

## Commonwealth of Pennsylvania Department of Environmental Protection Southeastern Regional Office

Norristown, Pennsylvania

<b>Building Type:</b>	<b>Office</b>
<b>Recognition Status:</b>	<b>LEED for New Construction v2.0 Gold</b>
<b>Completion Date:</b>	<b>2004</b>
<b>Gross Square Footage:</b>	<b>111,700 sq. ft. (10,480 sq. m.); 4 stories</b>
<b>Total Project Cost:</b>	<b>US\$12 million</b>
<b>Indoor Potable Water Use:</b>	<b>109,400 gallons/yr (414,100 liters/yr)</b>
<b>Outdoor Potable Water Use:</b>	<b>0 gallons/yr (0 liters/yr)</b>
<b>Occupancy:</b>	<b>350 employees</b>
<b>DOE Climate Zone:</b>	<b>Zone 3 (5300 HDD, 900 CDD)</b>



Front façade (reused building at right)  
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### PROJECT OVERVIEW

The Pennsylvania Department of Environmental Protection (DEP) built their Southeastern Regional facility to demonstrate a commitment to green building. The project design, construction, and continued operation serves as a regional model for high-performance building and the use of integrated design strategies. The facility is located in downtown Norristown, and thus contributes to the neighborhood's redevelopment and economic regeneration. In addition, the site is easily accessible from the adjacent public bus and light rail transit hub. The urban site also includes a 6,000-square-foot (560-square-meter) Historic Landmark former train station building, which the project team reused

and incorporated into the new building. The office spaces are organized around a central four-story public atrium, which contributes to interior daylighting, visual interconnection, and houses a rainwater-harvesting cistern.

### THE BOTTOM LINE

While achieving Leadership in Energy and Environmental Design (LEED) Gold rating, the DEP Southeastern Regional facility cost only \$108.69 per square foot (US\$1170 per square meter), slightly below Pennsylvania 2002 average for comparable office buildings of US\$108.88 per square foot (US\$1172 per square meter). In addition, the building is expected to save 41 percent on annual energy costs and 83 percent on total water use. Daylighting, split task/ambient lighting, individual occupant comfort controls, and the central atrium contribute to the high-quality office environment. The DEP Southeastern Regional Office Building demonstrates that an integrated design process can result in a high-performance government building at an average capital cost and with ongoing operational savings for taxpayers.

### LOAD REDUCTION STRATEGIES GENERATE ENERGY SAVINGS

Building energy modeling projected a 41 percent energy savings through a combination of passive load-reduction strategies and optimization of building systems. The building envelope limits heat gain and loss by employing high-performance windows, sunshades, and R-25 insulated metal exterior wall panels. Daylighting from the building perimeter and the central atrium allows for a lighting power density of only 0.75 watts per square foot (8.1 watts per square meter) and helps reduce unwanted thermal output from the lighting systems. With underfloor air distribution throughout, the mechanical system achieves high ventilation effectiveness and eliminates the need for costly perimeter heating. These strategies facilitated a 50 percent reduction in the mechanical cooling capacity of the building, delivering both capital and operational savings.



Central atrium  
© Jim Schafer Location Photography

*“As an environmental agency, we’re walking the walk and talking the talk.”*

— Joseph Feola  
Southeastern Regional Director  
Pennsylvania Department of  
Environmental Protection

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Rainwater cistern in atrium / © Jim Schafer Location Photography

## **RAINWATER HARVESTING: CONSERVATION SYSTEM AND AESTHETIC ASSET**

The Southeastern Regional Office Building's rainwater collection system was integral to realizing a projected 83 percent reduction in potable water use. Waterless urinals and high-efficiency fixtures generate an initial reduction of 45 percent. The rainwater collection system then provides sufficient greywater to flush all toilets, saving the additional 38 percent. The centerpiece of the rainwater system is a 4,000-gallon (15,000-liter) wood cistern, located in the central atrium. The cistern acts as the architectural focus of the building's central atrium/garden space and creates an enviable lunch environment, which excited employees before they had even moved into the building. Additionally, all piping and collection components of this system are exposed to serve as an educational tool, including the filtration and pumping system for flushing toilets which are displayed behind a glass wall. A small green roof area con-

tributes to reducing stormwater run-off and creates a terrace garden space accessed from the employee lunch room.

## **SUPPORT OF LOCAL ECONOMY AND CULTURE THROUGH BUILDING MATERIALS**

As a branch of the Pennsylvania State Government, the DEP sought to support and exhibit products from Pennsylvania and the northeast. This effort began with the decision to reuse the existing train station building by incorporating the historic Norristown structure into the new office building. Reuse of the station shell saved over 900 tons of building material. The recycling of concrete, wood, and other materials diverted 83 percent of construction and demolition waste from landfill disposal while also supporting Pennsylvania recycling companies. Additionally, a Maryland supplier was able to provide salvaged raised floor panels as part of the building's underfloor air delivery system. By cost, 34 percent of the building's total material content is

recycled, including structural steel with 94 percent recycled content, rubber roof pavers with 100 percent post-consumer recycled-content, and rubber flooring with 82 percent post-consumer recycled content.

In addition to reusing, salvaging, and using recycled-content building materials, the project team emphasized local materials by sourcing three-quarters of the building materials from within 350 miles (560 kilometers). In addition, one-sixth of building materials were harvested or extracted from within 100 miles (160 kilometers) of the building. The use and reuse of local resources helped support local business and preserve the historic character of downtown Norristown while decreasing carbon emissions and reducing the embodied energy of the building.

## **SOURCES**

John Boecker, AIA

7group

Project Architect for L. Robert  
Kimball & Associates

*“There’s no more tangible bottom-line evidence that green is good for the pocket book than green buildings.”*

— Kathleen McGinty, Secretary  
Pennsylvania Department of  
Environmental Protection