



## THE CITY OF PHILADELPHIA | ENERGY OFFICE

### CASE STUDY: Quadplex Guaranteed Energy Savings Project

#### BY THE NUMBERS

**Construction Cost: \$12,230,000**

**Construction Phase Utility Cost Savings: \$1,955,000**

**Expected Annual Cost Savings: \$1,450,000**

**Rebates Received: \$1,030,000**

**Greenhouse Gas Reductions: 7,800 MTCO<sub>2e</sub>**

**Project Overview** The City selected NORESKO through a competitive RFP process to determine the feasibility of energy conservation measures (ECMs) in the City's 'Quadplex' buildings—City Hall, Municipal Services Building, One Parkway and the Criminal Justice Center. The City selected high payback energy conservation measures that produced a project with positive cash flow, strong environmental benefits, and improvements to tenant spaces. The completed project includes nine standard ECMs throughout the four buildings. This work resulted in facilities that are easier to operate, more comfortable for tenants, and have fewer immediate Capital needs in addition to energy savings.

#### Quadplex Buildings



City Hall  
659,185 sq. ft.



Municipal Services Building  
491,000 sq. ft.



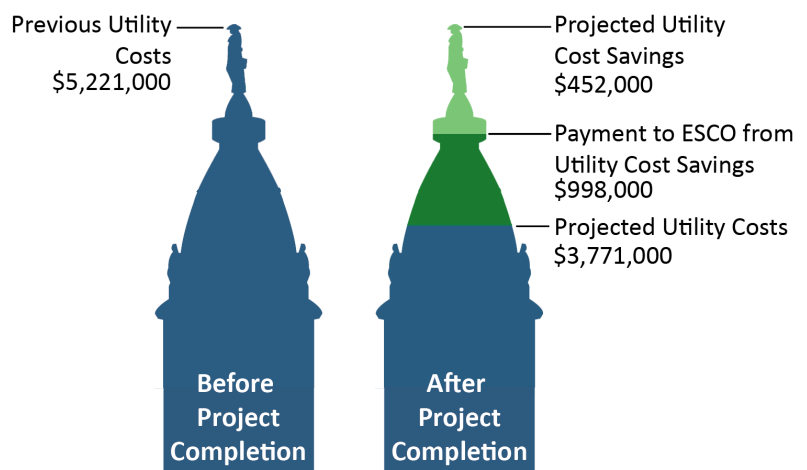
Criminal Justice Center  
600,000 sq. ft.



One Parkway Building  
502,000 sq. ft.

**Total floor area: 2.25 million sq. ft.  
Amounting to 12% of the City's  
General Fund energy usage**

**Guaranteed Energy Savings** Under Pennsylvania's Guaranteed Energy Savings Act (GESA), all Commonwealth municipalities are enabled to enter into contracts with Energy Service Companies (ESCOs) to develop energy efficiency projects. This is the type of contract vehicle used to implement this project. The legislation also authorizes third party financing so that annual utility and operational savings can support the project repayment over a 15-year contract term, meaning an up-front budget allocation is not necessary. As shown in the graphic below, energy cost savings realized through a GESA project are allocated to project repayment, and the left over savings can be used for other municipal programs.



**Background** The City of Philadelphia is committed to reducing City government energy use, associated costs, and environmental impacts. Achieving short and long-term energy savings requires strategic energy efficiency upgrades to city-owned facilities. The 'Quadplex' buildings are among the City's largest energy users and were selected for this project based on their energy savings potential.

**Measurement and Verification** The construction period closed in July 2015. The project is now in its measurement and verification phase. This means that the City is measuring and verifying energy savings realized at the Quadplex buildings. The City's Energy Office is designing a building monitoring program to ensure building operations continue to support expected project savings.

### Energy Conservation Measures

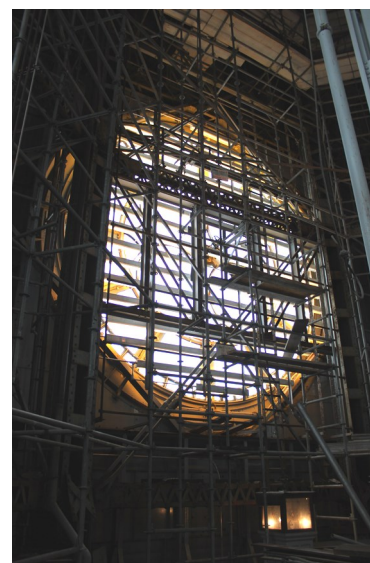
- ◆ Lighting improvements
  - ◇ Replaced inefficient lighting with CFLs, LEDs, T8s
  - ◇ Includes retrofits to City Hall Clock Tower lighting
- ◆ Lighting control systems
- ◆ Water conservation
  - ◇ High-efficiency, low-flow plumbing fixtures
  - ◇ Aerators for lavatory and kitchen faucets
- ◆ Steam system insulation
- ◆ High-efficiency, modular dual-fuel hot water boiler in MSB
- ◆ Building control systems upgrades
  - ◇ New set points, operating schedules and control strategies
  - ◇ Variable frequency drives (VFDs) on fans and pumps
- ◆ High-efficiency air filters and concourse VFDs
- ◆ Concourse area vestibule improvements
  - ◇ Reduce the time period automatic doors remain open, provide a tighter seal when fully closed, and provide updated safety controls
- ◆ Building envelope improvements and weatherization

*"Energy efficiency improvements to the Quadplex buildings improved occupant comfort and made it easier for facilities staff to run the buildings efficiently."*

— Jerry Merrigan, City of Philadelphia Dept. of Public Property, Facilities Management



Pipe Insulation Installation



City Hall Clock Tower LEDs

### The mission of the Energy Office is to:

- Strategically procure cost effective, reliable, safe, clean energy and conventional energy systems for City government
- Promote energy conservation and efficiency within City facilities by providing education, technical expertise and analysis of energy used
- Develop and implement projects and programs that promote the efficient use of energy and reduce the City's environmental impact

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