HYBRID FUNDING APPROACH MAKES THE GRADE

SOLUTION OVERVIEW

Portland Public Schools (PPS), realized the long-term benefits of energy efficiency upgrades, but was averse to completing projects because of the district's limited capital budget which was reserved for emergency infrastructure needs. In addition, officials were concerned that the process of verifying and maintaining ongoing savings would be timely and complicated.

PPS addressed these barriers by leveraging bonds in place of district funds to pay for smaller, more straightforward projects with shorter payback periods. This strategy was easier for district officials to manage internally while also contracting an energy services company (ESCO) to oversee the more challenging energy conservation projects. PPS relied upon the ESCO's expertise to scope, procure, and implement complex projects, while collaboratively, guaranteeing energy savings and performance. Taking a hybrid approach to funding energy efficiency projects allowed PPS to optimize the technical potential of the projects and still have some control over the financial outcomes and benefits.

ORGANIZATION TYPE

K-12 Urban School District

District Student Population: 48,000

GOAL

Enhance the learning environment while improving energy efficiency across the district's aging portfolio of public school facilities; Target 20% energy reduction in public school facilities by 2020 based on a 2009 baseline

BARRIER

Perception of organizational risks associated with using the district's limited access to capital to complete energy efficiency projects

SOLUTION

Energy Efficiency funding through a hybrid Energy Savings Performance Contracting model

combining Recovery Zone Economic Development Bonds for smaller, owner managed projects

OUTCOME

Over $1.2 million in annual savings from completed projects in more than 80 facilities across the district, resulting in increased district and school board support for projects that also teach students and the community about environmental responsibility

POLICIES

Portland Public Schools tapped into a number of state and district wide policies to support the implementation of an aggressive energy efficiency strategy that would also address deferred maintenance on its aging facilities to reduce the strain on limited capital funds.

State Policies

Senate Bill 1149

Effective March 2002, SB 1149 requires Oregon's two largest utilities to collect a public-purpose charge from consumers equal to three percent of total revenues from electricity services. Ten percent of these funds go to energy efficiency efforts in public schools within their service areas. Utility cost-savings coupled with risk management strategies can ease demands on capital and operating budgets.

The Oregon Department of Energy's SB 1149 Energy Program distributes the funds to the district to improve efficiency through energy reduction and conservation capital projects. In the past, PPS used this funding to perform comprehensive energy audits of all facilities and implement projects identified by the audits.

District Policies

3.30.080-P Resource Conservation

The district will take a key role in resource conservation, including creation of resource management plan consistent with district's educational goals.

3.30.082-P Environmentally Sustainable Business Practices

Requires the district to establish business procedures emphasizing environmentally sustainable practices.

8.80.010-P High Performance Facility Design

Mandates future planning focus on investment in high performance school design to support academic achievement.

PROCESS

PPS' energy efficiency strategy was divided into two phases:

1. Phase one included the ESPC pilot program
2. Phase two included the district-wide hybrid ESPC.

Phase One: ESPC Pilot Project: Four Schools in Four Years

PPS is challenged with an inventory of older, inefficient facilities with an average age of over 65 years and a backlog of deferred maintenance and capital upgrades. As a result, PPS was looking for a way to capture utility cost savings to fund facility improvement projects that could help preserve the growing stock of aging building infrastructure concerns arising district-wide. In 2008, PPS launched a pilot project to test the ESPC model as a solution to these issues. The pilot project focused on four schools with the goal of implementing a budget neutral project using utility cost savings, SB 1149 funds, and Business Energy Tax Credits (BETC) to repay project costs. The district then competitively selected an ESCO to develop the project.

Pilot Project Cash Flow Diagram

Figure 1: The red line represents the fixed pilot project payment over a 12-year term. The blue line represents the guaranteed utility cost savings with an estimated annual escalation rate of 5%. The green line is the difference between the two and the purple line is the accumulated value of these net savings.

The graph demonstrates several features of the pilot performance contract:

1. Deferred payment helps ensure the project is “budget neutral.” Payment can often be deferred until projects are completed and savings realized.This helps to ensure the project will be “budget neutral” from the start.
2. Financing over a term longer than the simple payback period (cost divided by first year savings), the project can generate net savings to the customer’s budget immediately.
3. Over time, even small annual savings can grow to a significant amount, especially when utility cost escalation is taken into consideration.

The pilot program required an investment of $2 million which was comprised of SB1149 funds, BETC funds and savings generated from the energy conservation measures. The project generated a utility savings of over $192,000 in the first year, with an accumulated cash flow of over $635,000 at the end of the 12-year term. With the demonstrated success of the pilot project, PPS conducted phase two of the project to implement measures district-wide.

Phase Two: District-wide Hybrid ESPC: Deeper Savings over a 10-year Period

In 2010, PPS was one of eight public agencies to respond to the City of Portland’s request for information (RFI) to allocate more than $13 million in Recovery Zone Economic Development (RZED) bonds for energy and water conservation projects. The district knew it had a backlog of energy projects that could be implemented quickly and was confident the ESPC process could support this effort as well as identify even more utility reduction opportunities. After a thorough review process, PPS was selected and received $11 million in bonds which were used to launch the second phase of energy conservation measures.

Next, PPS convened a broad group of stakeholders comprised of operations, maintenance and administrative staff to identify, develop and implement selected projects. The group targeted six schools in addition to the district’s central administrative office and maintenance facility. The team selected measures offering quick payback periods that could be implemented internally and managed by district staff.

With the bonds’ 12-year repayment term in mind, PPS staff implemented simple projects over a 10-year period with shorter payback periods in order to generate positive cash flow during the bond term. This savings is estimated at more than $1.2 million annually.

