



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 2320 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 throughout the state, potential applicants have access to a great deal of experience and guidance.

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 helpful as well.

Preparation: Phase One

Selecting a location is a critical first step in moving forward with your project. Although you may have an idea of where you want the panels installed, a 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 want to avoid installing the panels in an area that is perfect today, but which may become shaded in the future. Take note of whether or not a new building may be built, and if it will affect the amount of sunlight to the panels. 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.
- **The panels need to have HIGH visibility.** The Solar Schools program is an educational tool and it is very important that the panels are visible, preferably from the main entrance to the school. Also, the greater the visibility, the less likely it is for the panels to be forgotten about over time. Pole-mounted installations are encouraged in order to insure a highly visible location. Each project is different and there will not be a one-size fits all solution, however, visibility should be strongly considered when determining a location. In some cases, it may be necessary to use some creativity! **All installation locations will need to be approved by the Foundation prior to installation.**
- **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, or roof-edge mounted solar panels are not a problem because they are affixed to the building where the power will be connected. For pole mounts installed far from the main building, a longer connection for wires will cost extra and may cause a drop in power as it flows the extra distance from the panels 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 major problem, but is something you may want to consider when selecting a location for the solar system. 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).
- **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 teachers. You learn a lot about solar and wind energy technology, and 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 (see Phase One).** 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 320 solar school installations, but taking a quick glance at every picture can help you understand the wide variety of installations available. Consider visiting schools to see installations in person.
- **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 should 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—public or private—has different rules. If you are experienced with solar electricity, you will have a better idea of 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 their 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 system, 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, so you must pay the contractor before you get the ICECF funds (unless the contractor has agreed otherwise). The grant is for 90% of the cost of the system, up to \$7,000. 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 agreement from ICECF to make sure you understand what you need to do in order to receive your payment. Live online data is one of a few important components required to receive your grant. Be careful of hiring an installer purely on cost. You may not get all the required components.
6. **Read your contract.** Ask for and insist upon getting a written proposal that you can 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 your district or school. You are going to be obligated to make payments for equipment and services and you need to know what you will be paying for 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 may have another. Data collection systems come with their own warranties. Be sure to organize this information for yourself. References will be the best judge of an installer's quality of service and warranties.
 - a. Who will you call if there is a problem?
 - b. Will the installer clean up after they are done?These questions are better to get answers for ahead of time. You can also put the conditions that are important to you in the agreement.
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 an 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. Remember that you do not get your grant funds until your data is on line and the system is operating.

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 to include your IT department). When the installation is complete and the data is 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.

The Foundation will review your request and determine if the extension will be granted.

After the Installation

1. The site location must be approved by the Foundation prior to installation. The Site Location Approval requirement can be found on your ICECF online account.
2. Grant funds are paid by ICECF only when a project is completed and operating. Review your grant agreement to make sure you meet all the requirements, especially those in the Reporting Requirements section. Your ICECF online account will allow you to upload a Final Report Form, as well as the other items below that are part of the Final Report. Please upload these to your account.
 - a) Final Report Form,
 - 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.
3. 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.
4. You email us a picture that you want on your school web page on the Illinois Solar and Wind Schools web site. Email a picture to Glen@LearnEnergy.org
5. If you have questions:
 - a. About the grant: GMartin@IllinoisCleanEnergy.org
 - b. About anything else: Glen@LearnEnergy.org