THE UNIVERSITY OF ARIZONA

Planning, Design & Construction

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Date: February 1, 2012

RE: AASHE STARS Innovation Credit

Dear AASHE STARS Program Staff:

This letter is being submitted in support of the University of Arizona's STARS documentation for an innovation credit. Atop the University of Arizona's Student Recreation Center sit 346 solar thermal collectors. They aren't solar panels, which convert solar energy into electric power. Instead, this Solar Thermal Array turns heat into chill—no small feat in a desert town like Tucson.

Within the solar thermal collectors are 5,336 argon-filled vacuum tubes that collect heat energy from the sun to drive an absorption chilling system that cools the 55,500-square foot facility. While using heat for cooling purposes may seem counterintuitive, unlike a refrigerator or an air conditioner, which draws its energy from electric power, an absorption cooler transforms heat into productive energy. Specifically, a water-glycol mix heated by the sun is pumped through the absorption cooler, producing chilled water that is fed into the University's main chilled water loop, thus cooling campus buildings.

A byproduct of the cooling system is heat energy, which, in many similar systems, is released in an adjacent cooling tower. But at UA's Recreation Center, the excess heat energy produced by the system is cycled under the Recreation Center pool, heating its 55,000 gallons of water and closing the solar loop.

This innovative system is the first of its kind in the nation, as no other campus in the U.S. uses solar energy to power both heating and cooling operations.

Maintaining 55,000 gallons of water at a comfortable and consistent temperature would otherwise require a significant amount of natural gas; however, by utilizing the byproducts of the absorption cooling processes, the Recreation Center is able to replace a third of the energy needed to heat the pool.

The energy collected by these 346 solar thermal collectors harvests an estimated annual equivalent of 1.9 million kilowatt hours of electricity, thus reducing greenhouse gas emissions by 1,317 metric tons a year.

Sincerely,

Ralph Banks
Assistant Director, Engineering