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Michigan Solar for Schools Guide

Great Lakes Renewable Energy Association

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Why consider solar energy for your school?

These days, schools are focused on keeping up with changing technologies while saving money. We also face the growing responsibility to set and reach sustainability goals. Adding solar energy production to your public school or district can do both of these things. Between savings on installation and monthly savings solar arrays offer in comparison to utility electricity, installing solar for your school is the right thing to do.

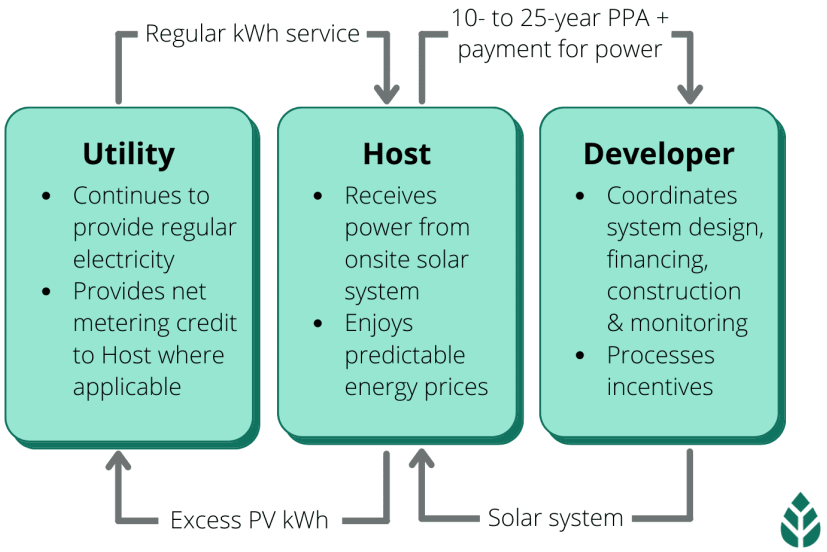
Beyond that, a solar installation is an opportunity to educate students in the district about electricity, clean energy, and sustainability with a real-world model and example to learn from. Solar energy projects offer a variety of experiential learning for high schoolers to learn from monitoring systems, middle schoolers to learn about energy systems and sustainability, and elementary schoolers to learn how electronics are powered. Curricula for sustainable and energy lessons is already built out and available for school teachers to utilize. It is also a great way to build community, such as building up environmental student groups or inviting parents and neighbors to support the project. Inviting investment from members across the schools and community builds a culture of shared investment in school sustainability and children's learning. Pairing this investment with infrastructure and maintenance work on school structures will only support the school in the long term.

If you and your school are interested in adding solar to your school, this guide will help you find all the resources you need to get started.

How to finance solar for your school

Power Purchase Agreements (PPAs)

PPAs offer a less expensive and involved alternative to installing and managing a solar system attached to your school. Under a PPA, a third party owns and operates the solar system on your building to maximize its benefits, meaning you do not need to incur any upfront installation costs. You then purchase the electricity generated by the system at an agreed-upon rate that is usually significantly lower than your usual utility rate. PPAs can present some challenges in negotiating legal terms and financing with low risk, so make sure you talk to your installer for guidance on what would be the best option for your school before agreeing to a PPA.