District Staffing Needs

The district's energy specialist, along with the facilities and operations staff, initially helped inform the selection of district implemented measures which would both decrease energy use and address deferred capital infrastructure needs across the district.

However, due to the large scope and limited staff, a unique project management position was created to specifically manage and implement the district's internal energy projects and to work directly with the ESCO.

The project management position included the following job responsibilities:

1. Conducts project meetings and proactive issue resolution
2. Responsible for management of multiple project budgets and schedules
3. Prepares and distributes status reports regarding project schedules and budgets
4. Reviews and recommends payment of invoices from professional service providers, consultants and contractors
5. Manages design and construction activities as part of the project team and acts as a liaison with school staff to ensure minimal impact with on-going school programs
6. Negotiates contract amendments with architects and engineering consultants and provides necessary documentation for the preparation of contract amendments for approval by Assistant Director of Project Management or their designee
7. Manages production of design and contract documents prepared by architects and engineers
8. Prepares bid analysis and recommends contract award to the Assistant Director of Project Management
9. Provides necessary documentation for the preparation of construction change orders for approval by the Assistant Director of Project Management or their designee
10. Prepares documentation necessary for contract administration, including change orders, permits, A/E invoices, contractor payment requests and material/equipment for approval by the Assistant Director of Project Management or their designee
11. Monitor and inspect projects through various phases of construction
12. Coordinates compliance with all contract documents, applicable codes and regulatory agencies? closeout of contracts and permits

ESCO Involvement

For the more complex projects with longer payback periods, the district contracted with the same ESCO from the pilot program which identified three district-wide measures that fit the 10 year payback criteria. These projects were funded through utility cost savings generated from other completed energy efficiency measures.

These measures included:

- Replacing water-cooled refrigeration systems for kitchen walk-in coolers with air-cooled refrigeration systems to conserve water in 46 schools

- Installing occupancy sensors to replace auto-flush urinal system with 5-7 minute increments in boys restrooms to conserve water in 72 schools
- Replacing missing and damaged insulation on steam and condensate return systems to conserve fuel oil and natural gas in 19 schools

In addition, the ESCO audited several higher energy consuming facilities and implemented mechanical upgrades including:

- Building HVAC control system upgrades and continuous optimization
- Building lighting control upgrades
- Condensate return unit upgrades

Thus the district was able to successfully implement a hybrid approach to the energy conservation measures at more than 80 facilities. District staff managed the projects at six schools, central administrative office and maintenance facility which offered shorter payback periods funded by the $11 million in RZED bonds. At the same time, PPS contracted with an ESCO to implement more complex measures with longer payback periods paid by the generated energy savings.

Tools:

- 2008 PPS Facilities Maintenance Audit
- Facilities and Asset Project Manager Job Description
- Pilot Program ESCO Case Study

OUTREACH

The district engaged internal and external stakeholders through a variety of methods including presenting at school board and administrators meetings, and training staff to oversee project implementation and tracking procedures. In addition, the district established websites for sustainability initiatives across the district, including school improvement bonds as well as issuing newsletters for the Department of Facilities and Asset Management.

A Citizen’s Bond Accountability Committee (BAC) was formed and comprised of experts in building design, construction, public contracting, budgeting and/or auditing to ensure transparency with regard to proposed bond projects. The committee convenes quarterly and offers recommendations to the school board.

Tools:

- PPS Sustainability Website
- School Improvement Bond Website
- Facilities & Asset Management Newsletter
- Citizen's Bond Accountability Committee
- BAC Meeting Minutes & Progress Reports

MEASURING SUCCESS

PPS developed a custom spreadsheet tool to track energy and cost savings across the program as

well as a simple measurement and verification tool which demonstrates the ongoing energy savings and costs avoided attributed to these projects. In addition, the district tracks energy consumption through the use of a third party biller and benchmarks monthly energy consumption on EPA's ENERGY STAR Portfolio Manager tool.

District-Wide Measure Cash Flow Diagram

Figure 2: The aggregate project has a simple payback of approximately eight years. Comparing Figure 2 with Figure 1 demonstrates the immediate impact of these "quick payback" measures.

The district also contracts with an outside professional firm to conduct independent, financial and performance audits on an annual basis which are presented to the BAC. Progress reports and audit presentations are available on the BAC website.

Tools:

- Project Summary Tracking Spreadsheet

OUTCOMES

Through its hybrid funding approach PPS completed work at over 80 facilities in the district's portfolio contracting work for over $10.5M to date with energy savings projections totaling more than $1.2 million since the project was initiated in 2012.

In addition, project success has influenced the district's outlook on implementing future projects and making a commitment to sustainability. The district created a new permanent project management position to oversee and implement energy projects, work directly with the ESCO and bridge connection between the energy and facilities teams at the same time. The school board enacted seven guiding principles for PPS facilities, to ensure that the district remains committed to "teach both students and the community at large about environmental responsibility—and model what they teach."

To this effect, the district has launched an occupant education campaign geared towards district maintenance staff, school custodians, teachers and students. This effort focuses on teaching environmental responsibility to occupants while also engaging the school community to join the district in measures to improve building performance through proper operation of components such as HVAC systems and windows.

Tools and Resources:

- Master M&V Spreadsheet
- PPS Department of Facilities and Asset Management
- PPS Long Range Facilities Plan

Media:

- Oregon Business Article on PPS Natural Gas Conversion
- Oregon School Facilities Management Association Newsletter
- DJC Oregon Article on Storm Water and Energy Management

- Proactive Green Article on Energy Efficient Schools