



**ABRAHAM PAISS
& ASSOCIATES**

Supporting Sustainable Solutions

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SolSource Military Backgrounder

[SolSource Inc.](http://www.SolSourceinc.com) (www.SolSourceinc.com) is Colorado's largest solar engineering, procurement and construction (EPC) firm focusing on institutional, military and commercial installations, as well as a leading designer and installer of residential solar electric and solar thermal projects. The Denver-based company recently won its largest solar photovoltaic installation at a military base with partner, AMEC Earth & Environmental, an international engineering and project management company.

This \$7.3 million contract is SolSource's largest installation to date, and will be Buckley's largest solar energy system. The Buckley 1.2 MW project is the largest solar PV installation for an Air Force Base in Colorado, and the third largest military solar PV array in the U.S. The solar panels to be used in this installation are 100 percent American-made.

Colorado hosts the Army's largest solar array in the U.S. at Fort Carson Army Base in Colorado Springs. Located on a converted landfill, the 2 MW system covers nearly 12 acres and can generate 3,200 mega-watt hours (MWh) per year. Fort Carson is also home to the largest SolarWall solar thermal heating system installed by SolSource. America's largest military solar PV installation is at Nellis Air Force Base in Nellis, Nevada. The 14.2 MW array consists of 70,000 solar panels on 140 acres.

Anti-Reflective Solar Panels

The Buckley Air Force Base 1.2 MW installation will consist of over 5,040 SolarWorld 230-watt Sunmodules, with each module measuring 69.94" x 39.41" or approximately 6 ft. X 3.2 ft. The 100 percent American-made modules are manufactured and assembled at one of SolarWorld's factories in Camarillo, CA, Hillsboro, OR and Vancouver, WA. The modules are being installed in a flight zone adjacent to the BAFB Air Traffic Control tower where jet streams are up to 150 MPH. The Sunmodules are manufactured to be anti-reflective and are approved by the Federal Aviation Agency (FAA) for use in a flight zone. Each panel is flash tested individually to ensure performance quality. SolarWorld AG is a world leader in providing high-quality solar power technology, with facilities in Germany and the U.S.

SolSource Military Experience

SolSource has extensive experience meeting the environmental and technical specifications of renewable energy installations for the military. Since 2005, SolSource has successfully designed and installed 10 on-base projects at U.S. Air Force and U.S. Army facilities in Colorado. Completed projects include solar PV and solar thermal collectors for Fort Carson Army Base, Peterson Air Force Base, Schriever Air Force Base, the VA Medical Center, and five installations at Buckley Air Force Base.



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These solar energy installations help SolSource's military partners meet the requirements of the Federal Energy Policy Act of 2005 and Executive Order 13423 for military facilities to actively incorporate renewable energy sources into their operations. SolSource has helped Buckley Air Force Base introduce solar energy to help power its facilities. The company designed and installed three SolarWall solar thermal systems and two solar electric systems at BAFB. Project profiles are available on the SolSource website at this [link](#). Project summaries follow below.

Buckley Air Force Base (BAFB), Aurora, CO

System: 2 SolarWall solar thermal systems, 6,500 sq. ft.

Location: Airplane Hangar

Carbon Offset: 157.3 tons equal to 314,600 lbs per year

Completed: 2005

In 2005 working closely with the base's Energy Manager, SolSource installed two solar thermal systems on an airplane hanger at BAFB. The two SolarWalls use solar radiation and ventilation fans to heat and ventilate the indoor air space. The 6,500 sq. ft. systems capture heat from the sun and circulate pre-heated warmed air into the building. This supply of fresh air also improves the indoor air quality within the buildings increasing the health, safety and comfort for Air Force personnel. Buckley Air Force Base serves more than 10,000 men and women who represent every branch of the military.

Buckley Air Force Base

System: 2 Solar PV Systems, 10 kW

Carbon Offset - 26,461 lbs/year

Location: Headquarters of the Civil Engineering Building and Building 26

Completed: 2006

BAFB chose SolSource to design and install two 10kW solar PV arrays for building 26 and the Civil Engineering Building for the base's first two solar electric systems. These two pilot PV systems laid the foundation for Buckley to integrate solar energy into the base's electrical and energy management systems. Each system uses 56 SolarWorld 175 modules and can produce 13,200 kilowatt hours (kWh) per year. SolSource worked with SetPoint Systems to integrate the PV output into Buckley's Energy Management Control System (EMCS). The two 10 kW grid-connected installations are situated on self-ballasted roof arrays. SolSource installed a total of 112 modules on both solar PV arrays within a two-week period.