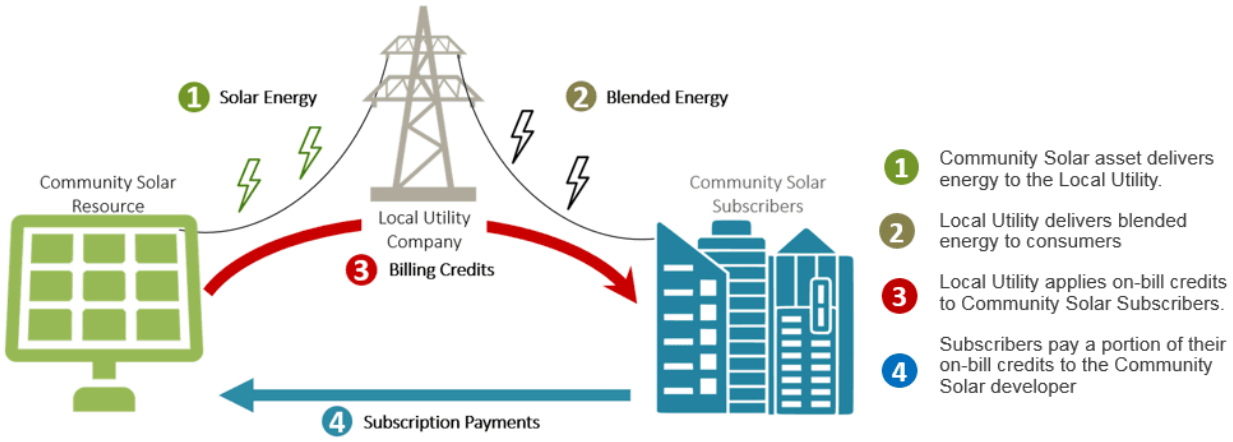


Source: EcoWatch, Solar Power Purchase Agreements.

Michigan Saves is a nonprofit green bank that supports homeowners, businesses, and organizations undertaking energy efficiency and renewable energy projects with PPAs. BluePath Finance is another leading financier of PPAs and sustainable projects. Your selected installer will be able to appoint a third party PPA financing partner like Inclusive Prosperity Capital or the National Energy Improvement Fund (NEIF). These organizations can provide $500,000 to $2,000,000 in funding for your projects. NEIF, for example, uses equity crowd-investing with RaiseGreen, a company that provides investment opportunities in green projects. Consider similar community investment structures to support your project's financing.

Community Solar

Community solar is a great way to subscribe to a local solar project without incurring the costs of installation yourself. As of 2024, community solar is forbidden in parts of the state and heavily opposed by utilities, and thus is very rare. Upon enactment of policy incentivizing utilities to invest in community solar projects, this will become a great way to power your schools with clean energy and get a portion of your electricity bills offset by clean energy usage, at the cost of the subscription program. See the Department of Energy's description of community solar to learn more. This story written by Yale Climate Connections outlines a Minnesota school's community solar investment, which may help inform this option if it becomes available.



Source: Village of Niles, IL, Community Solar

PACE

Property Assessed Clean Energy (PACE)Program, a state-run program, is a way to finance your projects over 25 years without any upfront costs. With PACE, the local municipality, township, or county will assess your property and project plans and finance your project upfront through a traditional lender, which you repay through an addition to your schools' property taxes. The Office of State and Community Energy Programs offers a helpful overview of this strategy. Go to Lean & Green Michigan and contact their representatives to learn more about where to start in Michigan and what your options are.

Utilizing Bonds

Bonds can be a great way to raise money in large quantities for long-term use. Below, information and advice from the Ann Arbor Public Schools' bond program outlines how this can be utilized for this kind of project. The bond's website (linked above)describes

how the bond will be used, how it was presented to voters during the referendum, and more useful information.

Ann Arbor bonds case study:

- Comes from a portion of a 2019 Ann Arbor Public Schools bond
- Voted on through a city referendum
- Funded through a millage on homeowners
- Supported by the community to improve schools' infrastructure and learning environments

Inflation Reduction Act (IRA) Tax Credits

As of May 2024, tax-exempt organizations like schools can access certain IRA tax credits as direct cash payments from the IRS. Although these tax credits require schools to pay for their solar projects upfront, they can help recoup around 30% of these projects' costs. Schools can also recoup up to an additional 20% of project costs if they are located in an Energy Community or a Low-Income Community. There are five solar-related IRA tax credits that schools can apply for:

- Production Tax Credit for Electricity from Renewables
- Investment Tax Credit for Energy Property
- Clean Electricity Production Tax Credit
- Clean Electricity Investment Tax Credit
- Low-Income Communities Bonus Credit

The US Department of the Treasury has released a helpful fact sheet to summarize this process. Find a helpful and readable summary of the available grants and credits provided in the IRA in this document created by the Aspen Institute.

