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SUSTAINABLE SOLUTIONS

Benefits of Solar Panels for Schools



[Palo Alto Unified School District](#) installed a solar parking array that will provide lasting cost savings and emissions reductions for the school district.

What is Solar for Schools?

From urban schools to rural school districts, [solar panels for school buildings](#) are providing more than 5 million K-12 students nationwide with:

- Greater access to hands-on learning opportunities
- Investments in curriculum or additional teachers, courtesy of energy savings
- Healthier environment and cleaner air through the reduction of greenhouse gas emissions and air pollution

Keep reading to learn more about why solar for schools may be the right choice for your school or school district. We'll walk you through school, student and community benefits, financing options and how to overcome potential challenges.

How Does Solar Save Districts Money?



[Pittsburg Unified School District](#) designed a plan to reduce their electrical bills by as much as 90% through the installation of over 13,000 solar panels.

If your schools operate like most school districts, energy costs are probably one of your largest expenditures.

Making the switch to solar energy could help reduce and stabilize your energy consumption — thus lowering your energy costs significantly.

With savings like that, you could help preserve teaching staff, invest in new academic programs or curriculum, purchase or update technology, or introduce new extracurricular programs.

Many school districts that invest in solar for schools immediately make plans to install solar panels at buildings that have the highest energy demand: high schools.

But a closer look at your districtwide energy usage will show that a different strategy may be more beneficial. If you want to make the most progress on reducing costs, consider bundling solar power across many district facilities at once.

And if you're looking to enhance those savings, take a look at the following three areas:

- Energy efficiency of existing buildings (e.g., lighting, HVAC, plug load, etc.) — An energy efficiency analysis should happen at least every five years and/or as your site usage or building operations change.
- Demand response strategies — Tap the lowest rates possible with your local utility while helping your community avoid rolling blackouts and brownouts when grid demand is high.
- Electrification of bus fleets and EV charging for staff and students — Many states and local government agencies are sponsoring large incentives to help replace

Schools are an integral part of any local community's fabric, and their success relies heavily on families and community members who volunteer their time, talents and resources in support of students and faculty members.

But that support isn't one-way — schools also provide substantial benefits to their local community through economic development and community development. Solar for schools is another way that schools and school districts offer benefits that extend well past classroom walls.

Here are some ways that solar panels for schools can benefit your local community:

- **Emergency shelters** — In communities that are prone to severe weather, schools have long been an obvious choice for emergency shelters. Small photovoltaic (PV) systems and batteries can generate enough power to keep electricity flowing even when a natural disaster interrupts the grid, providing your community with critical and reliable electricity that can be used for lighting, outlets for charging and communications.
- **Health and air quality** — Solar energy is an obvious choice for clean energy as it doesn't produce air pollution, water pollution or greenhouse gases. Installing solar panels can drastically cut your school's carbon footprint and improve the air quality in your community, ultimately helping to alleviate smog, acid rain and other damaging emissions for your students and community members.
- **Fundraising** — When you install solar carports at your school or have solar panels provide shade to outdoor lunchrooms or play areas, it's an extremely visible reminder to your community that you care about your students and the environment. Many schools find fundraising is easier with visible reminders of sustainability and fiscal responsibility.

How Does Solar at Schools Help Students?

Solar for schools presents limitless opportunities for innovative academic instruction. Sure, creating a solar system project for school would be great, but what about the benefits of actually studying the benefits of solar energy in real time?

From kindergarten to senior year, solar for schools provide students of all ages with an educational opportunity that helps them learn about real-world energy issues. That project-based and hands-on experience can help them further their STEM education.

Not only does the installation of solar panels at schools open the door to critical thinking and discussions about renewable energy sources, energy efficiency and electricity generation, but it also serves as an in-house renewables living laboratory for students.

And as the clean energy sector continues to grow rapidly, schools with solar are able to expand career and technical education and better prepare high school students for in-demand jobs after they graduate.

However, the benefits to students aren't only academic. Solar for schools also offers a unique opportunity for students to learn how they have the power to change the world around them.

A growing number of community members and parents are concerned about climate change and are demanding to see commitment to environmentalism from corporations, government agencies and more.

Incorporating solar panels into your curriculum helps address those concerns by taking a leadership role in the community regarding environmental stewardship and conservation.

How Do Schools Finance Solar (and Why)?



Rendering of City of Anaheim solar carport

By now, you're probably asking yourself, "How much would solar panels cost for a school?"

Well, here's some good news: In recent years, the installation cost for solar panels at schools has drastically decreased.

As costs continue to go down, schools now have more flexible financing options that minimize upfront costs as well as ongoing operations and maintenance.

