

Engineering Operations Vehicle Storage & Maintenance Facility Addition

Objectives

- Alleviate overcrowded conditions to provide a safe, productive work environment and protect significant investment in vehicles and equipment.
- Develop construction standards for City storage and maintenance facilities that through a combination of energy efficiency and renewable energy measures reduce energy consumption by at least 50% when compared to current standards for such construction.
- Determine existing capacity to design a new facility in-house. Hire external A&E consultants only to provide specialized services where we do not have the required engineering expertise (i.e. structural, electrical service consolidation).
- Meet these objectives in a cost-effective manner.

Project Highlights

RENEWAL ENERGY GENERATION

- 60 kW Photovoltaic roof top installation.

BUILDING ENVELOPE

- Enhanced building envelope construction to minimize heat loss/gain reducing energy consumption.
- High-efficiency metal insulated panels (MIP) for roof and exterior wall construction.
- Super insulated envelope, detailing to avoid air infiltration and thermal bridging, triple insulated, low-e, windows.
- White roof to minimize heat island effect.

LANDSCAPING

- Green wall features on façade.
- Native, low maintenance plantings with deep root systems to promote infiltration.
- Provide food source for pollinators.

LIGHTING

- Incorporation of daylighting to minimize daytime use of artificial lighting.
- High Efficiency LED light fixtures controlled by occupancy and daylight sensors.

HVAC

- In-floor radiant heat.
- High, efficiency modulating, condensing boilers.
- Passive solar wall on south exterior to naturally preheat outside air used for ventilation and provide supplemental heating.
- Centralized Building Automation System to optimize efficient operation, provide remote ability to troubleshoot, diagnose and at times resolve operational issues remotely.

WATER

- Expansion of the facility's existing solar thermal system to provide hot water for maintenance shop area.

Projected Results

RENEWABLE ENERGY PRODUCTION

- The roof-mounted 60 kW PV system providing total source energy of 737,024 kBtu per year. This is equal to 112% of the expanded facility's electricity requirements.

DECREASED ENERGY USAGE DUE TO ENERGY EFFICIENT IMPROVEMENTS

- The ESB expansion as designed will require source energy of 2,311,367 kBtu per year. This is 48.23% less energy than if constructed to meet existing code requirements.

TOTAL ENERGY IMPACT

- Combined energy efficiency and renewable energy measures reduce energy consumption by 64.74% when compared to current standards for such construction.

Cost

Funds for the addition were originally included in the 2012 and 2013 capital budgets. Site constraints, however, delayed the start of design work until May 2013. Addressing the site issues resulted in a more complex structure. The delay and additional complexities, in turn, have increased projected costs. The project is now estimated to cost \$3.725 million with additional budget authorization of \$430,100 being required to move forward.

PROPOSED FUNDING

• Available in 2015 Adopted Capital Budget*	\$ 883,400
• Restoration of Past Budgetary Authority*	\$1,986,500
• New Funding*	\$ 430,100
• Energy Efficiency Fund	\$ 125,000
• Renewable Energy Fund	\$ 300,000

*Allocated 60% Sewer, 30% Stormwater and 10% Landfill

→ 19,000 ea \$
+ 2,000 per annum