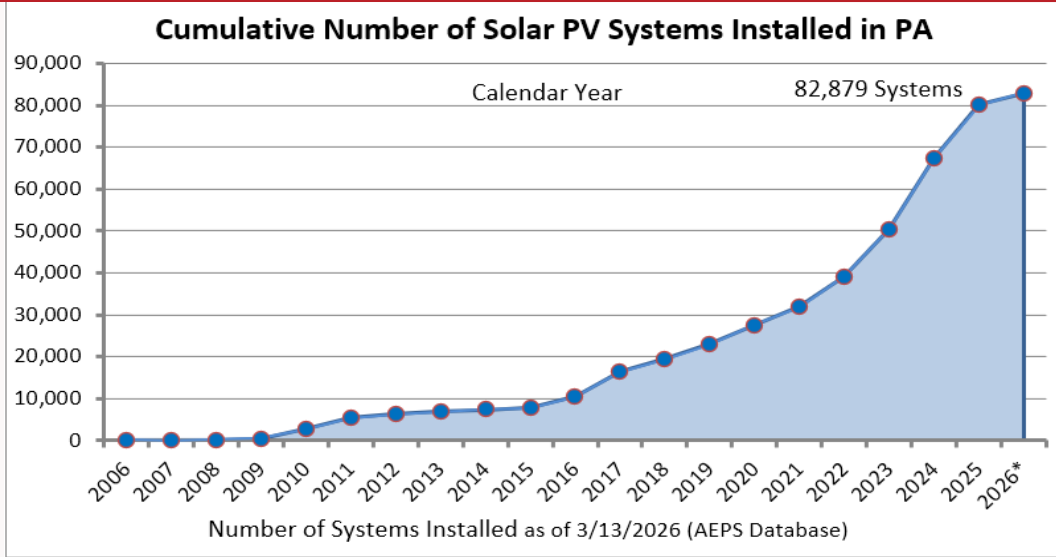
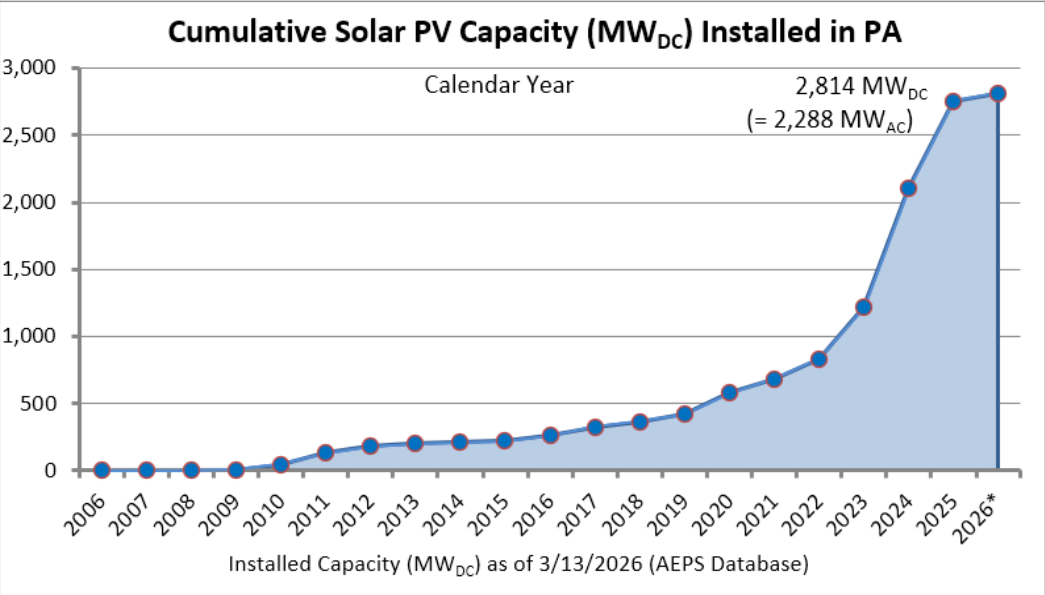
**Pennsylvania Ranks
22nd in the Nation
for Solar Production**



SOURCE: SEIA - Qrt Q4, 2025

Solar Growth in PA

As of 3/13/2026



82,879 solar systems with 2,814 MW of capacity or about 2.5% of our electricity mix

Cumulative PV Installed in PA (AC)		
Capacity (AC)	# of Systems	Total MW
≤ 15 kW	74,380	551
> 15 kW to ≤ 250 kW	8,059	248
> 250 kW to ≤ 1 MW	310	156
> 1 MW to ≤ 3 MW	90	182
Total DG Solar (NEM)	82,839	1,137
> 3 MW to ≤ 5 MW	4	16
> 5 MW to ≤ 10 MW	2	15
> 10 MW	34	1,122
Total Grid Scale	40	1,153
Total	82,879	2,288

* as of 3/13/2026 as per PA AEPS (PUC)

SEIA reports 3,086 MW installed through Qrt 4-2025



Solar Benefits All Pennsylvanians

Solar at every scale benefits everyone, not just the owner of the system.

- Diversifies the energy mix we use, making the grid more resilient against outages
- Solar is predictable - We know when the sun will be out, making our electricity more reliable
- More cheap energy on the grid makes electricity more affordable for all
- Reduces carbon emissions and pollutants in our air and water
- Creates family-sustaining jobs
- Reduces “peak demand” when electricity use is at its highest (e.g., hot summer days) and reduces the need for expensive fossil fuel peaker plants that drive up the cost of electricity prices throughout the year

Scales of Solar Energy Generation

Distributed solar

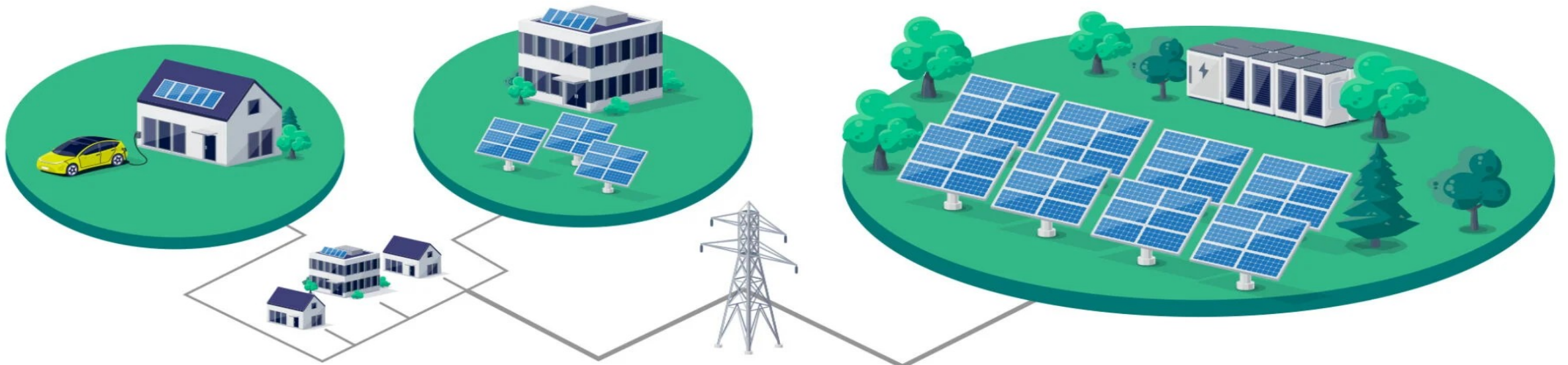
- 0 kW up to 3,000 kW
- (3 MW)
- Power is used where it's generated; connected to the distribution grid
- Regulated by the local distribution utility & PUC

Community-scale solar

- 1-3 MW
- Powers a group of homes and/or businesses
- Located off-site, but nearby
- Regulated by the local distribution utility (usually)

Utility-scale solar

- 3+ MW (usually much bigger - 20-400MW)
- Sold directly to utilities or large energy users (located off-site)
- Connected to the transmission grid
- Regulated by PJM



Solar Benefits All Pennsylvanians

Distributed Solar

- Substantial savings on solar owner's electric bills
- Reduces demand on the distribution grid
- Energy suppliers purchase less energy because more is generated by customers

Community Solar

- Provides access to solar for those left out of the solar market (e.g., renters, seniors on a fixed income, low-wealth families, too much shading no property)
- Can provide savings to subscribers on electric bills
- Local generation means less wear and tear on the transmission system

