

# Solar PV Case Study

## ASU Apache Parking Structure 864 kW



|                          |                       |
|--------------------------|-----------------------|
| <b>LOCATION:</b>         | Tempe, AZ             |
| <b>COMPLETED:</b>        | February 2009         |
| <b>NUMBER OF PANELS:</b> | 4,320                 |
| <b>PANEL TYPE:</b>       | Suntech 200 W         |
| <b>OUTPUT:</b>           | 1,685 MWh per year    |
| <b>INVERTER:</b>         | 4 x Xantrex GT 250 kW |

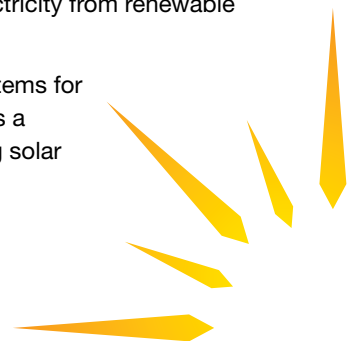


### Project Overview

CarbonFree Technology has developed the largest privately-funded distributed solar power system to date in Arizona. The project, pictured here, is located at Arizona State University's main campus in Tempe.

Arizona State University is working to fight global warming. As a prominent member of the American College & University Presidents Climate Commitment, ASU has pledged to purchase or produce at least 15% of its electricity from renewable sources.

Because of this commitment, ASU issued a Request for Proposal in 2007 seeking solar power systems for its Tempe campus, home to more than 51,000 students. CarbonFree Technology won a contract as a result of this solicitation, and among other projects CarbonFree developed this single-axis-tracking solar power canopy on top of the Apache Parking Structure.





## Solution

For the project, ASU elected not to buy the equipment, but rather to enter into a Photovoltaic System Services Management Agreement, through which it pays a monthly amount for the electricity generated by the system and for related services. This amount is adjusted each year by the rate of inflation.

The systems are owned and operated by Sun Devil Solar LLC, a subsidiary of Integrys Energy Services, Inc., a leading supplier of retail and wholesale gas and electricity in non-regulated markets. Under the agreement, ASU has an annual option to buy the system outright starting in the seventh year.

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“There is no downside to a project like this. We generate clean energy and manage our energy consumption costs. For us it’s a win environmentally, economically and from a quality of life perspective.”

**RAY JENSEN**  
ASSOCIATE VICE PRESIDENT  
UNIVERSITY BUSINESS SERVICES  
ARIZONA STATE UNIVERSITY

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## Environmental Benefits

The 864 kW solar array will generate approximately 1,685 megawatt-hours of clean electricity in its first year of operation, declining by approximately one percent over each successive year. Compared to grid electricity, the effect of using this solar system is equal to eliminating 918 metric tons of carbon emissions in the first year, based on the average mix of fuels used to make electricity in Arizona.

The system provides shading for cars parked on what was previously an exposed and hot rooftop, and reduces the urban heat island effect of the structure.

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### THE CARBON SAVINGS ARE EQUAL TO:

- » Powering 123 average AZ homes
  - » Taking 168 cars off the road
  - » 209 acres of mature pine/fir forest
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## Project Notes

The Apache project is highly innovative in that it combines the benefits of trackers with a canopy system installed on top of an existing building. System design and installation was led by ViaSol Energy Solutions of Tempe, AZ, and outstanding cooperation was received from ASU and from the local utility, APS.

The installation time-frame was tight, and one of the challenges was that almost all construction took place while the university was in session. ASU is a commuter campus and the garages are heavily used, with a high percentage of spaces allocated to pass holders. The installation team worked closely with ASU Parking Services, and a big effort was made to reduce the number of parking spaces taken offline at any particular time. The disruption to campus life was minimal.

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“The whole goal is that through our leadership we will increase our efficiency and reduce our impact, while other organizations will learn from us, and that in the end we will all be leaders.”

**BONNY BENTZIN**  
DIRECTOR, SUSTAINABLE BUSINESS PRACTICES  
ARIZONA STATE UNIVERSITY

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## About Us

CarbonFree Technology is a leading North American solar project developer. We provide turnkey solutions that enable clients to benefit from solar energy without bearing the significant capital expense of purchasing solar power systems. We offer the most up-to-date, reliable solar technologies available and make it easy for public and private organizations to choose the systems best suited to their needs.

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