The most popular ways that schools have installed on-site solar include:

- **Bond Measures and Incentives:** To shift electricity costs from an operating expense or general fund budget to a capital expense, many school districts leverage bond measures or other tax equity programs to support capital improvements like solar energy generation. Grants and other public funding incentives are constantly changing. Check with your vendor to assure you are making the most of federal, state and local government incentives.
- **Power Purchase Agreements (PPA):** This is the primary way schools have funded their solar installations. Through a PPA agreement, a third-party finances, builds, owns and maintains the system. [Districts](#) and schools typically pay a lower rate for their electricity and are able to see immediate energy savings that increase over time.
- **Direct Ownership:** This is an option for schools and school districts in states where third-party ownership is not allowed. Grants for solar power for schools as well as donations, bonds, or cash are additional ways school systems pay for projects through direct ownership. According to the [2020 Solar Foundation report](#), 88% of solar projects under 15KW were paid for with grants and donations. For systems over 50KW, direct ownership through cash, loans and bonds is the second highest source of funding.

Taking notes from municipalities and businesses, a growing number of school districts are also finding ways to reduce their carbon footprint without installing solar panels on campus. This can be done through:

- **Renewable Energy Certificates (RECs):** A school district can purchase 1 megawatt-hour of renewable-generated energy, or an REC, directly from the developer of the renewable energy or an REC retailer.
- **Community Solar:** A developer builds a solar array and delivers electricity to a utility. A school district can then subscribe to a portion of the facility and receive bill credits based on production through the utility. The utility pays the developer for electricity produced by the facility.
- **Virtual PPA:** This financial transaction assures you are buying renewably generated electrons even though you physically may not be using that electricity at your schools. (The electricity may be generated by large scale wind and solar generation hundreds of miles away.) Along with assuring you have the choice to purchase clean energy, it gives you means to leverage investment in wholesale markets and retain RECs.
- **Leasing Land:** As space in urban areas is often at a premium, school districts are finding creative ways to leverage unused space. The [City of Anaheim](#), for example, leased parking and open space areas at nine schools across five school districts to be home for new solar energy generation that serves income-qualified residents of their community.

How Does Solar Create More Costs Savings and Resiliency?



[Pleasanton Unified School District](#) installed solar carport canopies plus a battery energy storage system. The combined project is expected to save the district more than \$2.2 million over the 25-year lifetime of the PPA.

If the year 2020 has taught schools anything, it's the importance of being prepared for the unexpected. Whether your students are in the classroom or if your schools are regularly serving as a safe haven and emergency shelter, you need reliable school backup power for your facilities and additional ways to help your community, such as shifting or decreasing load to avoid blackouts.

Solar panels alone cannot create that load shifting or electricity backup by themselves. Here are a few ways you can pair your solar to lower costs and then increase energy resiliency at schools:

- **Solar +Storage:** This option includes a battery energy storage system (BESS). During daylight, your solar system stores excess energy it generates in batteries. That energy is later discharged when the price per kWh is high or to avoid peak demand charges.
- **Solar +Microgrid:** This option builds on the solar and other generation and battery energy storage capabilities. Additional software, equipment and technologies are used to help you "island" from the grid and deliver the backup power you need during an outage.

When considering energy resiliency, evaluate what has happened and what is anticipated for your community.

Have you experienced rolling blackouts during heat waves? Have you had to suspend classroom instruction due to a power outage caused by a hurricane, snow storm or other major weather event? Have you been impacted by Public Safety Power Shutoffs (PSPS) or other utility-initiated outages?

Pairing your solar panels with an energy storage system, microgrid controls, software and equipment can give you the reliable backup power that you need and that your community and families expect from you.

How Can I Bring Solar to My School?

It's no wonder the number of schools with solar power has increased substantially during the last decade.

Energy cost savings, increased academic and job training opportunities, greater financing options, lower emissions to combat climate change and air pollution, and reliable backup power make solar panels a win-win for nearly every school or school district.

If you're ready to begin the installation process, here are a few things to keep in mind:

- **Location:** Solar panels need to be placed in an area that receives direct sunlight. Will you be able to place solar panels on the roof of a building or a large plot of land nearby with unobstructed views during the day? Parking lots may be perfect, sunny locations for solar parking structures.
- **Financing and regulatory requirements:** Do you understand local and state regulations, building codes, and incentives for a project like this? What financing/ownership model will work best for your district?
- **Community, staff and parent/student support:** Who have you identified as the most important stakeholders and have you communicated your plans to them? Community engagement is key to moving any school construction project forward. Engaging those in your community and school at the beginning of the project can help you build momentum and identify any concerns at the outset. If there is ever a time when the saying "better to know sooner than later" is true, it's before starting a solar energy, energy storage and/or microgrid project at a school.

Ready to bring solar to your school or school district?

Contact us today to learn how schools like yours have found the right financing options, determined best return on their investments and accelerated their schools shift to clean, sustainable energy.

Resource Details

Date
Oct 21, 2020
Tags