Utility-scale Solar

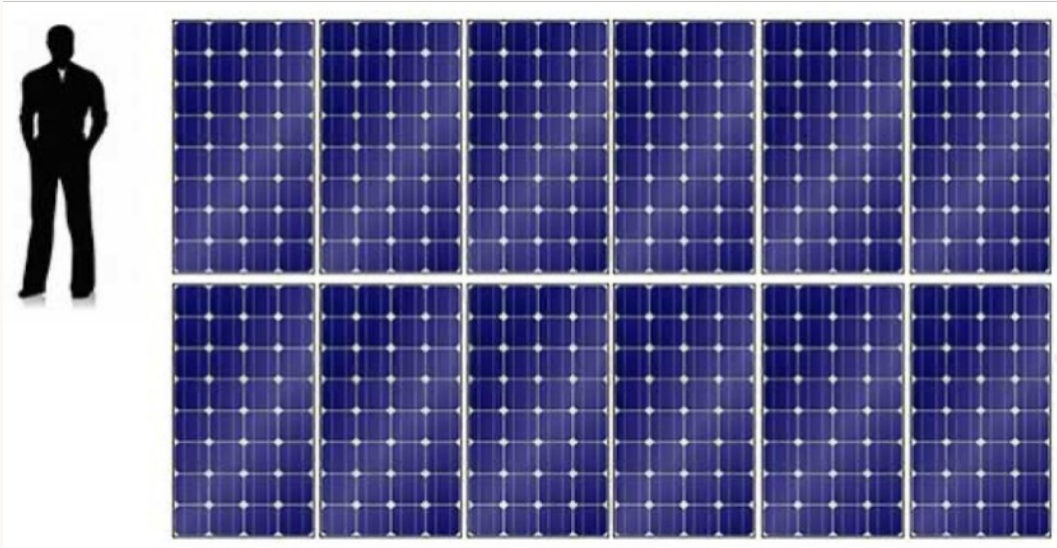
- Cheapest energy to build
- Low-cost wholesale energy prices
- Lowers the cost of energy for all ratepayers



Parts of a Solar Energy System



Solar Panel Technology

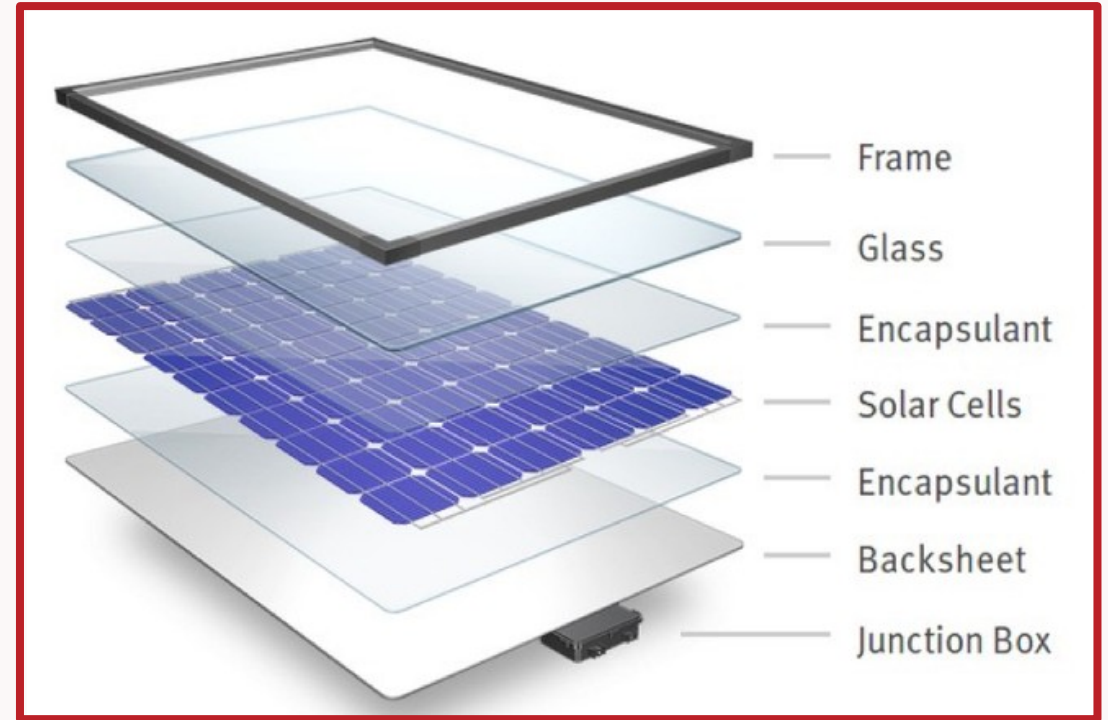


Twelve 400 W panels make this a 4.8 kW solar array. This array would cover approximately 250 sq. ft.

- Solar panels come with different wattages, like lightbulbs
- Kilowatts (kW): system size
- Average residential system in PA: 4-15 kW
- The average solar panel is 3.5 ft x 5.5 ft and weighs 40 lbs.

Solar Panel Technology

- Solar photovoltaics (PV) convert sunlight into electricity
- A panel (or module) has solar cells at the center
 - Surrounded by materials designed to protect the cells from the elements
 - Panels are engineered to endure the elements for more than 25 years
- There are no toxic materials in a solar panel. A laptop computer contains 30-100x more toxic materials than a solar panel.



- Solar panel glass is designed to absorb light and causes less glare than window glass or bodies of water.

Solar Recycling

- More than 85% or more of a solar photovoltaic (PV) module is made of materials we already know how to recycle, like aluminum and glass.

- What can recovered materials from a solar panel be used for?

Aluminum

- Cans
- Airplane Components
- Building Facades
- Bicycles

Glass

- Fiberglass
- Reflective Beads in Road Stripes
- Concrete Aggregate
- Septic Water Filtration

Encapsulant

- Rubber Shoe Soles
- Sports Equipment
- Construction

Silicon

- Solar Modules

Copper and Other Precious Metals

- Electronics



- The **National PV Recycling Program**, founded in 2016, is a network of recycling and refurbishment providers with end-of-life management services for solar and storage installers, project and system owners, developers, distributors and other parties. Participants can repair, refurbish, resell, and recycle PV modules, inverters and other equipment. Visit Source: <https://www.solarrecycle.org>

System Components: Inverters

Microinverter



String inverter



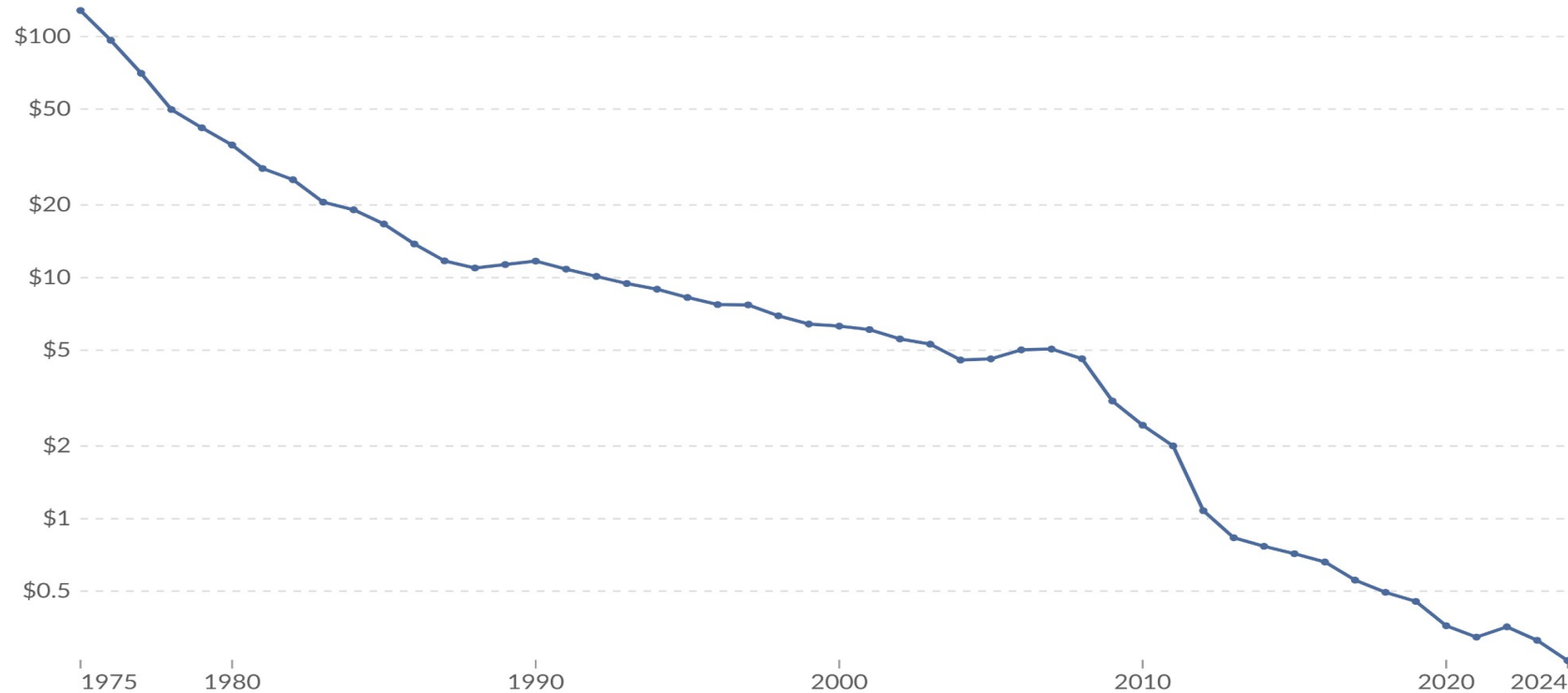
- Inverters convert Direct Current (DC) into Alternating Current (AC) that we use in our buildings
- Constantly calculate and adjust optimum power and current to maximize output
- Connect to the internet for production monitoring
- Microinverters are placed on the back of individual panels and are used when there is an uneven amount of sunlight across the solar system (eg., shading); more common on homes than larger commercial systems
- String inverters are used to maximize production across multiple solar panels at once

Solar is Economical

Solar photovoltaic panel prices

Our World
in Data

Average price of solar modules, expressed in US dollars per watt, adjusted for inflation.



