



Illinois Clean Energy

community foundation

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K-12 Solar Schools—Installation Process

The Illinois Clean Energy Community Foundation's (ICECF) K-12 Solar Schools Grant Program has more than 200 schools with completed installations. Any school interested in this program has many schools across Illinois to visit, to call, and to ask for guidance. With so many successful projects at schools throughout the state, potential applicants have access to a great deal of experience and guidance to them through the process. This document is an overview of the installation phase of the project, but talking to your counterparts in schools with existing installations is going to be a huge help to you as well.

Preparation: Phase One

The first part of adding solar to your school is selecting the location. Typically, a school will have an idea where they want the panels installed, but the final decision is usually made with the help of an installer. To pick a location, you need to look at the factors that will help determine the suitability of the site. It's a good idea to first consider different locations without an installer. Once you determine a few possibilities, review your options with a professional. Here are some basic factors:

- ***The panels have to face south.*** A simple compass will help you understand how the panels will be facing. What you think is south may not be south. A compass will help you confirm the southern direction at your school.
- ***The panels cannot be shaded.*** For solar panels, sun is good and shade is bad. There may be a spot that has great southern exposure, but if a tree or a nearby building or any type of structure will shade the panels after they are installed, you need to find another location. You also do not want to install the panels in an area that is perfect today, but which may be shaded down the road. For example, if a new building is going in between the panels and the sun, you should pick another location. In other cases, there may be a tree that is not shading the panels right now, but may grow to shade the panels later on.
- ***Consider your electrical connection.*** Figure out the distance between your solar panels and the closest electrical connection. Most buildings have a place at which it will be possible for your installer to connect the solar electricity to your grid power. Typically awning style, wall mounted, edge of roof mounted solar panels are not a problem because they are affixed to the building where the power will be connected. For pole mounts, there are times when you want the pole to be installed way out front or way in the back and a very long connection for the wires will cost extra and you may get a drop off in the power as it flows from the pole to the electrical connection point. At schools this is not a huge problem, but it is good to be aware of this when you are planning your installation.
- ***Could there be vandalism?*** Vandalism is not a huge problem with the solar schools project, but it is something you want to consider. You can put the panels behind the school facing an alley, but if that is an area with a lot of vandalism then maybe you avoid that location. The panels are not easily broken so you do not have to hide them from the elements (and they obviously have a 20 year minimum warranty with full sun exposure so they are not delicate), but you want to consider vandalism in making your site selection.

- **A mock up is a great tool.** You can paste panels from another source onto your existing site photo. Some installers can also do this for you. This is a good way to help people visualize how the installation might look. At elementary schools, teachers may be able to do this. At high schools and junior high/middle schools, there will probably be students who can do it.
- **Teacher training.** You should check www.IllinoisSolarSchools.org and www.need.org for upcoming teacher training workshops and send as many teachers as you can. These are invaluable for students as well as for you and your staff. You learn a lot about solar electricity and you will learn a lot about the installation by attending one of these workshops. You also get material to take back to your classroom.

Preparation: Phase Two

Most schools talk to more than one prospective installer, but there are some things that you can do ahead of time to make this process more useful:

- **Determine a few potential locations.** Your location may determine the type of installation you want. You should advise any prospective installer if you plan to do a pole-mount, as some installers are reluctant to do these types of installations. This may save you from an unnecessary meeting. Also, tell the installer if you plan a wall mounted system, an edge-of-the-roof system or any other specialized mounting. Preparing for your meeting with an installer by understanding the locations you plan to choose can save time and help everyone make a good decision.
- **See what other schools have done.** Look at the pictures of the various school installations that have been completed on the www.IllinoisSolarSchools.org web site. There are more than 200 solar school installations, but taking a quick glance at every picture can help you understand the wide variety of installations available.
- **Get advice from other schools.** Call at least one school from the web site and ask them about the installation, their installer, their experiences, and any advice they might have for you. Typically it is best to make this a peer exchange. So if you are a principal, call the principal. If you are a teacher, ask for the teacher involved with the solar project. If you are in facilities, then ask to talk to someone in facilities.
- **Get your IT person involved as early as you can.** Ideally, you would have your IT person talk to an IT person at another school with an existing system and meet at least one installer to go over the IT part of the project. Data is going to be streaming through your internet service and your IT person will need to make sure that part of the project works.

Teachers + Principals + Facilities + IT: For the initial meetings with the installers, it is best to have as many people attend as you can arrange. Teachers need to be involved from the first moment the project comes up because in the end it is an educational project. Principals have paperwork to sign, district procedures to address, and a long list of other tasks such as raising money and writing checks. The facilities staff should always attend meetings with prospective installers to address technical issues, and provide access to important parts of the building. Members of the IT staff should also be included for at least one visit (see above).

How many installers do you meet with? There is no easy answer to this question because every school district has different rules. Public and private schools have different rules. If you are experienced with solar electricity, you will have a better idea what you will want. If you have zero experience with solar electricity, you should take more time and talk to more installers and call and visit other existing solar schools to gain more insight into the process.

