Energy Efficiency and Block Grant Program

The American Recovery and Reinvestment Act of 2009 funded for the first time the Energy Efficiency and Conservation Block Grant program to deploy the cheapest, cleanest, and most reliable energy technologies we have—energy efficiency and conservation—across the country.

In 2009 the City of Beaverton was awarded over $900,000 in EECBG funds to implement projects with the following goals:

- Reduce fossil fuel emissions;
- Reduce the total energy use of City buildings;
- Improve energy efficiency in the transportation, building, and other sectors; and
- Create and retain jobs

The City of Beaverton has utilized EECBG funds for four main projects: 1) Building retrofits 2) Streetlight retrofits and 3) Solar panel installations and 4) Home weatherization loans. This document aims to communicate the energy, greenhouse gas, and financial savings resulting from the implementation of the first three projects above, as the home weatherization loan program is reported separately.

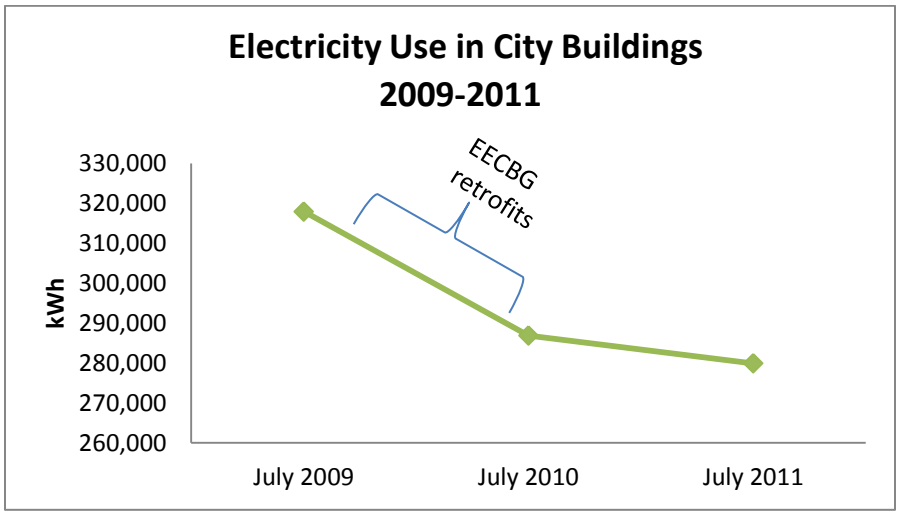
Building Retrofits

The figures in the following table come from comparing annual totals for energy costs, energy consumption and greenhouse gas emissions for 2009 versus 2011. Building retrofits were completed summer 2010 therefore in this table it is assumed annual totals from 2009 represent the full spectrum before upgrades and annual totals from 2011 represent savings after upgrades.

	Energy Cost Savings from Natural Gas and Electricity Consumption (from 2009 compared to 2011)	Total kWh Savings from Natural Gas and Electricity Consumption (2009 compared to 2011)	Reductions in GHG due to energy savings from retrofits (MT CO2e)
City Hall	$15,577.92	64,583	44.5
Library	($1,061.47)	(63,735)	(43.90)
Public Works	$4,566.15	89,801	61.9
Resource Center	$4,395.77	13,386	9.2
Community Center	($5,891.91)	3,989	2.8
Totals	$17,586.46	108,024	74.5

- The reductions of greenhouse gas emissions due to the retrofits in the five core City buildings are equivalent to preventing the carbon dioxide from burning 8,352 gallons of gasoline or the electricity use of 9 homes for one year.
- In aggregate, there was a 6.4% reduction in energy use when you compare annual totals before retrofits to after retrofits.

Building retrofits were completed July 1st 2010. Below is a graph showing energy use comparisons for City buildings in July 2009, July 2010, and July 2011. This is to illustrate the effects of the retrofits and the resulting decrease in energy consumption.



Streetlights

EECBG Streetlight Project Summary

Project Number	Date Completed or to be Completed	Project Summary	Cost Saving Analysis Update
1	04/2011	80 LED fixture upgrades at 30 traffic signal locations; each location individually metered	Waiting for billing summaries from each meter for 2009, 2010 and 2011 to analyze cost savings
2	12/2011	171 fixture upgrades- 101 induction and 70 LED; all Schedule C flat rated	Working with PGE Analyst to understand savings, possible rebates, and new LED rate updates
3	04/2011	82 LED fixture upgrades to outdoor parking lot and site lighting at City Hall and Public Works buildings	These lights are included on the main building electricity meter and therefore can be incorporated into the above electricity savings for building retrofits
4	06/2012	172 LED fixture upgrades on pedestrian/ bike paths	Plan to h
5	06/2012	250 LED fixture upgrades in residential areas of South Beaverton	

The City of Beaverton has approximately 7,055 streetlights. These lights have three categories based on who owns and who maintains them: Schedule A (PGE owns, PGE maintains); Schedule B (Beaverton owns, PGE maintains); and Schedule C (Beaverton owns, PGE maintains).

At the time of this report, EECBG funds have been used to upgrade 333 Schedule C lights. EECBG funds have purchased 422 additional lights that have not yet been installed. Although the retrofits have undoubtedly provided significant energy savings for the City, the resultant financial savings from this decreased energy use has been difficult to realize. The

two main challenges have been that PGE does not currently have an LED rate to offer customers and because the majority of streetlights are not individually metered. Therefore, PGE bills the city based on the number of streetlights on various rates.

Instead of a new LED rate, PGE representatives have agreed to bill the new retrofitted lights at the rate nearest the wattage closest to the LED wattage. This new rate agreement is already effect for 101 induction lights on Hall Blvd but not for the majority of LED upgraded streetlights. PGE is expected to offer rebates to the City of Beaverton to compensate for the energy reduction and maintenance charges associated with their LED upgrades.

The ultimate goal is to understand the savings we should be getting from LED retrofits, ensure that we receive those savings from PGE, and set up a revolving fund for future upgrade projects.

Solar

Library Solar Project Summary

Cost	EECBG Funded	Balance from Building Fund	Rate we are paid by PGE (feed in tariff)	System Size	Revenue per year	ROI	GHG Reductions (MT CO_2e)
$178,163	$125,000	$53,163	39.6 centers per watt	17.6 kW	6,771.60		11.8

Although the City has been a strong advocate for solar panel installations, the City had yet to demonstrate its commitment by installing a significant solar array on City property. In April 2012, this changed with the installation of a 17.6 kW solar system on the Beaverton City Library. The Library solar system was paid for with $125,000 of federal EECBG funds and the City of Beaverton was awarded a feed in tariff from our local utility, PGE. This means that PGE will pay 39.6 cents per kWh of energy generated from the solar panels. The panels are expected to produce 17,100 kWh per year therefore PGE will pay the City $6,771.60 annually for their solar generation. The solar generation will offset approximately 6.5% of the Library's annual electricity costs.

In addition to the financial paybacks to the City, the Beaverton library solar system also has environmental benefits. The project will prevent the following amounts of pollution:

- 18,624 lbs. of carbon dioxide
- 19.68 lbs. of sulfur dioxide
- 27.28 lbs. of nitrous oxide

This is equivalent to reducing automobile driving by 22,248 miles or to planning 1.4 acres of trees. 1

[1] www.energytrust.org solar calculator

It is also important to note that the Library solar system was installed by a local solar company, Mr. Sun Solar and used locally made solar panels from SolarWorld in Hillsboro, Oregon. The project will provide cost savings, positive environmental effects, and also support local clean technology companies.