Data source: IRENA (2025); Nemet (2009); Farmer and Lafond (2016)

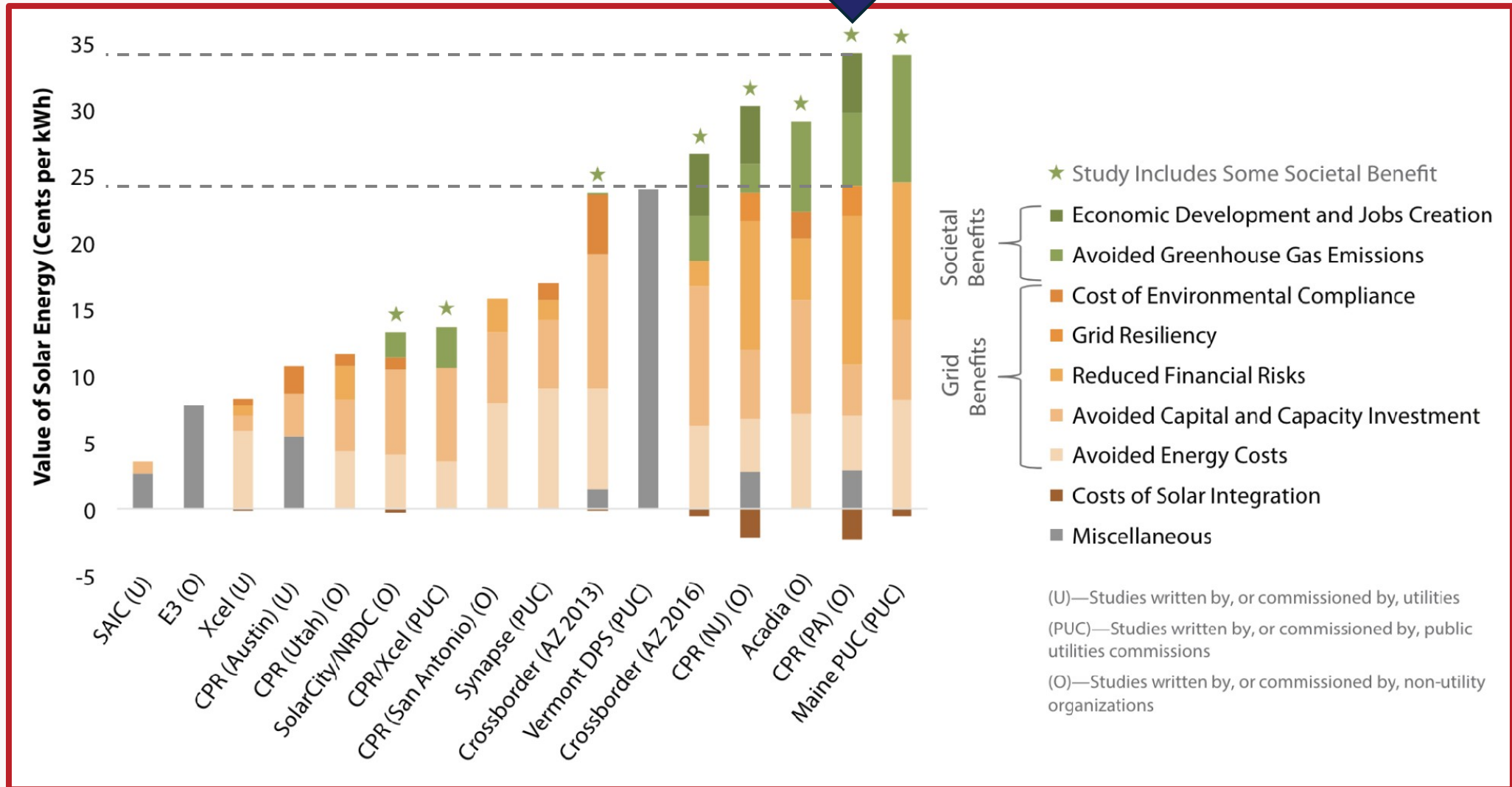
OurWorldinData.org/energy | CC BY

Note: Costs are expressed in constant 2024 US\$ per watt. Global estimates are used before 2010; European market benchmarks thereafter due to limited data availability.



SOURCE: <https://ourworldindata.org/grapher/solar-pv-prices>

Solar Benefits Everyone



SOURCE: Environment America

Solar = Jobs

- Currently 6,914 solar jobs in PA across more than 450 companies and 3,314 wind jobs and 4,468 jobs in storage and grid technologies
- If PA continues to work towards “30% renewable energy by 2030” we would gain 129,000 jobs across the state.
- Utility-scale solar creates work for our communities:
 - Lodging (houses, apartments, hotels, RV parking), fencing, hardware, lumber, and electrical supplies, rock and gravel, construction equipment rentals, landscaping services, agrivoltaics
- Distributed solar brings jobs the most jobs per megawatt - construction, electrical, attorneys, banks, engineers, etc., and solar saves money for entities buying solar for their buildings so they have more money for their employees



Solar Panels Are Increasingly Manufactured in the United



- Between the end of 2024 and September 2025, US solar manufacturing capacity has increased 35%.
- Solar manufacturing facilities online or under construction in 43 states and PR.
- PA steel manufacturers are boosted by large-scale solar installations.

Utility-scale solar can decrease property taxes.

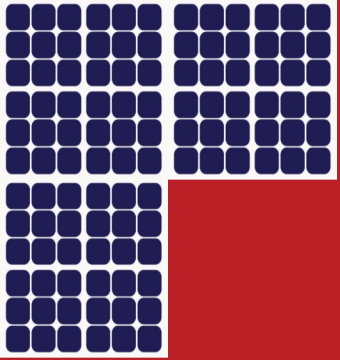
Increases county tax revenue in two ways

- 1) Direct payments to county governments
- 2) Income tax payments on leased land

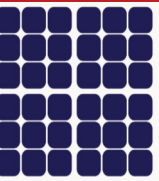


This impact often leads to lower residential & commercial property taxes.





Solar & Farmland



Solar Can Save Farms From Development

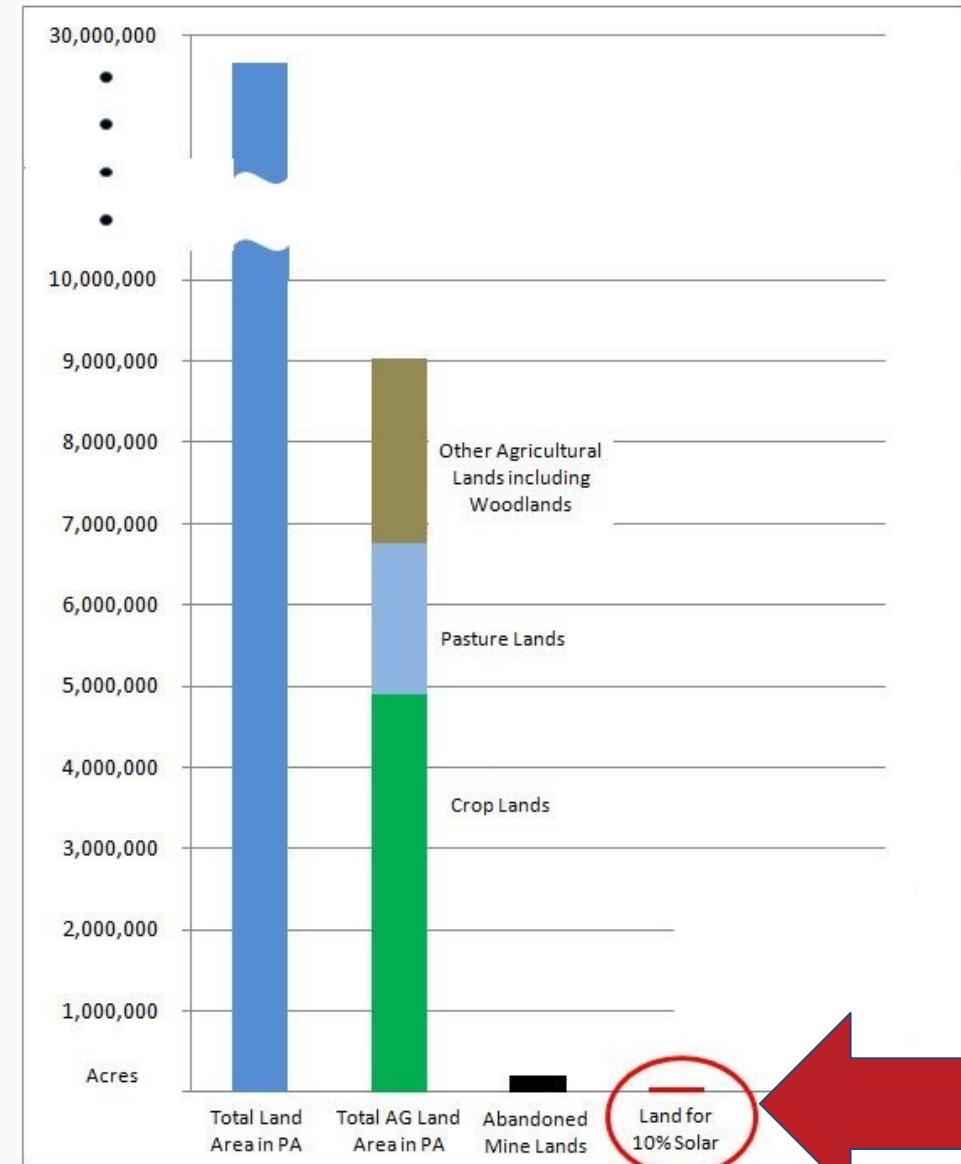


Sheep from Owens Family Farm grazing at Susquehanna University solar farm

3.9-megawatt solar array supplies 30 percent of the university's electricity needs; Selinsgrove, PA (Snyder County)

