



Southern Depot

Sustainability Program Case Study 005: Stormwater Management, Energy Retrofits, and Electric Buses

Making Possible What SEPTA Can't Do Alone

Cultivating strong partnerships has been essential for SEPTA's progress toward sustainability. A partnership with the Philadelphia Water Department has provided funding that has helped to make possible SEPTA's largest stormwater infrastructure project to date. Partnerships with ESCO's are crucial in helping SEPTA identify the best ways to reduce water consumption and energy costs. The Southern Depot is an example of how a variety of partners can come together to create multiple sustainability successes, all in one location.

The Benefits of ESCO's

The PA Guaranteed Energy Savings Act (GESA) enables public agencies to partner with Energy Savings Companies (ESCO)'s on retrofit projects. Once a partnership is established, the ESCO conducts an investment grade audit, a "whole building" approach that identifies multiple ways to reduce utility costs.

A key benefit of these agreements is that they allow SEPTA to do comprehensive sustainability projects without spending capital dollars. Instead, SEPTA keeps its energy costs constant, and then uses the savings from the energy reduction to repay the capital investment. Being budget neutral, these projects provide long-term financial and environmental savings.



[High-speed garage doors will save energy on heating (left).]

**See back for
Stormwater
Project** ▶



[All lights (right) will be replaced with LED's.]

Quick Facts: Southern Energy Retrofits

Southern ESCO Cost: \$2.37 million

Annual savings: \$246,000

Repayment period: 9.4 years

Energy retrofits will include:

- Comprehensive lighting change-outs (from metal halide, high-pressure sodium and fluorescent to LED)
- Weather stripping, roof vent sealing, speed doors, window replacement, and HVAC controls.

Timeline:

- Sept 2015: Investment Grade Audit
- Dec 2015: Financing Arranged
- Jan 2016: Notice to Proceed
- Dec 2016: Project Completion Anticipated

Electric Bus Pilot Program

In April 2016, SEPTA was awarded a \$2.6 million grant for electric buses under the FTA "LONO" program. This grant will help to cover the incremental cost of the zero-emission battery-electric bus technology. 25 battery-electric buses will soon be put to the test, serving Routes 29 and 79 in South Philadelphia. Both routes operate out of Southern Depot, adding yet another sustainability initiative to the maintenance facility. Look on our website for more information and updates on our electric bus initiative.

[A Proterra Catalyst electric battery-powered bus.
Photo Courtesy of Proterra]



Why Stormwater Management Matters

In 2011, the City of Philadelphia and Philadelphia Water adopted the *Green City, Clean Waters* plan to reduce stormwater pollution. The majority of Philadelphia is served by a Combined Sewer System, meaning that both rainwater runoff and sewage is collected together.

Cities have large areas of impermeable surfaces, such as pavement and concrete, that cannot absorb water. Because of the combined sewer system, when it rains heavily, more water flows into the sewers than the capacity of the pipes leading to the waste water treatment plants. When this happens, the sewer pipe backflow is released into streams before treatment, creating an ecological hazard (see diagram at right).

Managing stormwater not only reduces sewer overflow; it improves water quality, provides opportunities for city greening, and creates environmental, social and economic benefits. Additionally, managing stormwater provides a financial benefit to SEPTA by eliminating or significantly reducing stormwater fees. Through a partnership with PWD, SEPTA is also eligible for green stormwater infrastructure funding, helping make projects like the one at Southern a reality.

Capturing over 6 Acres of Stormwater

From Buckled Pavement to Stormwater Retention and Greening

In order to remove old trolley tracks that have caused the depot apron (the area where buses leave the depot) to buckle, large areas of pavement will be replaced beginning in October 2016. Replacing the pavement has provided the opportunity to implement SEPTA's largest stormwater project to date.

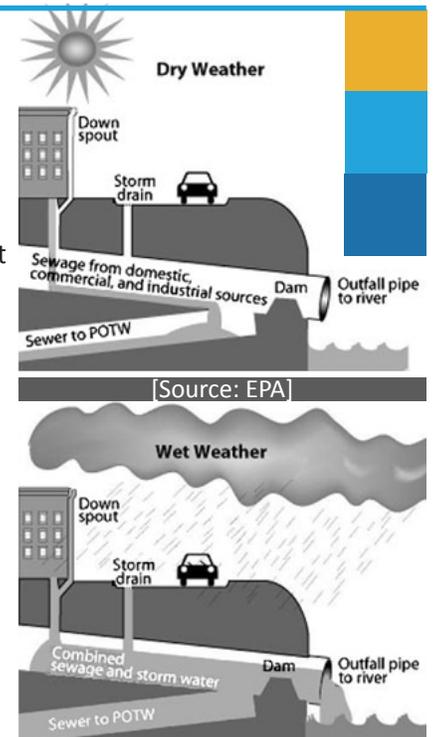
Currently, water running off the depot apron goes directly into the sewer system. Once the pavement and old trolley tracks are removed, a detention basin will be installed underneath, and the apron will be re-paved. Water from the new apron, as well water from the roof, will be diverted to this basin, which will function as a holding tank for stormwater. The basin will then release the water slowly into the sewer system, helping to minimize sewer overflow.

Additionally, bio-retention basins, which are planted areas that can also hold stormwater, will be added around the perimeter of the facility, beautifying the area.



Reaching a Vision of Sustainability Together

By partnering with groups invested in Philadelphia's sustainability, organizations can support one another in reaching their sustainability goals. Southern Depot's large-scale energy retrofit, made possible by an ESCO, contributes directly to SEPTA's progress toward its goals for GHG and energy performance improvement. Southern Depot's green stormwater infrastructure project, in addition to helping SEPTA to be more sustainable, directly supports the City of Philadelphia's goal on green stormwater management. The zero-emissions electric buses will also contribute to cleaner air, lowering street-level emissions, and helping Philadelphia to come closer to compliance with the federal standards on ozone levels. All of these projects are helping to make Philadelphia a more sustainable city.



For more information visit:

SEPTA: www.septa.org/sustain

Green City Clean Waters: http://www.phillywatersheds.org/what_were_doing/documents_and_data/cso_long_term_control_plan

