

Frequently asked questions about solar power production

Why should the District install solar panels? These are generally not considered a cost effective way to produce electricity.

Alternative power is being promoted by the Commonwealth and by the US Government in order to reduce our dependency on oil and other fossil fuels. While there are many ways to produce alternative power, solar and wind energy are two of the cleanest methods, producing no harmful greenhouse gases. In southeast Pennsylvania, wind is considered insufficient for energy production, but solar panels can be effective. With the incentive grants being offered by the Commonwealth, the costs to the District for the installation of panels make the project cost effective and cash positive from day one. The District has received a grant for \$1 million dollars to offset the cost of the project.

How will the installation of solar PV benefit the District?

The District will benefit in two ways, first by the reduction of purchased power. Every kilo-watt hour of electricity produced by the system reduces the amount that the District will have to purchase. As utility rates rise over time, this becomes more and more significant. In addition to the direct energy savings, the renewable energy produced generates Solar Renewable Energy Credits (SRECs), otherwise referred to in Pennsylvania as Alternative Energy Credits (AECs).

How are the SRECs sold?

SRECs are sold through an auction system, similar to other commodities. The Owner can sell directly in this market or a broker/aggregator can work for the Owner to maximize returns, and will advise as to timing of sales, size of the issue, etc. In most cases, the larger the issue, the higher the price, but grouped sales at round numbers, such as 100 MWh are also advantageous. SRECs are reported monthly and generally must be sold within 2 years of the production of solar power or they expire. While other States have limits on the number of years that systems can generate SRECs, in Pennsylvania the SRECs can be sold as long as the system produced electricity.

Will the School District continue to manage the SRECs or will they eventually be sold to a third party?

We recommend that the Owner manage them for maximum cost benefit, however, this is a decision that is up to the Owner. There are aggregators who will manage the SRECs for you for a small fee.

How many kilowatt hours will a 4 x 8 panel generate annually in this latitude?

The answer depends on the DC rating of the panel. Every manufacturer is different due to differences in the efficiency of their panels. Sharp panels, which are the basis of our design, are approximately 17 sf, slightly less than 3 ft. by 6 ft. Each of these panels is rated at 230 DC watts and will produce approximately 250 kWh of AC electricity in this area (a factor of 1100 x the DC panel rating).

What is the rate of decline in panel efficiency after the first ten years of service?

Most panels are warranted to provide a minimum of 80% of their rated performance after 20 years. The design rating is sized for the average over 20 years, so a system rated at 100 kW would be actually producing in line with 110 kW initially, and at a minimum of 80 kW after 20 years.

Can you explain the relationship of the kW of the system to the energy produced? kW is a measure of power, and kWh a measure of energy, so the formula showing the relationship of kW to kWh does not make sense.

There is a relationship between the two, based on geographic location, which allows us to calculate the total electrical output and the anticipated Solar Renewable Energy Credits (SRECs). In this area, a group of panels rated at 1000 Watts DC will produce slightly more than 1100 kWh of solar electricity over one year, which is equal to 1.1 MWh (mega-watt hour). Each MWh is eligible for 1 SREC.

How is the payback period calculated? Obviously the higher the electric rates get, the quicker the payback will be reached.

Spiezle Group factors in a 3% annual increase in rates, but not a dramatic jump since that would be speculative. If electric rates jump dramatically, the payback will indeed be faster.