- PA lost 6,000+ farms between 2012-2017
 - 70% converted to low-density housing (source: American Farmland Trust)
- Solar provides supplemental income that can keep farms in business
 - Farmers lease unfarmable land to solar developers for 20 years or more
 - Landowners are paid a fixed price of \$800-\$1,400 per acre per year
 - Solar provides more income than most crops
- The solar equipment is removed at the end of the life in a process called decommissioning
 - Land is often equally or more productive for farming after solar is removed

Amount of Land Needed for 10% of Electricity from Solar



Agrivoltaics or AgriSolar

- Agrivoltaic systems combine solar energy production with agricultural and use and represent a promising pathway for sustainable, dual-purpose land management.
- Integrating solar panels with crop production can improve land-use efficiency, enhance water conservation, and increase farm profitability.
- Successful implementation of agrivoltaic systems requires careful planning and management to balance both agricultural and energy-production needs.



Sheep grazing in the shade of solar panels. Photo: NCAT



ENGIE project in Vermont. Photo: Rob Davis



Grafton solar array in Grafton, Massachusetts. Photo: AgriSolar Clearinghouse

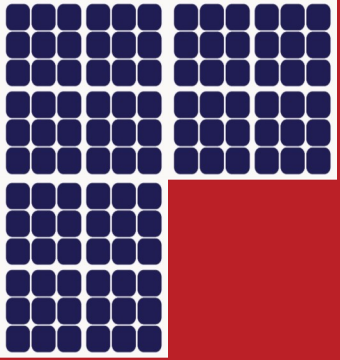


Photos from Best Practices in Agrisolar. NCAT.
<https://www.ncat.org/publication/best-practices-in-agrisolar/>

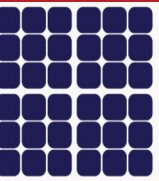
Solar Provides More Benefits

- Solar can improve soil health.
- Utility-scale solar can both manage water runoff as well as soil erosion.
- Solar helps farmers pass their property down to the next generation.





Case Studies: Real Solar Owners



Tim Larson, Erie County

“

It's a hard time to be a farmer, and solar can be a great option to generate profit from our land and build equity for future generations. Beyond rooftop solar, farmers should be allowed to use their own land for community solar and rural solar farms.

I hope that one day Pennsylvania will catch up with the rest of the country and let farmers host community solar projects. ”



“Solar keeps me farming.”

St. Andrew's Episcopal Church, Union County



“

Our church's energy costs increased faster than other costs. We knew going solar could help us save money in the long run, plus allow us to further our outreach and provide services to the community.

The savings will be used for deficit reduction for the congregation, as well as maintaining outreach programs and community service.

”

“It's a win financially, and it's a win environmentally.”

Community College of Allegheny County

McCandless Township, Allegheny County, PA

Date solar array was completed: March 2022

Size of system: 543 kilowatts

Financing: Thanks to a Power Purchase Agreement with their developer, the college did not have to spend any of its own money on the solar installation, which will save CCAC about \$750,000 in energy costs over the next 28 years.

A Power Purchase Agreement is a tool often used by tax-exempt organizations to gain access to solar energy with little to no financing upfront. A third-party investor owns and maintains the solar array and the host site (here, CCAC) pays for the energy generated by the solar system, typically at a significantly lower price than what the host was paying before.



Berner International

New Castle, PA (Lawrence County)

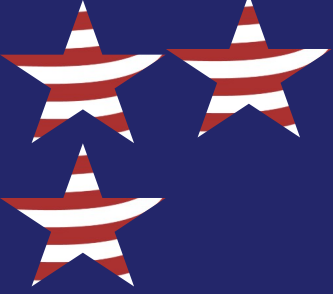
Date their solar array was completed: January 2024

Size of system: 886 kW

Financing: Berner received a \$537,000 Rural American Energy Program (REAP) grant through the USDA toward the cost of installation and benefitted from a 40% solar investment tax credit. The remainder was financed through an existing lender relationship.

The system is designed to cover all future energy expansion needs. Excess energy will initially be sent back to First Energy but will eventually be integral to a planned Berner facility expansion.



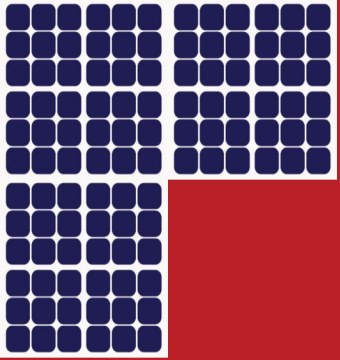


Take Action!

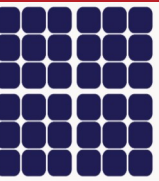
What you can do to lower your electricity bill:

- Consider energy efficiency measures; see if your utility offers Act 129 and energy efficiency rebates
- Consider buying solar for your home or workplace; contact a local solar installer to get a quote
- Encourage your municipality and schools to go solar; there are low interest loans and grant programs that can save them thousands of dollars
- Talk to your legislators and encourage them to support policies for energy efficiency, renewable energy, and storage
- VOTE!





Additional Slides



How do Pennsylvanians feel about solar?

Overall, over three-quarters of Pennsylvania voters (78%) support significantly increasing the use of renewable energy like wind and solar to generate electricity. This includes 93% of Democrats, 84% of independents, and 59% of Republicans.

([Global Strategy Group, 8/4/2024](#))

A majority of Pennsylvanians (55%) believe that we should transition to renewable energy as soon as possible.

A majority of Pennsylvanians (65%) would like to see more solar electricity produced other in state overall as well as in their local region.

([Embold Research, 2/10/2022](#))