Installer Selection

Schools can hire any installer they want so long as district guidelines are met. Every school will have its own procedures for making selections of contractors. Here are some things to remember:

1. **How many other solar installations has this installer completed?**
2. **Is there a prevailing rate of wage issue?** If you have to comply with a prevailing rate of wages requirement, ask any installer you talk to how that will be handled.
3. **Check installer references.** Since it is unlikely that any school would select an installer who had not completed at least one other solar school installation, what do the schools who have used the installer in the past say about him or her?
4. **Online Data.** At the other solar school installations that this installer has completed, is the data up and on line? If not, it may be due to the school's IT people, but it may also be due to the installer. If you do not see the data, you should call and find out the cause.
5. **Prices.** The grant is a reimbursement grant so you must pay the contractor before you get the ICECF funds. The grant is for 90% of the cost of the system, up to \$8,000. Make sure you can afford the installation and also understand how much you will have to pay the installer to get started and what kind of payment schedule you will be on. Also, read your grant from ICECF to make sure you understand what need to do in order to get the \$8,000 check. Live data online is one of a few important components required to receive your grant. Do not hire an installer because he or she is less expensive and then find out you did not ask for or get any on line data equipment.
6. **Read your contract.** Ask for and insist upon getting a written proposal that you will have time to review on your own schedule. You have plenty of time to hire a contractor. If you like everything about the installer, then ask for a copy of the agreement or whatever document you will be signing and pass it around to others involved with the project, the teachers, the IT person, and maybe even the lawyer for the district. You are going to be obligated to make payments for equipment and services and you need to know what you are getting and how much it will cost you. You also need to know about the warranties. Panels have one warranty, inverters have another, and the rest of the pieces have still another. Data collection systems come with their own warranties. Write them all down so that you have it on your desk. Who will you call if there is a problem? References will be the best judge of his or her service and the warranties. And does he or she clean up after they are done? Again these questions are better to get answers for ahead of time, but you can also put the conditions in the agreement that are important to you.
7. **Warranty.** The panels will typically have a long warranty of 20 years or more, but what about the inverter (5 or 10 years?) and what about the balance of the system? What if your system stops working in one month? Do you have to pay for a service call? What are the steps involved for contacting the installer? This information is going to be in your agreement with your installer, but you need to understand these terms.
8. **Interconnection.** Finally, will your installer help you with your interconnection agreement with your electricity provider (example: ComEd or Ameren)? If not, you will be responsible for getting the interconnection form and filing it yourself. Also, remember you do not get your grant funds until your data is on line.

The Installation

The installation can take one long day or parts of two or three days depending on the type. Generally, it is not time consuming if your installer knows what they are doing.

In this grant program, ICECF requires the panels to be visible from school grounds in order to enhance the educational value of the technology, and encourage regular maintenance by staff. In order to increase visibility, panels will be installed at an angle.

There will be an inverter. There is wiring from the inverter to the electrical connection inside the school. There is a data collection system and that has to be connected to the school's internet (remember the IT person). When the installation is complete and your IT person has the data flowing through your school's internet, you should be able to see your solar electricity generation on line.

What if you need an extension?

Each grant comes with an expiration date. You are given a year to complete your installation, but there are situations that may cause you to need additional time. If you are going to run out of time, do not wait until your grant has expired. Send in a letter requesting an extension at least thirty (30) days prior to the expiration of your grant. Make sure your letter includes:

- a) a summary of what you have accomplished on your solar project to date,
- b) a workplan and timeline for the installation of your solar system,
- c) the reason(s) for needing an extension,
- d) the date to which you wish to extend your grant.

Send this request to Gabriela Martin at the Illinois Clean Energy Community Foundation via e mail to GMartin@IllinoisCleanEnergy.org or mail. The Foundation will review your request and determine if the extension will be granted.

After the Installation

1. You apply to the Illinois Clean Energy Community Foundation to get the grant funds released. Review your grant agreement to make sure you meet all the requirements, especially those in the Reporting Requirements section. Send a letter to the Foundation requesting the payment of the grant along with:
 - a) a brief summary of the installation experience and project overall,
 - b) copies of any invoice(s)/proof of payment for the installation of the solar panels,
 - c) photos of the completed installation, Solarbration, etc., and
 - d) copies of lesson plans and other educational materials being used in the school to teach about solar energy.
2. Two possible hold ups on the release of grant funds.
 - a. Your funding request submission is incomplete.
 - b. Your data must be online and publicly accessible at www.illinoissolarschools.org. There are a number of different data service companies, but someone at ICECF must be able to click on a data link and see your data from their computer in order to get your grant funds paid.
3. You email us a picture that you want on your school web page on the Illinois Solar Schools web site. Email a picture to Glen@LearnEnergy.org
4. If you have questions:
 - a. About the grant: GMartin@IllinoisCleanEnergy.org
 - b. About anything else: Glen@LearnEnergy.org