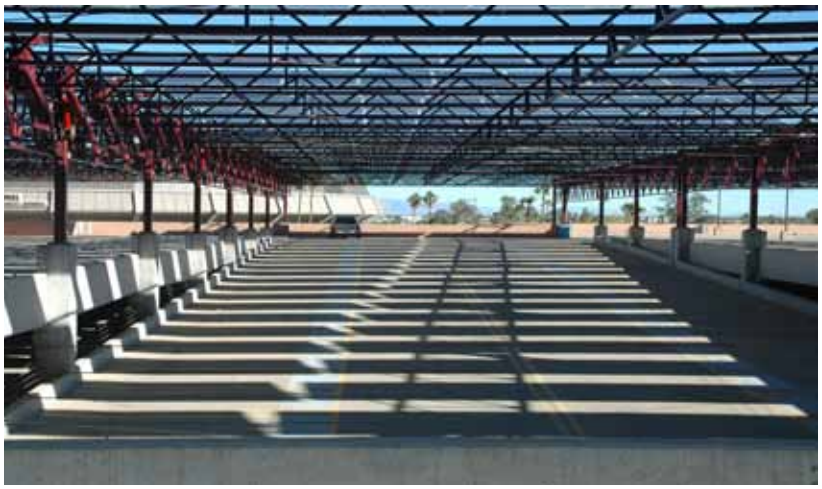
Solar PV Case Study
ASU Stadium Parking Structure 731 kW

LOCATION:	Tempe, AZ
COMPLETED:	December 2008
NUMBER OF PANELS:	3,510
PANEL TYPE:	Suntech 200 / 210 W
OUTPUT:	1,425 MWh per year
INVERTER:	3 x Xantrex GT 250 kW



Project Overview

CarbonFree Technololgy has developed the first third-party-financed solar power system to be installed in Arizona. The project, pictured here, is located at Arizona State University's main campus in Tempe.

The project uses a design-build-own-operate financing structure that required zero capital contribution from ASU. Rather than buying solar equipment, ASU purchases solar power produced on-site at their campus in Tempe, AZ, home to more than 51,000 students, and benefits from related services. This arrangement enables ASU to take advantage of certain incentives for solar power which have more value to the private sector than to a not-for-profit institution.

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 renewables, and CarbonFree's financing and project development solutions have helped ASU move boldly towards this goal.

Solution

Because of a shortage of vacant land at its Tempe campus, ASU of necessity had to look to its rooftops and multi-story parking garages as potential locations for solar power systems. Both types of locations were promising, but the large footprint of the garages, the added benefit of shading and the absence of roof maintenance issues made the garages especially attractive.

Smaller ground-level installations using the general type of tracking system recommended by CarbonFree had been functioning well in Arizona for several years, and their performance in terms of kilowatt hours per year for a given size system was well understood. What was very novel, however, was the idea of mounting these tracking systems on top of a building.

It was determined that the additional cost of the steel structure to mount the system above cars parked at the roof level was more than offset by the added output from using trackers to keep the solar modules oriented toward the sun as it passes from East to West.

"The parking structures are like a blank canvas, and this enabled us to use single-axis trackers – which increases the efficiency of the systems."

BONNY BENTZIN
DIRECTOR, SUSTAINABLE BUSINESS PRACTICES
ARIZONA STATE UNIVERSITY

Environmental Benefits

The 731 kW solar array will generate approximately 1,425 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 777 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.

THE CARBON SAVINGS ARE EQUAL TO:

» Powering 104 average AZ homes
» Taking 142 cars off the road
» 177 acres of mature pine/fir forest

Project Notes

System installation was led by ViaSol Energy Solutions of Tempe, AZ, which also designed the steel structure and tracking mechanism used to support the solar PV modules and keep them oriented toward the sun.

At the time the project was being developed, there was a risk that the 30% federal Investment Tax Credit for solar power systems would not be extended beyond the end of 2008. As a result, all parties involved in the project were under significant time pressure. Specific issues faced during construction included tight timelines for solar module delivery, and rising steel costs. Despite these hurdles, the total construction time was just four months, and the year-end deadline was met.

"Economically this works for us because of the relationship we have built with our partners."

MICHAEL CROW
PRESIDENT
ARIZONA STATE UNIVERSITY

About Us

CarbonFree Technology is a leading North American solar project developer. We provide solutions to help clients benefit from solar energy without the upfront capital cost of buying systems. We offer the most up-to-date, reliable technologies available and make it easy for organizations to choose the systems best suited to their needs.

For more information, please contact us.

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