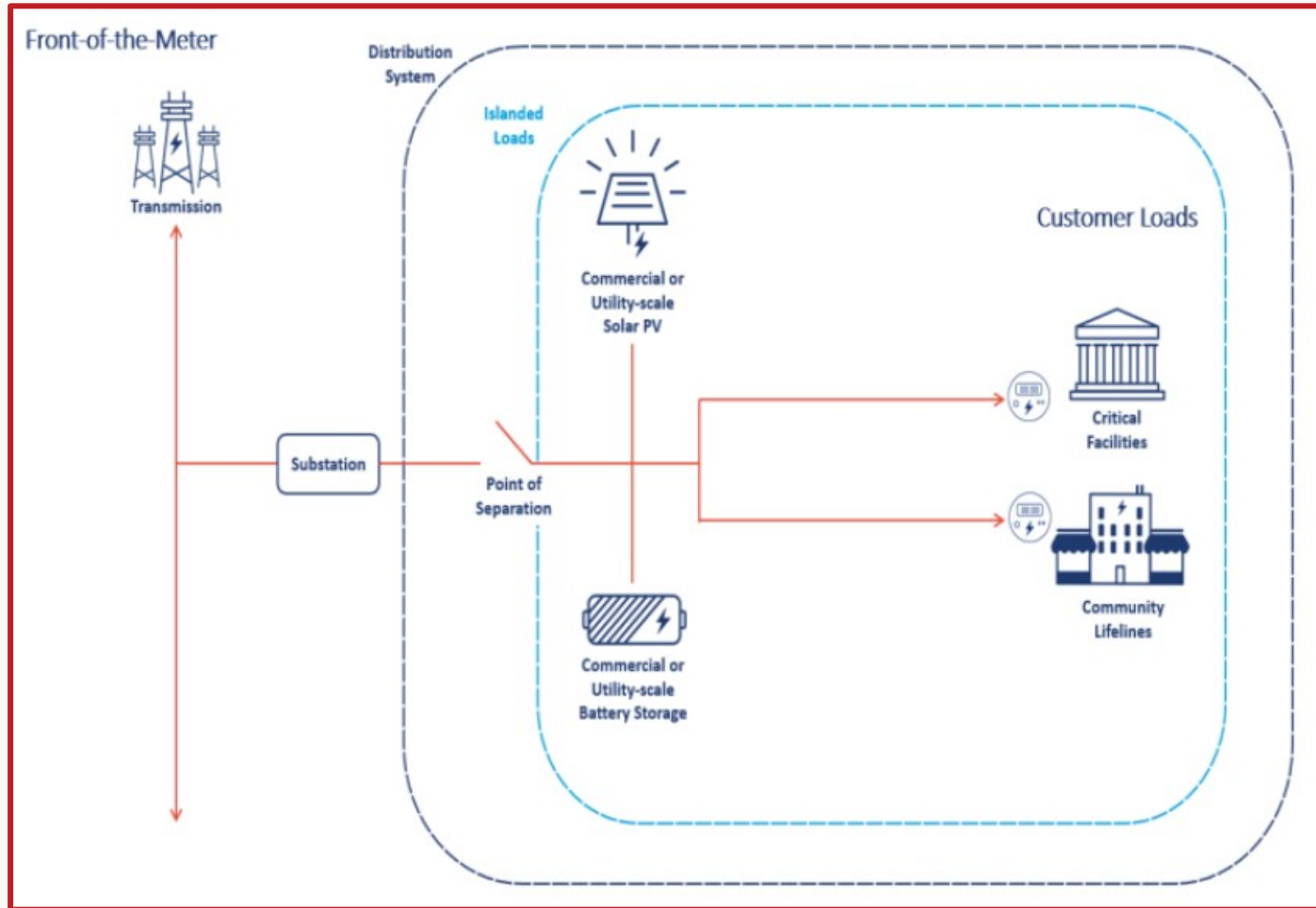


Resiliency From Solar + Storage

What is a Microgrid?

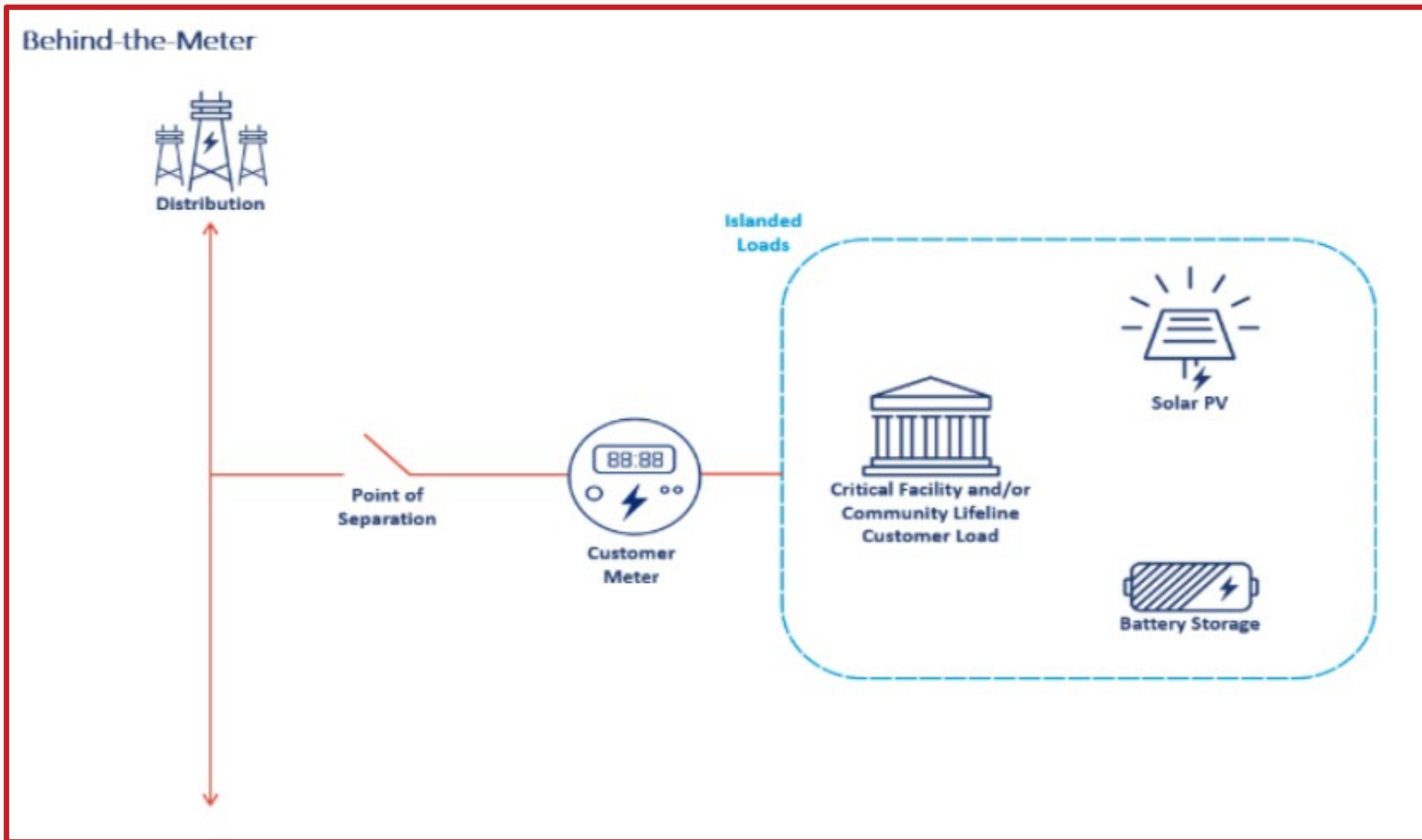
- A group of interconnected loads and distributed energy resources within clearly defined electrical boundaries that act as a single controllable entity with respect to the grid
- Grid connected mode and Island mode
- In Front-of-the-Meter and Behind-the-Meter
- Allows facilities to operate independently if the grid fails due to severe weather events or cyber attacks
- Particularly important for critical infrastructure such as police, fire, food banks, shelters, dialysis centers, etc.

Front of the Meter (FTM) Microgrid

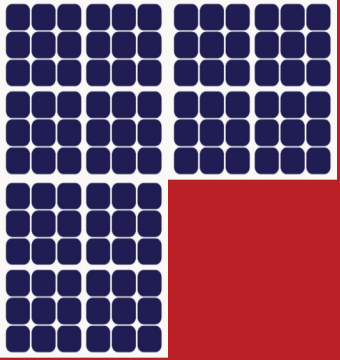


- Often referred to as Community Microgrids
- Uses distributed energy resources (DERs), batteries, and back-up generators to power multiple facilities
- All the facilities must be in close proximity to each other

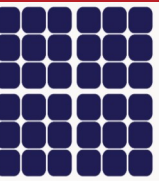
Behind the Meter (BTM) Microgrid



- Uses distributed energy resources (DERs), batteries, and back-up generators to power a single facility (such as a food bank)
- Typically simpler and faster to implement because only powering one facility



Important Policy Drivers for Solar Deployment



Net Metering

- Net Metering - one of the most important policies in PA for distributed solar.
- If a solar customer has excess solar generation in one month, the customer's bill is credited on a 1:1 (kilowatt to kilowatt) basis in the following month at the full retail rate (distribution, transmission, and generation rates) and continues to roll over month to month.
- In essence the customer 'banks' their excess generation until there is a month when the solar system generates less than needed that month. When that happens, the excess credit is applied to the bill.
- If there is excess generation on May 31 each year (the annual true-up period), then the utility pays out the remaining balance at "price-to-compare" rate (just transmission and generation, but not distribution rates).
- Only required by the Investor Owned Utilities (not municipal utilities or rural electric coops).



Net Metering Benefits Everyone

- Net metering (NEM) is fair credit for solar and other forms of energy sold to neighboring homes and businesses
- Multiple studies over many years and in different states have shown that NEM at retail rate provides fair value to solar and other distributed resources for the values they provide to the grid

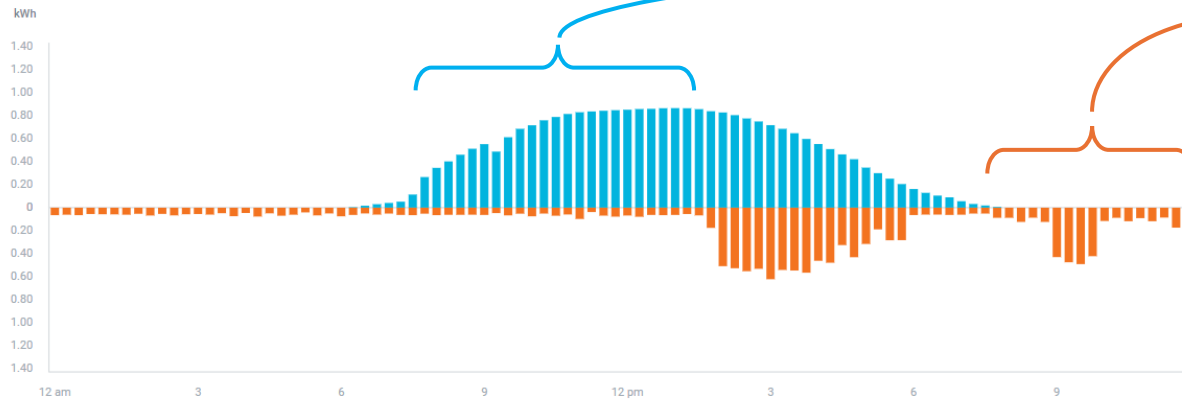
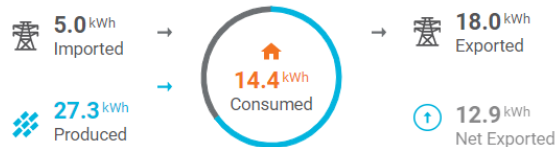
Net Metering

