



ASI Awarded DOD Contract to Recover Solar Heat for Barracks Heating and Cooling at Fort Meade

Annandale, VA, June 18, 2015— The DOD ESTCP program awarded American Solar, Inc. contract to recover solar heat at a barracks building at Fort Meade, MD to validate reductions in space heating, water heating, and cooling.

The Department of Defense (DoD) has nearly 3 billion square feet (ft²) of building space under roof that requires energy for heating (building space, water heat, and equipment) and for cooling. Burning fossil fuels for heat or using electric air conditioning systems costs DoD approximately \$1.6 billion/year (heating) and \$0.6 billion/year (cooling) out of a \$5.8 billion total energy bill.

To reduce the impact of energy used to heat and cool buildings, American Solar, Inc. (ASI) will demonstrate the benefits of using a Thermally Assisted, high temperature, air-to-water Heat Pump (TAHP) at the Freedom Barracks, at Fort Meade, Maryland.

The system uses the heat pump water heater to heat domestic hot water for the barracks. ASI's system boosts the heat pump's heating performance by supplying it with heat from hot attic air (a form of renewable solar heat). The system will also transfer warm attic air to preheat cold outside ventilation-air in the winter.

In the summer, the heat pump delivers cool air, which the building uses to reduce air conditioning costs. This project will document the performance of the system in the Freedom Barracks and create calculations to predict performance in any similar building, across all climate zones.

The system's triple use—water heating, outdoor air preheating, and cooling—enables operations 87% of all hours of the year, reducing the energy use and cost of heating and cooling the barracks, and increasing the use of renewable 'solar' heat from the attic air.

At Fort Meade, the TAHP will run about 6,000 hours for domestic hot water heating, with about 3,000 of those hours providing both domestic water heating and cooling to the outside air. The attic air fan will run about 1,500 hours to deliver preheated air via air-to-air heat exchanger to the outdoor air intakes in the heating season.

The TAHP will deliver net savings of about \$2,367 per year in natural gas and electricity compared to the existing combination of gas hot water heaters, gas boiler, and chiller for outside air conditioning.

Using the same system in an identical barracks in a warmer, more humid climate such as Jacksonville, FL, increases savings to about \$3,844 per year and results in a simple payback of 4 years and a 20-year savings-to-investment ratio (SIR) of 5.58. Several hundred thousand DoD buildings could benefit from the system. ASI expects to complete the project in 2018.

About American Solar, Inc.

American Solar provides project development, consulting services and technical advice for solar-thermal projects in the agricultural, commercial, industrial, and government markets. The company develops projects for its patent-protected solar air-heating technologies. ASI also conducts research and testing of solar air-heating and low temperature air-heat-recovery systems.

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