Madera Community Hospital's Smart Financing of Solar Array

Madera Community Hospital is a non-profit organization located in Madera, California. Madera Community Hospital completed the installation of a 1,140 kilowatt (kW) ground-mounted solar photovoltaic (PV) array in October 2011, through a 20-year power purchase agreement (PPA). The array produces 2,183,220 kWh annually and offsets approximately 40 percent of the hospital's electricity consumption. It is located on an adjacent property owned by the hospital, with a single-axis tracking design to maximize energy production.

Project Keys to Success

Madera's primary motivation for the solar installation was to reduce its electricity bills. Hospital decision makers were concerned about the rising costs of electricity and were looking for ways to save on energy. The hospital was able to achieve this goal through the solar installation, in addition to several other energy efficiency measures, such as lighting upgrades.

At the start of the project, the hospital worked with an energy service company (ESCO) to complete energy efficiency upgrades and then help select the solar installer, Borrego Solar. Borrego Solar owns and maintains the PV array under a 20-year PPA with the hospital. Borrego Solar won the project bid through the ESCO and jointly presented the solar proposal to the CFO and Facilities Director of Madera Community Hospital.

From there, the project proceeded through several committees before reaching the Board of Directors during a quarterly meeting. While these approval processes are familiar to an experienced installer like Borrego, less experienced installers will need to be aware of the incremental steps and not let them become discouraging.

The 1,140 kW ground-mounted array in Madera, CA. *Photo credit: Borrego Solar.*

SOLAR PROJECT HIGHLIGHTS	
Date Installed	October 2011
Location	Madera, California
Size	1,140 kW
Annual Production	2,183,220 kWh
Electricity Offset	40%
Monthly Bill Savings	12-15%
Financing	PPA

Financing

After considering the benefits of solar energy, Madera Community Hospital sought a PPA that could offer solar electricity at a price equal to or below the cost of electricity from the local utility. After incentives, the project was able to offer a PPA price below utility rates, resulting in immediate savings.

Under the PPA with Borrego Solar, Madera Community Hospital buys electricity from the solar array for a pre-set price over the 20-year contract duration. Borrego Solar also worked with a financier that was able to collect Federal and State incentives for the system, including the past 1603 Treasury Grant Program and the California Solar Initiative performance-based incentive. Madera Community Hospital immediately began to save 12-15 percent on each monthly electricity bill – outperforming initial estimates.

Additional Tips

- Madera Community Hospital, like other active hospitals, exhibits a consistent 24-hour load profile with no convenient time to cut the typical power supply. Borrego worked with facilities staff to arrange the later-than-usual activity – the interconnection process took place at midnight – using backup generators.
- The largest challenge from the perspective of Madera Community Hospital was figuring out how to work with state building codes for hospital facilities. To comply with these regulations, the solar installer interconnected the array to the main power supply at a point where it would not affect the emergency power supply.
- In dry climates, solar panel maintenance becomes more important. In drought-stricken California, the panels require more frequent washing due to dust. However, this is no extra burden on the hospital because Borrego Solar owns and maintains the array.
- As part of the permitting process for ground-mounted arrays, the project was open for comments from neighborhood residents. Fortunately, there was no opposition and the area received the project very well. Now, employees and patients at the hospital frequently inquire how they can get solar on their homes, too.

KEY TAKEAWAYS

- **Impact on operations and reliability.** Solar developers must be able to explain to a non-technical audience that a solar installation does not interfere with the facility's ability to draw power from the grid. The impact of construction activities must be also be considered and, again, be shown to pose no risk to hospital operations.
- **The long-term nature of either the financial investment or commitment.** The upfront cost and payback period (cash purchase) or long contract term (lease or PPA) can also be a concern. A hospital's Board of Directors may feel exposed to various technical and financial risks under either arrangement. To help tackle these issues efficiently, it is important to have a person from the business side involved in the solar project development and approval process. Here are some of the most common questions the Board will want answered before entering into a significant purchase or long-term agreement:
  - What if the system breaks?
  - What if it does not produce as much electricity as expected?
  - What if the owner or vendor is no longer around?
  - What are the underlying financial assumptions of the PPA and what would change the outcome? (For example, if utility rates do not increase as expected)
  - What are the regulatory risks? (For example, changes in solar policies or incentives)
- **Partnering with an external, profit-driven company.** The Board will want to know about the counterparties to the agreement. How reliable are they? What is the track record of delivering on commitments? What does the market say about them? Hospitals will only work with established, reliable partners and do not want entanglements, especially outside their core business.