Total Energy

Updated 17 hrs ago

< August 08, 2021 >

☁ 20°C



SOURCE: Enphase

Account Summary

Amount Due

Balance at Billing on Sep 09, 2024

0.00

Net Meter Banked Usage Information

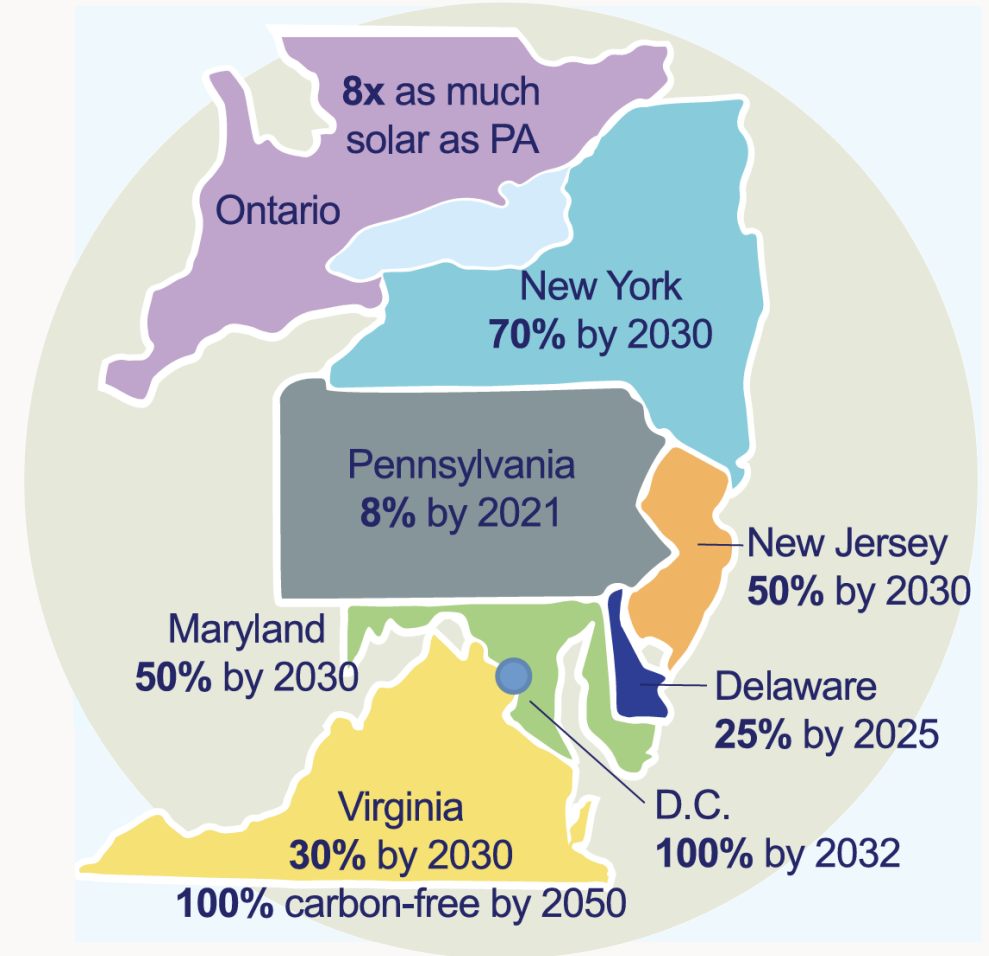
Aug 05, 2024 Banked KWH	1,695
Current Month KWH Deposit	985
Current Month KWH Withdrawal for Credit	-785
Sep 04, 2024 Banked KWH	1,895

Charges from Penelec

Price to Compare Default Service	785 KWH	x 0.097440	76.49
Customer Charge			10.41
Net Metering Credit	785 KWH	x -0.181809	-142.72
Current Consumption Bill Charges			10.23

Alternative Energy Portfolio Standards (AEPS)

- Signed into law November 2004
- Requires Pennsylvania utilities to obtain 18% retail electricity from alternative sources by May 2021 (through the purchase of Renewable Energy Credits)
- Tier I: 8%
 - Solar thermal, wind, low-impact hydropower, geothermal, biomass, fuel cells from anywhere in 13 states of PJM
 - 0.5% of the 8% must come from in-state solar PV
- Tier II: 10%
 - Large-scale hydropower, waste coal, energy efficiency, municipal solid waste, byproducts of wood processing from in-state resources



Renewable Energy Credits (RECs)

- 1 megawatt-hour of energy generated = 1 REC (also called Solar Renewable Credit or SREC for solar)
- RECs are bought and sold on a trading market
- Currently valued at about \$25/REC
- Utilities buy enough RECs to fulfill their AEPS obligations each year
- RECs encourage renewable energy production
- The AEPS created a credit market that drives the development of renewables
- The price of the credit is important for the financial viability of the project
- Example: a 7 kilowatt (7kW) solar system on a house will create 6 to 7 RECs (or about \$175 per year)

Tax Implications of Solar

- Reducing the upfront cost of solar
 - Federal tax credits
 - Available for commercial systems, leased residential systems, and batteries
 - State sales tax exemptions
 - Not available in PA
 - Property tax exemptions
 - Not available in PA
- Redistributing tax benefits in communities
 - Community- and utility-scale solar developers pay property and sales taxes to the municipalities in which they are located that can be reinvested into the community

Solar Financing

Many homeowners as well as businesses, schools, municipalities, nonprofits, etc., use available grants, loans, or other financing tools to purchase solar energy. Because there is no fuel cost (the sun is free!), the majority of the cost of solar is in the upfront cost of the equipment that lasts 30 years and more.

- Grants
- Loans
- Leases
- Power Purchase Agreements (PPAs) - In a PPA arrangement a third party who owns the solar system and installs the system on the customer's property. The customer simply pays for the cost of the power, similar to paying an electricity bill, but the rates are stable for the lifetime of the system (~25 years).

Community Solar

- Rooftop solar is not accessible to many people for many reasons
 - Renters, retirees on a fixed income, low-income, bad roof, too many trees...
- There are policy solutions to make solar accessible to **everyone**
- Community solar lets individuals and organizations subscribe to a portion of a large array, offsetting the monthly electric bill

Not yet legal in PA



Plug-In Solar

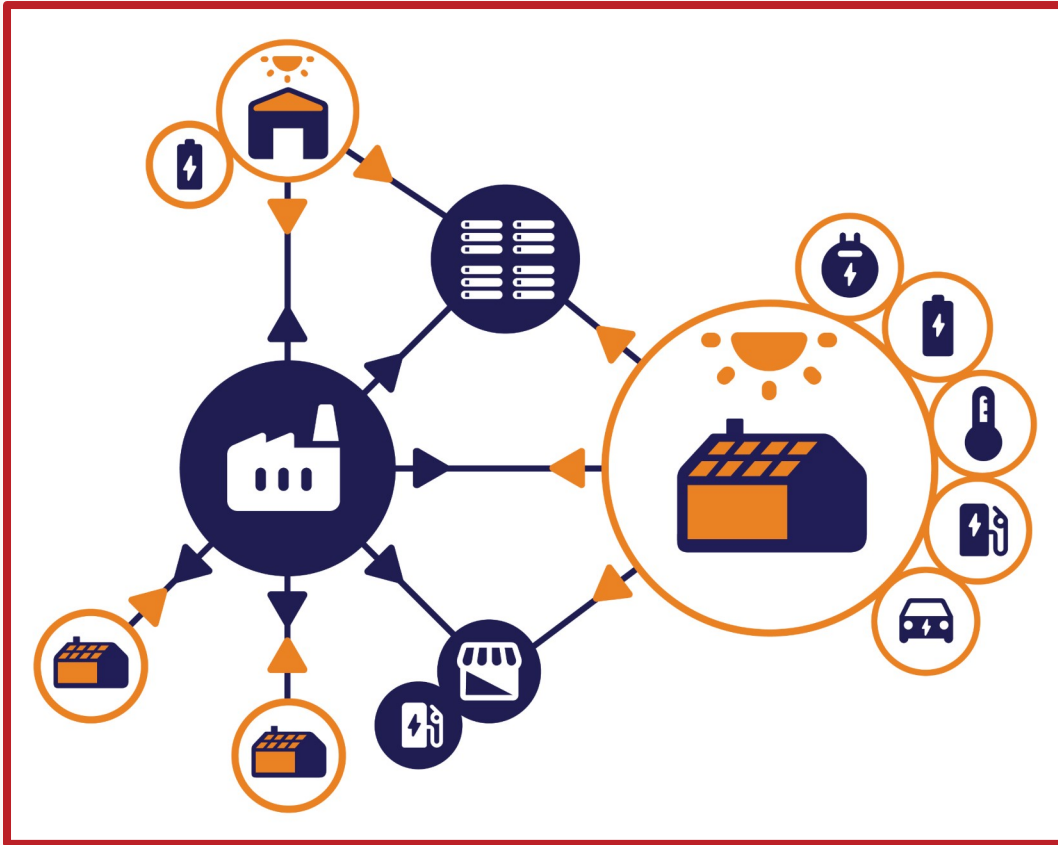
- Also known as “balcony solar”
- Rooftop solar without the roof
- Individual solar PV modules that can plug into a home’s outlet to offset a small portion of electrical use
- Systems are typically no more than 1200 W
- Payback period is about 3-5 years
- Easy to install and no interconnection agreement needed with your utility