You can also find great grant opportunities through the Infrastructure Investment and Jobs Act, as outlined by the Aspen Institute.

Additionally, Michigan Saves (mentioned above) offers a financing option to help schools pay for these projects upfront until they receive their credits back from the IRS. Tax Credit Bridge Financing, available for nonprofit and government entities, allows Michigan Saves to prefund the project up to $250,000 at an interest rate and be repaid upon the school receiving IRS tax credits through the IRA direct pay program for energy projects.

Michigan Schools Energy Cooperative (MISEC) Programs

MISEC is a not-for-profit cooperative dedicated to helping Michigan's educational communities procure and manage their energy. They offer two solar programs to school districts: Choice Solar and Bringing Renewable Innovation to Education (BRITE)

The Choice Solar program allows school districts to purchase solar energy for their schools at a fixed rate. MISEC has partnered with NorthStar Clean Energy to design and develop a 50 MW solar farm in Genesee County that will provide energy exclusively to Michigan schools. This option is a great fit for schools who want to support and gain the benefits of local renewable energy but can't install their own solar system. Commercial operation for this solar farm will begin in 2025, so contact officials from your school district to see if there is interest in getting involved.

The BRITE program gives school districts access to MISEC experts that will assess the feasibility of installing solar on your facilities. Once this feasibility review is complete, MISEC experts will design the most effective solar systems for the district and present this plan to officials. Districts are not charged any upfront costs for these services. To learn more, you can contact solar@misec.org.

Community Fundraising

Community fundraising can be a great supplement to grants, tax credits, and bonds. Involving parents and the community in the project is helpful to getting the project approved; try involving groups like a parent-teacher organization to support this initiative. More resources on fundraising for K-12 solar projects can be found at K12solar's website.

Working with Installers

A solar energy company or contractor will manage the installation of your school's solar panels. Installers are usually very familiar with the local, state, and federal policies that regulate solar systems, so they will be critical to ensuring that your solar panels are both legal and effective.

Choosing a Contractor

Choosing a contractor is one of the most important steps to the process. Michigan Saves offers a helpful tool to locate local contractors for your project type that are authorized by the organization. GLREA also has a business directory of renewable energy and energy efficiency contractors that may help you in your search. It is important that you only enter a relationship with your contractor after evaluating their credentials, qualifications, references, and experience with similar projects. Make sure your contractor is aware of your project goals, needs, and boundaries.

Every solar project is different. Upon contacting a potential installer, it is important to ask the right questions, including:

1. Does your installer have a working/existing relationship with a financier?
2. What will the interconnection process look like for my solar project?
3. How does my utility treat rates and compensation? Am I eligible for distributed generation?
4. Is a power purchase agreement a viable financing option? What other financing options do I have?
5. Can the installer supply references of similar projects they have completed?
6. Who would be the actual construction crews and electricians on the project? Will they subcontract this labor?
7. What are the installation and equipment warranties?
8. What are the recommended brands/types of equipment (panels, inverters, etc)?
9. How will a solar array affect my existing roof or ground space?

The Installation Process

1. **Determine Size**: You'll need to send your school's previous energy bills to your installer to determine how large your solar system can be based on energy usage and rate structure as well as local zoning rules. If your school is served by a municipal utility or co-op, your installer will check with them to determine how large your school's solar system can be. If your school is served by one of Michigan's investor-owned utilities (like DTE or Consumers Energy), the size of your solar

system is restricted to 550 kW and must not generate more than 110% of your electricity consumption over the previous 12 months (aside from behind-the-meter usage, explained in the Important Considerations section).

2. **Conduct A General Site Visit**: Installers will visit your school to assess your roof type and/or ground space, constraints, and shading to design the most effective solar system for your building(s).

