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Department of Energy

# Hawaii Marine Base Installs Solar Roofs

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Built on the end of the Mokapu Peninsula on Oahu's northeast coast, the Marine Corps Base Hawaii (MCBH) at Kaneohe Bay gets plenty of sunlight. But harnessing that sunlight to create renewable electricity was considered too expensive to be practical – until 2008.

That's when MCBH took advantage of planned maintenance funding to help offset the high cost of installing photovoltaic panels on the base. As a military entity, MCBH can't directly take advantage of federal or state tax credits, and there are no local utility company rebates for photovoltaic installations, so the cost is normally too high for planners to consider it.

But using maintenance funds and Energy Initiatives Program funding from Headquarters, U.S. Marine Corps, the base replaced built-up asphalt roofs on two buildings with polyvinyl chloride membrane 'cool' roofs and solar panels integrated directly into the roofs. For its efforts, the team behind the project won a 2009 Federal

Energy and Water Management Award from the Federal Energy Management Program, a program of the U.S. Department of Energy.

John Dunbar is a Resource Efficiency Manager for Tetra Tech, a contractor that assists MCBH with its energy management program. He says the project has lowered energy costs.

“[We] saved some money overall in the total roof replacement and got the benefit of producing electricity, which made the overall project a little more cost-effective,” he says. The project was successful enough that the base plans to repeat it when other buildings need new roofs.

Each roof has a 32-kilowatt system producing a total of about 100,000 kilowatt-hours of energy a year. The buildings are used for operations, training and office space, and during the daytime peak usage hours, they get all the energy they need from solar. John estimates that the base saves \$20,000 a year by using the panels.

Furthermore, the “cool” roofing material itself improves energy efficiency slightly by reducing the air conditioning load. The old roofs were heat-trapping, dark-colored asphalt, but the new roofs are made of a white PVC membrane. Not only is the white color cooler, John says, but insulation was installed directly beneath the membrane. And the unobstructed integration of the solar panels makes maintenance easier.

“We like the system because there are no protrusions, no mounting brackets or that kind of stuff to worry about,” he says. “It has a 20-year warranty. So we ended up with a good roof for at least 20 years, plus it’s putting out power.”

What does this project do?

Marine Corps Base Hawaii replaced roofs on two buildings with polyvinyl chloride membrane ‘cool’ roofs and solar panels.

The new roofs saves \$20,000 a year in energy costs.

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