



REVOLVING FUNDS FOR CITY EFFICIENCY PROJECTS

Texas City Efficiency Leadership Council Best Practice

San Antonio: Revolving Funds for City Efficiency Projects

Description of Best Practice

The City of San Antonio's Office of Sustainability finances energy conservation projects using a revolving loan fund. The fund was developed to help San Antonio reduce its annual \$34 million utility budget through energy-efficient retrofits of its facilities. The city's building portfolio encompasses more than 15 million square feet comprising fire and police stations, health clinics, recreation and service centers, warehouses, office buildings and parking garages. Using the fund, San Antonio is planning a comprehensive retrofit of many municipal facilities.

The fund allows the city to self-manage all retrofits from the design phase through a project's close-out, a process that includes measuring and verifying (M&V) energy savings. Having developed much of the technical capability in house, the fund improves project economics by lowering management and installation costs and eliminating debt service. Total project costs range from \$1,000 to \$250,000; the average is \$20,000.

The city also uses the fund to pay the marginal costs of efficiency improvements within larger capital projects. As the city realizes savings in each project, it returns a portion of the savings to the fund to be used in future projects. Utility rebates supplement savings in avoided costs, and the reduced energy usage contributes significantly to lower local air emissions.

Motivation for Revolving Fund

In 2011, the Sustainability Office established the Energy Efficiency Fund using \$4.6 million allocated to the city through the federal American Recovery and Reinvestment Act (ARRA). It created a revolving fund because the city needed a flexible funding mechanism for low-cost, high-impact projects such as exterior and interior lighting retrofits, PC energy management, window film, heating, ventilation, and air conditioning (HVAC) control upgrades, pool pump control and retro-commissioning projects. Furthermore, the city saw an opportunity

to significantly upgrade the efficiency of its high capital-cost mechanical systems – chillers, air handling units, etc. by leveraging the fund to pay the marginal costs to improve the efficiency of equipment due for replacement under its Capital Improvement Plan (CIP) and through emergency projects. Most recently, the fund covered 20 percent of the cost of a \$1.3 million chiller replacement project. This contribution allowed the city to purchase high-efficiency chillers and equipment controls that it otherwise would not have been able to afford.

Having experienced some challenges with performance contracting services, the Sustainability Office decided to gain expertise in conducting desk and on-site project reviews. As staff members honed these new skills, they found that they could develop and implement projects in house without having to rely on outside vendors for project management.

Benefits of a Revolving Fund

The Energy Efficiency Fund has benefited San Antonio in a variety of ways including:

- Reducing the need to incur debt and maintaining positive cash flow for each energy efficiency project;
- Working through and reducing deferred maintenance projects and lowering overall operating costs;
- Creating the flexibility to develop and implement projects quickly;
- Leveraging CIP project funds to significantly improve the efficiency of its equipment;
- Leveraging utility rebates to invest in future energy savings retrofits;
- Achieving significant reductions in local air emissions because of lower energy consumption;
- Improving the energy performance ratings of many of its buildings, making some eligible for ENERGY STAR Certification; and
- Decreasing the city's energy usage by 7 percent since 2008 while adding facilities providing more city services to a rapidly growing population.

For a representative sample of energy-efficiency projects across 103 facilities, the city reduced costs 54 percent by developing, funding and implementing projects in house versus working with a turnkey energy service company for project development and implementation using third-party financing. The table below summarizes this initiative.

NUMBER OF MUNICIPAL RETROFITS: IMPACT OVER 5 YEARS*

Total Projects	398	
Total Facility Sites Improved	180	
Capital Investment	\$36,127,097	
Avoided Costs (\$/yr)	\$4,219,509	
Rebates Received	\$5,427,701	
Simple Payback (years)	7.3	
Electricity Savings (kWh/yr)	58,227,372	
Natural Gas Savings (CCF/yr)	69,095	
Emissions Reductions	Tons CO ₂ e/yr	24,263
	Pounds NO _x /yr	26,731
	Pounds VOCs/yr	596
*Includes projects that are under way and completed.		

Challenges Faced and Addressed

In an effort to track savings and capture their value, the Sustainability Office worked with the city's Office of Management and Budget (OMB) to help track savings. As a result, the OMB developed a special revenue fund that captures energy savings and any utility rebates.