The 10 kW solar PV array for the Headquarters of the Civil Engineering Building sits next to a runway and air traffic tower. SolSource designed the solar system to accommodate for 150 miles per hour air bursts from large aircraft flying over the building. The system uses SolarWorld anti-reflective solar modules for use in a flight zone. SolarWorld panels are 100% manufactured and assembled in the U.S.

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Buckley Air Force Base

System: SolarWall solar thermal, 1000 sq. ft

Location: Warehouse

Completed: 2006

Carbon Offset: 24.2 tons equal to 48,400 lbs. per year

This SolarWall solar installation supplies pre-heated air, regulates the temperature inside the building, and brings in fresh air from the outside to improve the indoor air quality for Air Force personnel. The SolarWall is 100 percent recyclable and is made of 95 percent recycled steel.

Fort Carson Army Base, Colorado Springs

System: SolarWall, 500 kW – 12,000 sq. ft

Location: Building 8030

Completed: 2005

Carbon Offset: 290.4 tons equal to 580,800 lbs. per year

SolSource was selected to install a 12,000 sq. ft. SolarWall system for building 8030 at Fort Carson Army Base. This solar transpired-air collector is the largest SolarWall on a U.S. military base in Colorado. The three SolarWall system is mounted on three separate sections of the building. Outside air is heated as it passes over the panel surface before it enters the building where it de-stratifies the inside air and brings pre-heated fresh air into the building. A challenge was the original design of the building which has only one ventilation air intake per each 200 foot section. SolSource met this challenge by creating a deeper plenum for the SolarWall. The SolarWall improves the indoor air quality in the building with no greenhouse gas emissions. Ft. Carson is home to combat-ready forces in both Army and Navy divisions, the 10th Combat Support Hospital, and the Colorado Army National Guard.

Peterson Air Force Base, Colorado Springs

System: SolarWall, 190 kW – 2,100 sq. ft.

Location: Building 210

Completed: 2007

Carbon offset: 50.82 tons equal to 101,640 lbs. per year

SolSource to designed and installed a 2,100 sq. ft. SolarWall for building 210 at Peterson Air Force Base chose. The SolarWall delivers pre-heated outside air using renewable energy. Peterson Air Force Base is home to the North American Aerospace Defense Command (NORAD), Air Force Space Command's 21st Space Wing, Army Space Command, and Air Force Reserves.



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Schriever Air Force Base, Colorado Springs

System: Solar PV, 3.5 kW

Carbon Offset - 9,763 lbs./year

Completed: 2008

Schriever Air Force Base selected SolSource, in partnership with Shaw Environmental, to design and install a 3.5 kW ground-mounted PV array for the Air Force Base's Child Development Center. The system is composed of 18 SolarWorld modules which are 100 percent American manufactured and assembled in the U.S.

SolSource also installed a web-based data monitoring system that provides historic and real time data on solar energy production, CO2 emissions that were prevented from entering the atmosphere, and environmental and technical information about the solar PV array. The computer monitor is on display in the lobby of the Child Development Center building and serves as an educational tool for parents, staff, and Air Force personnel. SolSource was able to overcome several challenges related to strict protocol for working around children, security requirements, and the removal a section of fence to allow access to the site. Schriever Air Force Base is home to the 50th Space Wing and more than 6,000 military and civilian employees.

Veteran's Affairs Medical Center - Denver

System: Solar PV, 9.72 kW

Carbon Offset - 26,871 lbs./ year

Completed: 2009

Offering healthcare services to America's veterans, the Veteran's Administration Medical Center chose SolSource to design and install a 9.72 kW self-ballasted PV system on building 38 using 45 Sharp 216 modules. The system includes a web-based data monitoring system which provides system output information and environmental data.

The Federal Energy Policy Act of 2005

The Energy Policy Act of 2005 was passed by the United States Congress on July 29, 2005, and signed into law by President George W. Bush on August 8, 2005. The Act has shifted U.S. energy policy by providing tax incentives and loan guarantees for energy production of various types, and requires the Armed Forces to significantly increase the military's use of solar and other renewable energy sources. The Act states:

"... of the total quantity of electric energy the Federal government consumes during any fiscal year the following amounts shall be renewable energy: not less than 3% in each of fiscal years 2007 through 2009, and not less than 5% in each of fiscal years 2010 through 2012." (Source: Energy Policy Act of 2005).

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