Not yet legal in PA



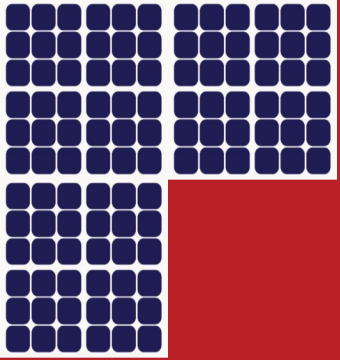
Photo credit: Bright Saver

Virtual Power Plants

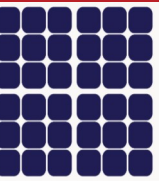


- Networks of distributed resources that can shift power or demand when the grid is unstable
- Batteries, smart thermostats, HVACs, smart appliances, EVs
- Reduces the need for expensive peaker power = lower costs for everyone
- Resource owners are compensated for their energy management
- Can help keep the grid from failing during severe weather events or other grid events.

Not yet legal in PA



Perspectives on Solar in PA



Polling results: Pennsylvanians on energy

8-in-10 Pennsylvanians say their household energy bills have increased over the last two years – including more than one-third who say their bills have increased “a lot.”

When presented with the choice between ensuring affordable energy and combating climate change, 68% of respondents favored ensuring affordability over working on climate change.

Rising energy costs (63%) and ensuring energy grid reliability (26%) were selected as the most pressing concerns regarding energy and environment.



When asked “How concerned are you about your ability to afford your family's energy needs, including energy to power and heat your home and fuel your vehicles...”, 70% of Pennsylvanians said they were somewhat or very concerned.

79% of Pennsylvanians are concerned about the future availability of affordable energy in Pennsylvania.

How do Pennsylvanians feel about solar?

Overall, over three-quarters of Pennsylvania voters **(78%) support significantly increasing the use of renewable energy** like wind and solar to generate electricity. This includes 93% of Democrats, 84% of independents, and 59% of Republicans.

([Global Strategy Group, 8/4/2024](#))

A majority of Pennsylvanians (55%) believe that we should transition to renewable energy as soon as possible.

A majority of Pennsylvanians (65%) would like to see more solar electricity produced other in state overall as well as in their local region. ([Embold Research, 2/10/2022](#))



Polling Takeaways

High priority concerns -

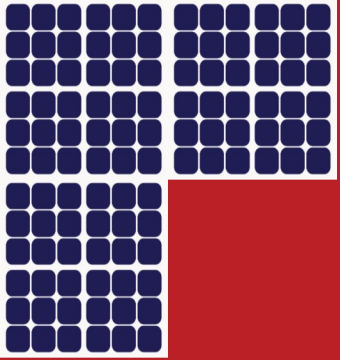
- Energy affordability and rate increases
- Grid Stability
- Jobs and the economy
- Energy independence

Lower priority -

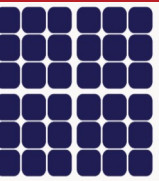
- The environment
- Climate change

Overall, Pennsylvanians support more solar generation both locally and statewide!





Solar Mythbusting



Overview



- Discussion
 - Why do you support solar?
 - What are we hearing on the ground?
- Positive Framework
- Solar Facts

Discussion

Why do you support solar?

What are the positives from your perspective?

What facts do you already know?



Discussion

What negative narratives about solar have you heard from neighbors?

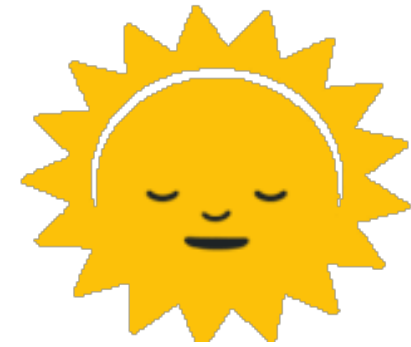
What are some solar “myths” in our communities?



Frame it Positively

- **Focus on possibilities instead of limitations**
- **Do not reinforce the misinformation**
- **Keep the conversation going**
- **Bring in personal elements (i.e. storytelling)**

Solar Facts



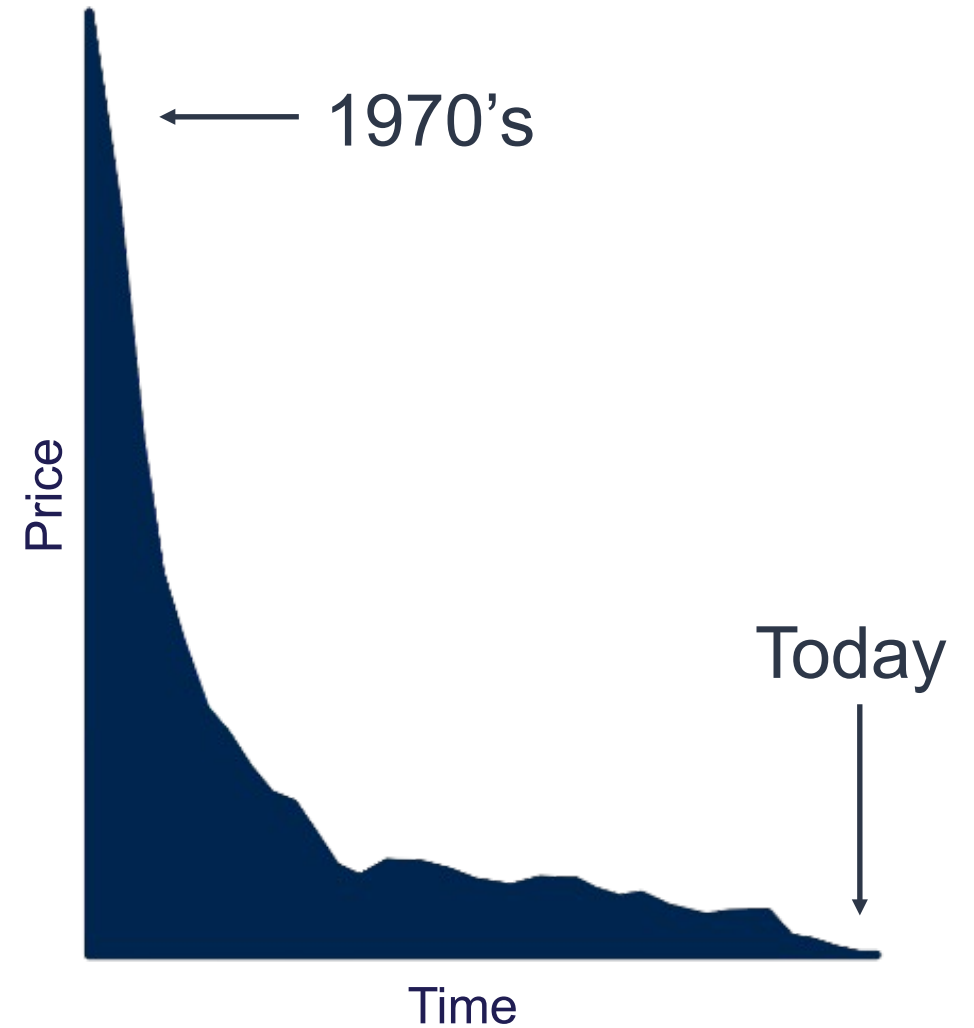
Solar works for our wallets.



Solar economics

Solar is a great investment

- Costs have dropped 73% since 2010
- No longer a specialty project
- Excellent ROI



FACT: Solar panels are increasingly produced in the United States.



- Between the end of 2024 and September 2025, US solar manufacturing capacity has increased 35%.
- Solar manufacturing facilities online or under construction in 43 states and PR.
- PA steel manufacturers are boosted by large-scale solar installations.

FACT: Solar brings jobs.

- Currently 4,200 solar jobs in PA across more than 450 companies.
- If PA continues to work towards Gov. Shapiro's "30% renewable energy by 2030" platform, that goal would gain 129,000 across the state.
- Utility-scale solar creates work for our communities:
 - Lodging (houses, apartments, hotels, RV parking)
 - Fencing
 - Hardware, lumber, and electrical supplies
 - Rock and gravel
 - Construction equipment rentals
 - Landscaping services
 - Agrivoltaics



FACT: Utility-scale solar can decrease property taxes.

