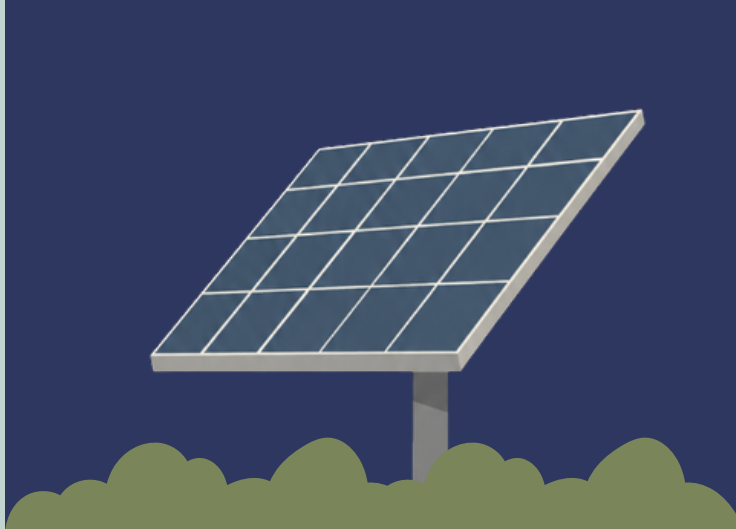
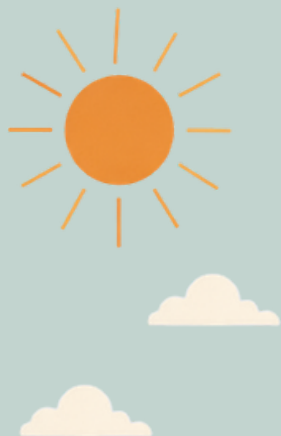
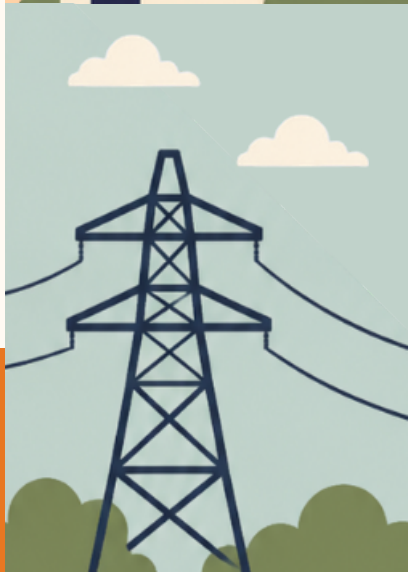




The Solar Energy Handbook

A Citizen's Guide

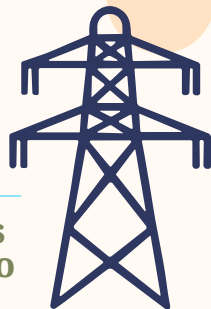
Understanding Solar Energy, the Electric Grid, and Solar in Michigan Communities



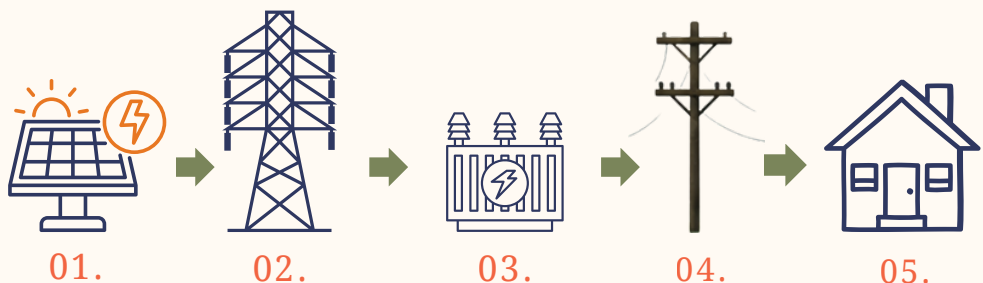
groundwork

How Does Electricity Reach Our Homes?

The power grid is a network that moves electricity from where it is generated to where it is needed.



HOW THE GRID WORKS



01. Generation

Electricity is produced from various energy sources, like solar panels.

02. Transmission

High-voltage transmission lines carry electricity long distances.

03. Substations

Substations lower voltage so power is usable by homes and businesses.

04. Distribution

Local lines then deliver the stepped down voltages to local neighborhoods and businesses.

05. You

The correct voltage level then enters your home so you can power your home or charge your car.



Did you know?

Michigan energy providers fall into three main categories:

- (2) Investor-Owned Utilities
- (11) Rural Electric Cooperatives
- (41) Municipal Utilities



Key Takeaway

The electric grid operates 24 hours a day, balancing electricity supply and demand through a complex system that relies on many different energy sources.