Once the fund was set up and a transfer process put in place, it was important to protect the fund so that, as utility costs decreased, OMB was precluded from reducing the utility budget and moving the savings to other funds to cover shortfalls or pay for other budget items. OMB made significant efforts to educate financial administrators on how to recognize savings and understand the importance of protecting the fund for future economic benefit.

Finally, to secure future savings, the city is investing in an expanded capacity to maintain systems and ensure that they continue to operate efficiently. Third-party maintenance services and M&V programs are options to maintain efficient building operation. The city opted instead for an in-house approach with expectations to reduce costs, increase jobs and give management staff the resources to properly maintain facilities.

To gauge its progress, the city created savings reports for completed projects to track each one's reduced energy usage and avoided costs. The savings reports were developed in ENERGY STAR Portfolio Manager as well as in-house tracking spreadsheets.

Description of Process Experience

Establishing the Fund

In order to create the fund, the office developed a business case and, through a year-long process, presented it to several city officials including the city manager, chief financial officer, budget director and the Finance and Building and Equipment Services departments. Office staff explained how other municipalities have been able to complete large energy projects using a revolving energy efficiency fund and how those efforts applied to San Antonio. They demonstrated the value of the program by quantifying potential energy savings along with all the other benefits of the program, including relieving the General Fund of personnel costs and helping deal with deferred maintenance. Also, they put together a five- and a 15-year project pro forma. These documents projected what the fund would look like over time, including the magnitude of savings and the effect on the General Fund budget. The outcome was a special revenue fund.

The fund was capitalized with avoided costs and utility rebates emanating from \$4.6 million in ARRA payments in 2011. This seed money was spent largely in the first year and a half; the office attempts to either spend or encumber all monies each year. The fund receives revenue each year from projects' avoided energy costs and rebate dollars from CPS Energy, the municipally owned utility. A portion of the avoided costs reverts to the General Fund each year; the remainder stays in the Energy Efficiency Fund.¹ Currently, the fund is revolving approximately \$1.8 million into projects annually. The fund pays both for the actual projects themselves as well as the personnel costs of administering the energy efficiency program and staff professional development.

Replenishing the Fund

Revenue for the fund comes from two sources: rebates and energy savings. Rebate revenue is projected for each fiscal year, then appropriated directly to the energy fund budget. Rebate dollars are deposited directly into the fund. To capture avoided energy costs, the utility budgets for each department are set at the pre-energy retrofit level. Each month one-twelfth is transferred from the affected departments' utility funds to the Energy Efficiency Fund.²

Project Development

The office takes a comprehensive approach to its project development process. It begins with developing building baselines for a comprehensive M&V procedure. The office uses EPA's **ENERGY STAR Portfolio Manager** to establish baselines, identify and prioritize projects and measure and track avoided costs. This is a free online tool offered by the EPA and is widely used. Most recently, governments and organizations participating in the Department of Energy's Better Building Challenge are using Portfolio Manager to track all of the projects in the program. This system not only allows the office to track its buildings' energy consumption but also to compare the city's buildings with similar building types across the same climate zone and around the country.

¹ The balance was reduced by \$287,000 in 2014 when a portion of the fund was transferred to the city's General Fund.

² Enterprise departments' energy savings are fully recoverable. Departments paying bills out of the General Fund may only recover 50 percent.

Four key decision-making factors are considered as the office moves through the project development cycle. These factors include:

- Building energy use intensity – MMBtu per square foot to measure energy use
- Building profile – Building function and degree of public use
- Equipment life cycle stage
 - State of the equipment
 - Repair history
- Project avoided costs
 - Avoided costs returned to fund must exceed project costs
 - Payback to fund is within useful life of project³