3. **Compare Quotes**: It's a good idea to have a few different installers visit your school, as comparing their quotes and services will help you choose the right one. Check their references and their numbers to make sure they haven't inflated your savings estimates. Also, make sure to ask potential installers for access to an app or interface that will allow you to see your electricity production over time. Having this information will allow you to more effectively monitor your solar panels and utilize them as a teaching tool!

4. **Sign The Contract**: Once you and your installer agree on the design for your school's solar system, you will sign a contract outlining the services they will provide and the associated costs. For a direct purchase option, your school will sign a design-build contract with the installer. For a PPA, there will be more agreements and legal reviews to cover the project's scope and financing.

5. **Conduct An Engineering Site Visit**: An engineer will visit your school to confirm it's safe to go forward with the installer's plans by evaluating the electrical status of your building(s). These plans will be checked by local electrical code officials.

6. **Complete Paperwork**: Your installer will deal with most of the paperwork involving applying for state and federal incentives and acquiring local solar permits.

7. **Order Equipment**: Your installer will order the solar panels, inverters, and other equipment needed for your school's solar system. It may take a few months for this equipment to be ready.

8. **Install Equipment**: Depending on system size, mounting type, and weather, it will optimally take 1-3 days or as long as 1-3 weeks for your installer to install the solar system.

9. **Approve & Interconnect**: A local government official will inspect your school's new solar system to ensure it is safe and up to code. Once approved, your installer will work with your utility to connect your panels to the electric grid. This process may take a few weeks to a month before your system can go live.

Working with Utilities

When installing solar on your school, it is important to work with your utility to make sure your system will integrate as intended – and to make sure you save as much as possible.

As of 2023, Michigan's Distributed Generation program requires utilities to purchase 10% of their average five-year in-state peak load from customers with eligible solar systems. This means that until this 10% cap is met, schools that have installed solar can be compensated by utilities in the form of electric bill credits for contributing excess electricity to the grid. Because it is uncertain when the 10% cap will be met, it will be important to enroll your school in your utility's Distributed Generation program as soon as your solar system is installed to ensure that you can be compensated for the extra electricity your school's solar produces! Alternatively, install your solar all behind-the-meter, meaning it will not flow onto the larger grid. This option requires fewer hoops in terms of interconnection and may be the better option depending on your school's status as an energy-producing entity. Discuss with your solar team to decide which option is right for your school.

This credit amount differs by utility, but generally equates to about half of the retail rate of buying electricity from your utility. These credits apply to the energy-use component of the bill and can be carried forward to future bills, allowing schools to benefit from any summer excess electricity production during the school year. This is an important factor, because solar production will fluctuate both seasonally and daily. Your system's nameplate (peak) capacity will not always match your monthly average usage, especially in the winter, so this credit is essential to maximizing your savings. Be sure to ask your installer and consult with local experts about the rate structure you choose with your utility, too; this can help you capture more savings by leveraging your solar production and time-of-use rates.

Beyond generating power alongside the utility, you may be eligible for some great rebates and savings from your utility. If you paired your solar array installation with any energy efficiency upgrades for your school, such as heat pumps, new lighting, or HVAC systems, you can find great rebates from your utility:

- DTE: find more information here, email dtesaveenergy@dnv.com, or call 866-796-0512 and select option 3 to speak with an Energy Advisor.
- Consumers Energy: find more information here.
- Other utilities: visit your utility's website and search for rebate options, or call to ask how you can save.

Important Considerations

1. Solar placement

Work with your building maintenance teams and solar/energy efficiency contractor(s) to decide on the best placement for solar panels. For example, is your flat rooftop new, properly supportive, or warrantied for this project? See Ann Arbor Public School's case study in the Additional Resources section to learn about liquid applied membranes and their success story in upgrading their rooftops for solar. Note that ground mounted arrays are more efficient than rooftop, if space is available. Plan for interconnection locations from the beginning of the project. Remember that solar design and installation can take a long time, and may run beyond the initial timeline.

