Perform a cost/benefit analysis—A district should analyze the costs and benefits of entering into a solar power system contract to ensure that it will obtain the solar power at a price that makes the best use of taxpayer monies. This evaluation may include analyzing other ways to reduce electricity rates. For example, at least one electric utility in Arizona offers reduced or fixed electricity rates in exchange for installing solar panels on district property. This type of agreement is generally less complicated and may involve fewer risks than a solar power system contract, but also may not provide the lowest rate.

In the course of conducting performance audits in 2011, we reviewed 21 solar power system contracts and found that some districts may not attain the cost savings they initially expected.

Contributing factors include:
- Districts unaware of the extent of continued demand and transmission charges from the electric utility.
- Unexpected losses when the amount of power generated by the solar power system exceeds a district’s needs.
- Cost escalation clauses that may raise rates faster than they have historically risen.

Perform energy upgrades first—To minimize a solar power system’s costs, districts should make any energy upgrades, such as installing energy-efficient heating and cooling systems and lighting fixtures, before entering into a solar power system contract. Doing these upgrades first will not only reduce the system’s initial cost but it will also reduce the potential that the system will produce excess power that the district will not consume. Producing excess power can be costly for a district because it will usually incur a loss when selling it to its electric utility.

Learn from other districts’ experiences—A district should network with other school districts that have already entered into solar power contracts by talking to them about the rates they have agreed to in their contracts, the provisions they have agreed to for fixed versus increasing rates over time, their experience with the vendor(s), and their actual cost savings since entering into the contract. Further, a district should ask vendors for references, especially school district references.
Best practices to employ when negotiating a solar power system contract

**Avoid purchasing an oversized solar power system**—Each solar power contract we reviewed (1) required the district to purchase all electricity produced by the solar power system regardless of whether the district consumes it and (2) did not include a means to store the generated electricity, such as battery banks. As a result, a district’s only alternative is usually to sell its excess solar power to the electric utility, but at a lower rate than the rate the district is paying the solar power system vendor for the solar power. Therefore, the district can incur a considerable loss when it sells the excess power. Several districts that had signed contracts with vendors were unaware of this potential for loss when they signed their contracts. Other districts should learn from this experience and ensure they agree to systems sized small enough to avoid producing too much excess power.

**Clarify key provisions of your electric utility’s policies**—Although a solar power contract is between a school district and a vendor, certain aspects of the district’s ongoing relationship with its electric utility are important in evaluating the solar power system’s benefits. A district should ensure it can answer the following questions about how its utility charges for electricity and how solar power will affect these charges.

- **What is the electric utility’s buyback policy?** Electric utilities generally buy back a district’s excess solar power. How often and when a district’s utility nets the district’s excess solar power production with its use of electricity from the utility will have a dramatic impact on the district’s overall costs. We noted wide differences in this regard. For example, some utilities did so as often as every hour, while others did so only once a year. The more frequently netting occurs, the greater the likelihood a district will incur a loss. Losses can also occur if netting happens soon after an extended time period in which solar power production is higher than electricity usage but before an extended time period in which electricity usage is higher than solar production. A district needs to clarify how often and when solar power production will be netted against its use of electricity from the utility.

- **What charges will the utility continue to impose for demand and transmission?** A district’s electricity costs generally consist of three main items: electricity generation, demand, and transmission. Although generation charges make up the majority of an electricity bill, demand and transmission charges can make up 30 percent or more of total electricity charges. In most situations, installing a solar power system will considerably reduce the costs a district pays its utility for electricity generation because it will use considerably less electricity from its utility. However, our audits have found that charges for demand and transmission often remain—and can actually increase—after the district begins using solar power. Using solar power may not reduce demand and transmission charges from a district’s electric utility because these charges can be based on the single highest 15-minute period of utility electricity usage in a billing period, which may occur simply by having a 15-minute cloudy period one afternoon during the month. A district needs to clarify with its electric utility how having a solar power system contract will affect these other costs.

**Ensure rates paid for solar power are competitive with rates paid by other districts**—The 21 contracts we reviewed contained solar power rates that varied from 7 cents to over 16 cents per kilowatt hour (kWh).
Best practices to employ after entering into a solar power system contract

Track electricity costs closely—A district should track and compare total electricity costs after the solar power system installation to estimates of what electricity costs would have been without the solar power system. It is important to include the costs of all district electricity needs, including the amount and cost of electricity from the electric utility plus the cost of the solar power, when making this comparison.
Ensure the solar power system is connected to the most appropriate meters—A district should ensure that its solar power system is connected to the appropriate electricity meter(s) at the district. Generally, these should be the meters that were used in the feasibility study and initially included in the baseline energy usage and cost data. However, in making the decision about which meters to use, it is also important that the system is attached to the meters that best match power generation and power usage at a level that will result in its best cost savings without resulting in too much excess solar power production. Throughout the contract period, a district should also monitor its electricity usage on the solar power system’s connected meters and, if there are considerable changes in usage, conduct a cost/benefit analysis to determine if it is feasible to change the meters that the solar power system is connected to.