

Riverside Correctional Facility Philadelphia, Pennsylvania

A Buderus Solar System Case Study



The "greening" of a prison facility through the installation of a Buderus solar thermal system

Since December 24, 2008, 800 inmates of Riverside Correctional Facility have been in hot water, but not of their own making. This hot water is made by a Buderus solar thermal system, which is estimated to save the City of Philadelphia \$1.1 million and prevent one million pounds of carbon emissions over the estimated 25-year life of the system.

Unveiled on December 4, 2008 by Philadelphia Mayor Michael A. Nutter, this is the first solar thermal system installed in a large urban jail in the U.S. and is one project towards the Mayor's goal for Philadelphia to become the greenest city in America. The system was paid for with \$400,000 from the prison system's budget (spread over 3 years) with additional funding of \$265,000 from the Mayor's Office of Sustainability. It is expected to completely pay for itself in 8-10 years.

The Riverside Correctional Facility, a multi-building complex, is the central intake for all women sent to jail in Philadelphia. The solar system was installed on one building with an average daily population of 800 that had recurring water heater failures. One project challenge was making the transition to the new system without interrupting the existing hot water service for personal hygiene, laundry, and cleaning. Another challenge was the limited existing boiler room space.

The Buderus solar system replaced 15-year-old direct-fired water heaters with 45 roof-top solar collectors, 15 indirect storage tanks, 2 dual-fuel back-up boilers, and associated controller and pumps. The solar panels transfer their heat to a closed, antifreeze-filled system, with "overheat protection" set to 265°F. The heat is transferred via dual coils to the water in the storage tanks. The back-up boilers provide additional heat, if needed, and are dual-fuel to take advantage of the lowest energy costs.

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1-800-Buderus
www.buderus.net
www.buderussolar.com

Buderus
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Project Quick Facts

Project Partners

- U.S. Facilities, Phila. - Facility Management
- Herman Goldner Company, Phila. - Contractor
Contact: Jim Childs, 267-346-2987
- J. Lorber Company, Phila. - Distributor
Contact: Bruce Kershaw, 215-791-2783
- Philadelphia Mayor's Office of Sustainability
Michael A. Nutter, Mayor

Equipment

- 45 Buderus SKS 4.0 Flat Plate Collectors, mounted in 2 rows at a 40° angle facing SSE
- 15 105-gallon Buderus Logalux SM400 Dual Coil Indirect Storage Tanks
- 2 Buderus G515 1 million BTU Dual-Fuel Boilers
- 15 Buderus KS0120 Solar Pump Stations
- Buderus TR0310 U Solar Controller

Cost

- \$665,000

Savings

- 1st Year: \$54,974
- 8-Year: \$673,295 (based on 20% energy cost increase)
- 10-Year: \$712,863 (based on 10% energy cost increase)
- \$1.1 million over estimated service life of 25 years
- 1 million pounds carbon emissions

Project Size

- 1 building, 200,000 ft²
- 800 inmates average daily population