2. Energy efficiency and electrification

As mentioned in the financing and utilities sections, a lot of savings for solar projects can be captured by pairing them with energy efficiency and electrification upgrades. This can include updates like LED lights, heat pumps, cafeteria appliances, geothermal systems, storm windows and insulation, and much more. These additions will support the solar project in making your school more sustainable. Work with an energy efficiency business or professional (such as ENERGY STAR benchmarking) and a tax professional to understand what upgrades work best for your school. Also consider adding a battery storage system to your project, if applicable. You can find a great example of this pairing done by Albuquerque Public Schools, as summarized by Generation 180. Depending on your solar array's size and electricity usage, battery systems can increase your school's savings and help provide power during hours without peak solar production. Paired with other behind-the-meter equipment, battery storage can be a great way to diversify your energy supply and usage.

3. Student engagement and education

There are plenty of ways to involve students as you add solar and energy efficiency improvements to your school. Give students the space to be part of the movement, and see which of the following resources are right for your school:

- Most solar systems will be compatible with a monitoring tool, usually an app, that lets you see your solar system's performance – ask your installer about including this option. This is a great way to educate and involve students and let them lead initiatives to support the solar project. Ann Arbor Public School's case study (see Additional Resources section for resources on this) outlines creative ways to include student groups in solar monitoring.
- Michigan's Department for the Environment, Great Lakes, and Energy (EGLE) offers a great environmental education curriculum.

- Additionally, leverage resources from the MI Green Schools initiative through EGLE and even consider applying for recognition.
- Contact local, state, and federal parks services and conservation nonprofits to partner on activities and field trips to enrich these lessons.
- Consider contacting the Michigan Alliance for Environmental and Outdoor Education's Climate Education Committee, collaborating with the Michigan Climate Action Network, which offers resources and training opportunities for educators.
- Tree Campus K-12 is an Arbor Day Foundation program with a useful framework for schools to stay engaged with the educational use of their forest. Tree Campus K-12 requires a tree team (forester, teacher, student, admin, grounds, etc.), education plan (this Forest Stewardship Plan), hands-on activity (tree planting) and Arbor Day celebration (last Friday in April). Contact Kevin Sayers at SayersK@Michigan.gov or visit their website.
- Project Learning Tree's Green Schools program inspires students to be a part of environmental work in their schools and communities.

4. Building a "solar team"

Building a dedicated, formalized team of project leaders will make sure your project has all of the expertise, perspectives, and resources needed to make it a success. This should include some or all of the following: school administrators, teachers, students and student groups, maintenance staff, school board members, parents, solar developers and installers, financiers, tax professionals, and energy efficiency professionals. What your team looks like will be up to you, but make sure you cover your bases and include people who will sign off on decisions, maintain and interact with the system after installation, and community members who will support this project.

Additional Resources

Ann Arbor Public Schools: case study

- GLREA Solar Story recording
- Around $150,000 saved annually by the district after upgrades and solar installation!
- Lessons learned:
    - Ensure rooftop has a long remaining useful life
    - Plan carefully for rooftop access and maintenance, walkways
    - Interconnection can go beyond the estimated timeline
    - Actively manage your supply chain for responsible sourcing

Other MI school districts with solar arrays to model your project after:

- Jackson Public Schools
- Mason County Central Schools
- Cheboygan Area Schools

Volts: Hey schools, go get your IRA tax credits! (podcast episode available everywhere)

Generation 180 has compiled a great collection of public school solar information, solar schools map, and success stories to inform and inspire your own.

UndauntedK12: A US nonprofit supporting public schools in their transitions to net-zero.

- They offer a climate action toolkit for school board members

Seattle Public Schools: Leading school district in IRA tax savings, energy commitments

- Check out their sustainability goals as inspiration and reference

Buckley Elementary School in Manchester, CT: a great clean and efficient energy success story

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