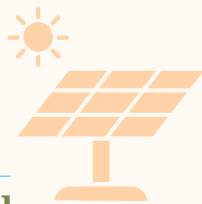
Analogy: Think of the grid like roads

Highways (transmission lines) move electricity long distances

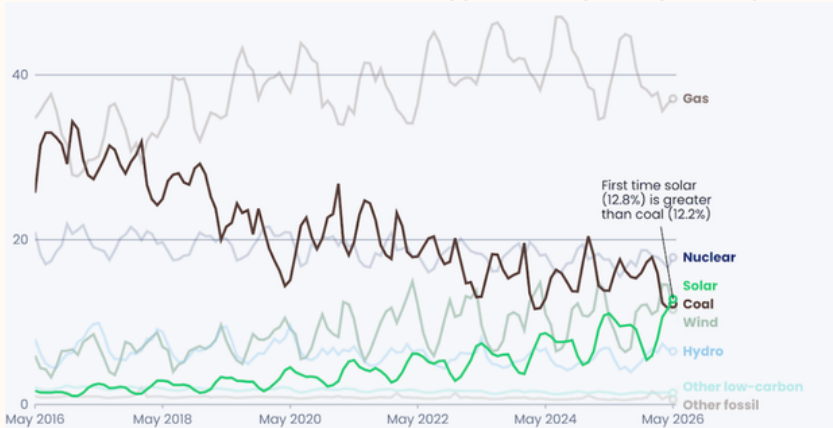
Local roads (distribution lines) deliver electricity to homes, businesses, and farms



Why Prioritize Solar Energy?



In May 2026, solar generation surpassed coal generation for the first time ever in the U.S., making it clear that renewable energy isn't going away.



Source: Monthly electricity data, Ember, [Electricity Data Explorer](#)

Other low-carbon' includes bioenergy and geothermal; 'Other fossil' includes oil, other petroleum products and fossil waste

EMBER

WHY?

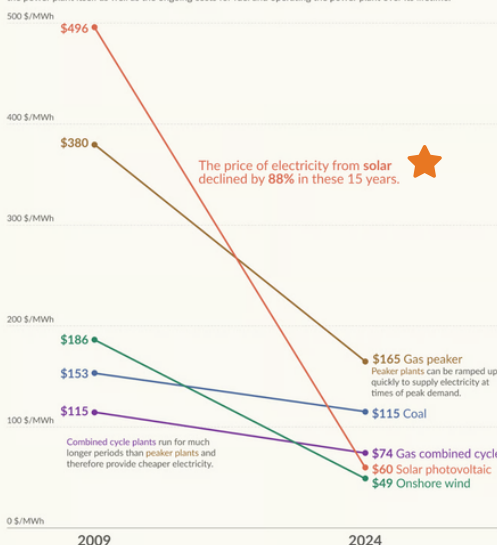
“Solar has developed to become the world’s cheapest source of electricity today.” (Roser, 2025)

★ Key Takeaway

To meet the growing energy demand worldwide, we must invest in affordable, rapidly deployable energy solutions—which means prioritizing renewables.

How did the price of electricity from new power plants change over the last 15 years?

Electricity prices are expressed in 'levelized costs of energy' (LCOE). LCOE captures the cost of building the power plant itself as well as the ongoing costs for fuel and operating the power plant over its lifetime.



Note: Data reflects unsubsidized costs, expressed in constant 2023 US\$. This means costs are adjusted for inflation.

Data source: Lazard – Levelized Cost of Energy (2024); World Bank and OECD (2023)

OurWorldInData – Research and data to make progress against the world's largest problems.

Licensed under CC-BY by the authors Pablo Rosado and Max Roser

Lazard, 2024 & World Bank and OECD, 2025



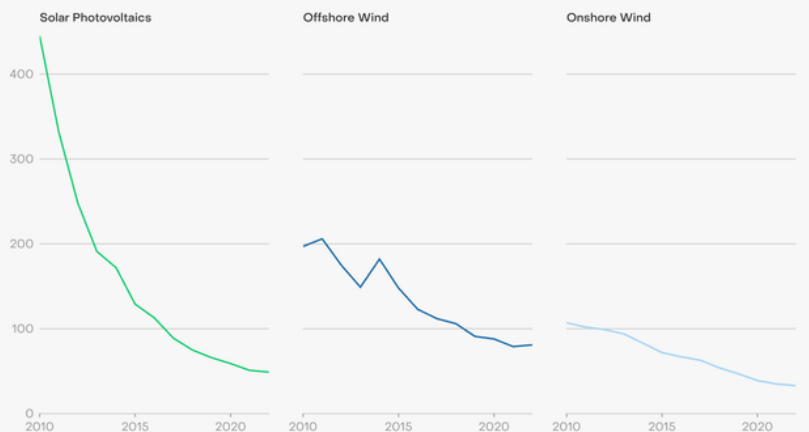
Solar is Combatting the Climate Crisis



Fossil fuels are responsible for nearly 90% of global CO₂ emissions, making clean energy a necessity to curb the climate crisis and secure a sustainable future (Wolf et al., 2025).