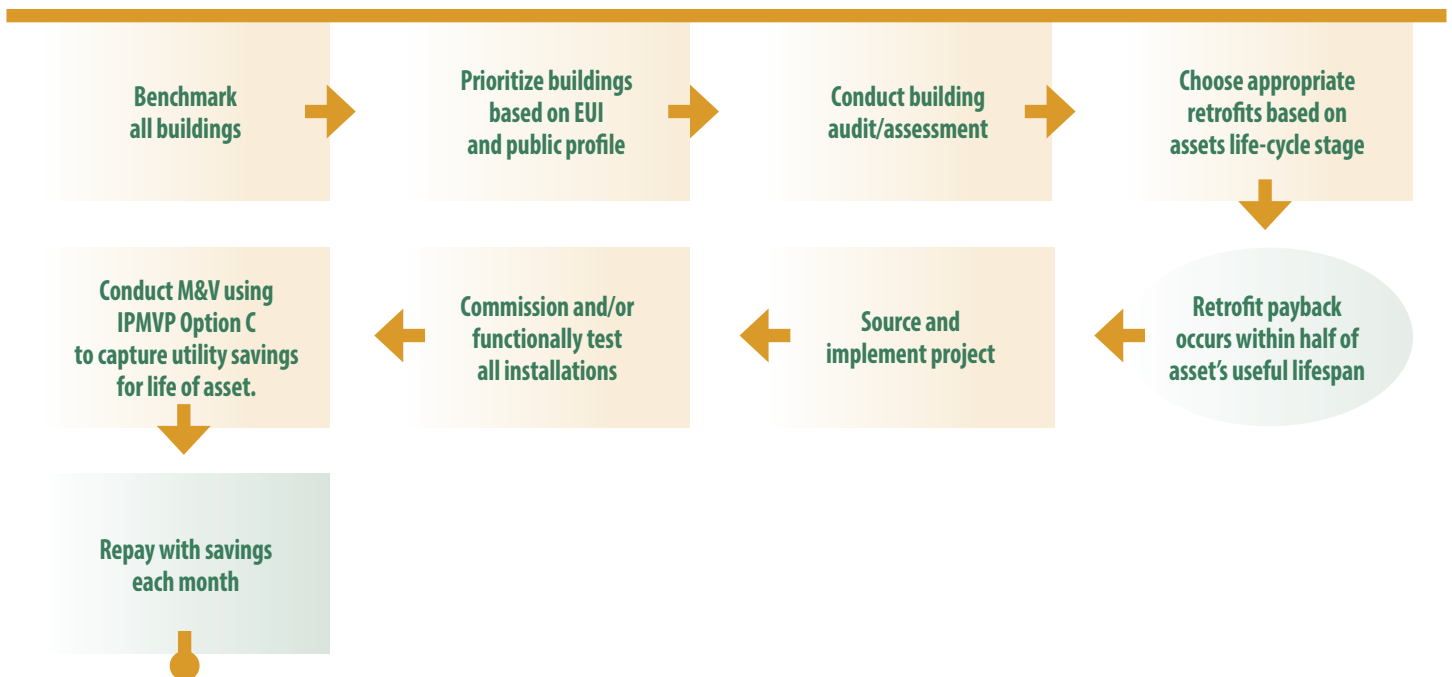
For higher capital-cost projects, such as chillers and other major mechanical equipment, the office references the CIP and works directly with the Building Equipment and Services Department to identify its priorities.

The chart below illustrates the process that the office uses to develop, implement and monitor a project. As the office develops a project, it bundles services across multiple facilities based on the type of retrofit. They have chosen not to bundle different asset types within individual buildings. In other words, the office does not combine lighting and mechanical retrofits to lower the payback on a project. It does, however, bundle multiple lighting projects across buildings to achieve economies of scale in bulk pricing and in level of effort for project administration.

Ongoing Efforts

The Sustainability Office is taking additional steps to enhance its energy savings program. To ensure optimal operation of its facilities, the office plans to provide building operator training to augment its preventive maintenance program. This will be supported further by continuous commissioning of new and existing facilities. The City of San Antonio is in the planning phase of developing high-performance design standards for new construction of municipal facilities. The city also intends to provide remote access and control for all existing automation systems within its buildings. Moreover, the city is working to implement standardized operational set-points and scheduling for mechanical equipment. Consequently, the office anticipates saving an additional \$65 million in energy costs over the next ten years.

Revolving Fund Project Process



³ Use ASHRAE standard for useful life, as well as other standards for hot and humid climates.