

Integrating Rooftop Solar in Luxury Hotel

Bardessono, a hotel in Yountville, California opened in 2009, was designed to be one of the most energy efficient luxury hotels in the world. The owners wanted to prove that “a hotel can provide a fully luxurious guest experience and be very green at the same time ... in a manner that is practical, economic, and aesthetic.”¹ To ensure environmental sustainability was an integrated component of the hotel, Bardessono was certified LEED² Platinum, the highest LEED certification available. As of 2015, Bardessono is one of only three hotels in the U.S. with LEED Platinum certification.

Project Keys to Success

The primary motivation for including a roof-top solar array in the design was its contribution to energy savings as a part of the LEED Platinum certification requirements. However, the owners also believe that solar energy is part of the solution to reducing the reliance on petroleum and other fossil fuels.

As part of the new construction, 940 high-efficiency solar panels were installed, which provide 197.4 kilowatt (kW) of power. Once Bardessono was in operation, the solar panels produce approximately one-half of the electricity used by the hotel. One inverter in the solar array did fail early; however, the manufacturer’s warranty covered the inverter at this time, and therefore the hotel received a zero-cost replacement.

The local jurisdiction at the time would not approve solar panels installed at a typical angle on the roof, so the solar array design was modified to have the panels lying flat across the roof surface. Although this is a less efficient layout for maximizing solar energy production, the design received approval and has a sleek, building-integrated appearance.



Bardessono was designed and is certified LEED Platinum, the highest LEED certification available. Photo credit: Inhabitat.

SOLAR PROJECT SPOTLIGHT

Date Installed	2008
Location	Yountville, California
Installation Type	Roof Mounted
Size	197.4 kW
Annual Production	144,000–288,000 kWh
Electricity Offset	Approximately 50% of total electricity consumption
Expected Payback	6-8 years based on electricity costs and available subsidies

¹ http://www.bardessono.com/overview/environmental_initiatives

² Leadership in Energy & Environmental Design (LEED)

Additional Tips

- ▶ When the hotel opened, the LEED Platinum certification was a significant attraction for early guests. Now that the hotel has been open for six years, the majority of guests stay at the hotel because of its location and luxury experience, proving that the vision for the Bardessono was achieved.
- ▶ The owners, developer, and operator shared a vision to pursue LEED platinum certification. This shared vision was simply that the Bardessono team collectively wanted to develop, open, and operate one of the greenest and best hotels in the world. The team wanted to demonstrate that extraordinary luxury and sustainability were not mutually exclusive.
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KEY TAKEAWAYS

- ▶ Building a LEED Platinum-certified hotel is a big accomplishment, and the effort required strong motivation by the hotel owners. But rather than enforcing a top-down directive for LEED certification, the owners described thoughtfully and meticulously developing a shared vision between all stakeholders.
- ▶ Beyond utilizing renewable energy, the hotel maximizes its use of the renewable energy by ensuring efficient operations with the installation of a high efficiency ground-source heat pump system for heating and cooling needs, high-efficiency lighting, expansive windows for natural daylighting, guest room occupancy sensors that control lighting and conditioning, and automatic blinds to minimize unnecessary heat gain.
- ▶ Bardessono publicizes its environmental initiatives, sustainable construction, and LEED Platinum certification. As a result, even years after its opening, 10% of its guests specifically stay at the hotel because of its environmentally-friendly operations and minimized footprint.



Photo credit: Bardessono.