The cost of wind and solar power has dramatically reduced over the past decade

Levelised cost of electricity, global weighted-average (USD/MWh)



Source: IRENA

EMBER



Did you know?

Boosting solar energy production by **15% nationwide** could **cut annual CO₂ emissions from U.S. power plants by 8.5 million metric tons**—that's like taking **1.8 million gas-powered cars off the road** for a year! (*Harvard Climate Brief*, 2025).



Key Takeaway

We are at a pivotal moment in history – carbon emissions must decrease to avoid the worst impacts of climate change. Solar energy provides clean, sustainable energy while cutting carbon emissions.





Benefits of Large-Scale Solar in Michigan



As Michigan's energy needs continue to grow, solar energy is helping add power to the grid while creating economic opportunities for communities, farmers, and local governments.

COMMUNITY BENEFITS

Tax Revenue

Communities can receive **\$2,000–\$7,000 per MW** each year. For a typical **100–160 MW Michigan** project, that's up to **\$1.12 million annually** for local schools, emergency services, libraries, and more (Uof M Graham Sustainability Institute, 2026).

Agriculture & Solar

When developers and farmers collaborate, solar energy and agriculture can thrive side by side—a sustainable practice known as **agrivoltaics** that preserves farmland and generates revenue for farmers (SEIA, 2026).



learn more about
agrivoltaics here →



💡 Did you know?

In Michigan, **less than 1% of prime farmland is taken up by solar**. By comparison, golf courses use nearly five times more prime farmland than utility-sized solar (SEIA, 2026).



How Are Solar Projects Approved in MI?

Local review - Projects are reviewed and approved through local zoning and permitting.

State review - Under PA233, developers can apply for project approval through the Michigan Public Service Commission

Learn more here →



★ Key Takeaway

As electricity demand grows, adding solar energy can help diversify Michigan's energy mix, lower energy costs, and reduce reliance on a single source of energy while supporting local communities and economies—and help slow climate change.

Is Rooftop Solar Right for You?



While large-scale solar generates electricity for the broader grid, residential solar systems allow homeowners to generate their own power and take control of their energy bills.

COST BREAKDOWN

Average Net Cost (2025)

A typical Michigan residential solar system from 5-8 kW costs between **\$15,000 and \$25,000** before incentives (Strawberry Solar, 2025).

Payback Period

A 6 kW system can save a homeowner between **\$1,200 and \$1,600 annually**. Net metering and other utility incentive programs can further boost savings (Strawberry Solar, 2025).

Long-Term Savings

A typical **6 kW solar system** can save a homeowner approximately **\$60,000** in electricity costs **over 30 years** (Strawberry Solar, 2025).

GROUNDWORK'S GROUP-BUY PROGRAM

Access MI Solar

Homeowners can save on **solar and battery storage systems** by participating in Groundwork's yearly group-buy program.

Learn more about this program below ➡



★ Key Takeaway

While residential solar is an upfront investment, long-term energy savings make it a cost-effective option for many Michigan homeowners

FAQ

Why don't we see more solar on rooftops and parking lots?

Rooftop and parking lot solar are important, but utility rules often limit businesses from generating far more electricity than they use (MPSC, n.d). Rooftop and parking lot solar can't generate enough electricity to meet growing energy demand and is more expensive than building on flat, already cleared brown field (House, 2025).

Sources: <http://bit.ly/4gZ0rcd>, <https://bit.ly/3TPLLIQ>

Do solar panels contain toxic chemicals?

No. Solar panels are highly regulated products. Panels are majority made up of glass (77%), aluminum (10%) , and silicon (3%) – none of which are toxic.

Source: <https://bit.ly/4gTECL8>

Can farmland return to agricultural use once solar panels are removed?

Yes. Solar projects typically last 20–30 years, and strong decommissioning plans require equipment to be removed so land can return to its previous use (UW Madison, n.d.). Good conservation efforts during solar use can leave the soil with more nutrients than before the project was installed (Center for Rural Affairs, 2025)

Source: <https://bit.ly/4fjiQPX>, <https://bit.ly/4pHlxhC>

Why are farmers installing solar on their property?

Leasing farmland to host solar panels offers farmers a diversified income, reduces financial risk, and allows for agrivoltaics, so land under the panels can be used for livestock or crops (MSU, 2025).

Source: <https://tinyurl.com/2fn95aj9>