Increases county tax revenue in two ways

1) direct payments to county governments

2) income tax payments on leased land.



This impact often leads to lower residential & commercial property taxes.

FACT: Solar benefits our communities in tangible ways.



Solar works for our farmers.

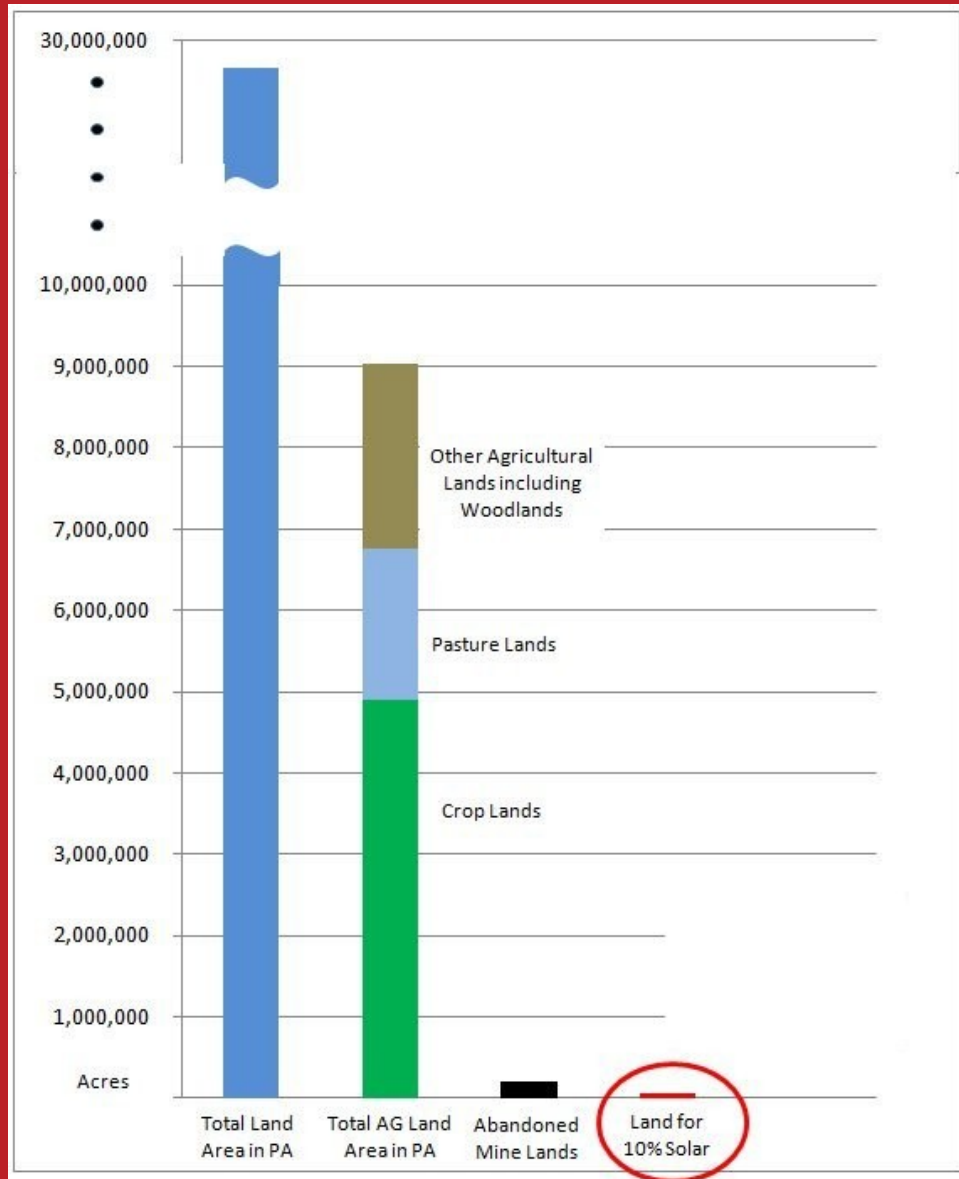


FACT: The biggest threat to farmland is housing developments.

- PA in top 12 states with the most threatened agricultural land use.
- From 2001 to 2016, Pa lost 346,000 acres from residential development.
- As of Q4 2025, PA has 10,000 acres of utility-scale solar



Amount of Land Needed for 10% of Electricity from Solar



Just ~0.27% of Pennsylvania's land is required to produce 10% of our state's electricity from ground-installed solar



FACT: Solar helps farmers pass their property down to the next generation.



**FACT:
Agriculture and
solar can work
together.**



**Solar +
Agriculture =
Agrivoltaics**



 **SOLAR UNITED
NEIGHBORS**

Photos courtesy of the Good Questions Project and the
American Solar Grazing Association

FACT: Solar can improve soil health.



FACT: Utility-scale solar can both manage water runoff as well as soil erosion.



Solar works for our communities.

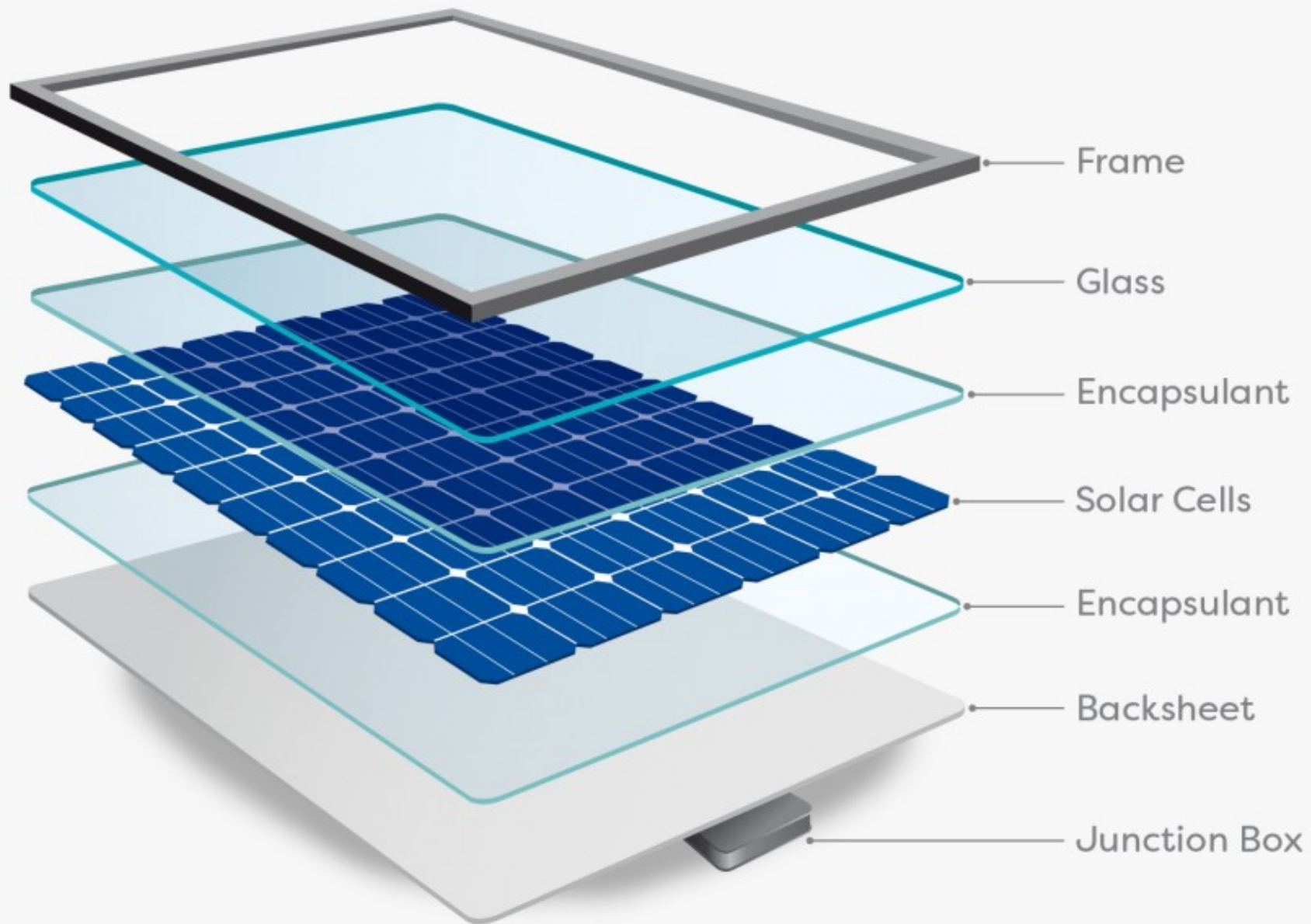


**FACT: Solar panels absorb light and
don't cause glare.**



FACT: Solar is safe!





A laptop contains
30-100x more
toxic materials
than a solar panel.







REUSE

REDUCE

RECYCLE



FACT: At least 95% of solar panels can be recycled!

FACT: Solar is quiet.

