Case Study:
Roof-Mounted Solar Array – Leased Building

BETTER BUILDINGS ALLIANCE

Solar PV Helps to Achieve Near Net-Zero

In 2014, WDT Indio sought to achieve a net zero energy bill at its 31,759 square foot space in Sunnyvale, California. The company engaged Sharp Development Company to perform a whole-building retrofit on the 40-year-old concrete structure. Sharp Development Company also hired Cobalt Power to install a 138 kilowatt (kW) solar photovoltaic (PV) array to contribute 80 percent of the building's energy consumption.

Photo credit: Sharp Development Company

Project Keys to Success

To ensure that the solar array provided as much of the building's energy needs as possible, the project team took a holistic approach to the retrofit. The project team was careful to ensure that the building's lighting, thermal mass, ventilation, insulation, windows, and building management system worked seamlessly together to minimize energy use. The project achieved an Energy Use Intensity (EUI) of 22.5 which is well above and beyond the minimum standards established by Title 24 and combined with the solar installation, approaches net-zero. Notably, the retrofit allowed the building to cap its gas line.

Once completed, the building leased significantly faster than the general market due to the high tenant demand for highly efficient space. Additionally, to date, the project has outperformed initial estimates for energy production and energy savings. Sharp Development Company also completed a similar project on the same street as WDT Indio and is currently working on two additional net zero energy projects.

SOLAR PROJECT HIGHLIGHTS	
Year Installed	2014
Location	Sunnyvale, California
Installation Type	Roof mounted
Size	138 kW-DC
Annual Production	175,000 kWh/year
Energy Offset	80% (with other building efficiency measures implemented)
Expected Payback	Undetermined – rolled into overall building retrofit cost
Financing	Purchase with bank loan

Financing

The complete retrofit of the older commercial building was an expensive undertaking. WDT Indio spent an additional $50 per square foot to fund the project. The solar array received a 30 percent Federal Investment Tax Credit and

MARCS Accelerated Depreciation benefits; however it still needed to work closely with its lender to explain the economic benefits of the project and secure a loan.

WDT Indio calculated that the retrofit would provide an additional $73 per square foot in value for the ownership group. WDT Indio uses a full-service lease structure that provides energy use for up to 6.5 occupants per 1,000 square feet. This leasing arrangement allows achieved energy savings to directly reduce WDT Indio's operating expenses, as well as insulates the landlord from higher than expected tenant energy use. Additionally, WDT Indio expects additional value through HVAC equipment replacement deferral and higher rent from tenants that no longer need to pay energy bills.

KEY TAKEAWAYS

- Capitalize on planned retrofit or maintenance schedules for the building. Timing solar installation with other projects and holistically planning energy efficiency retrofits helps to maximize the energy offset provided by the solar PV installation.
- If securing outside financing, work closely with lenders to establish a strong economic case for the project that includes more information than cost and anticipated savings. Consider factors such as deferred maintenance, leasing velocity, and potential for high rent.
- Understand tenant demand in the market for high performance, energy-efficient, and/or net-zero office space. Increasingly, tenants are seeking highly efficient office space and will pay a premium for buildings that have minimal energy costs.

Before

After

Photo credit: Sharp Development Company