



Seattle, Washington

A White House Climate Action Champions Case Study

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Executive Summary

Seattle's goal is to be a carbon neutral city by 2050. In 2013, the City Council adopted a detailed plan to achieve that goal focusing on the largest sources of greenhouse gas emissions. Building energy use is the second largest source of emissions accounting for 33% of Seattle's core emissions. Resource conservation is not new to the City. Capitol departments, those who own and/or manage the City's buildings, have made significant investments in the energy and water efficiency of their facilities. Because the majority of buildings that will be here in 2050 have already been built, reducing energy use of existing buildings is critical to achieving the carbon neutral goal. In 2011, the City announced a goal to achieve 20% energy savings in municipal buildings by 2020, consistent with its commitment to the USDOE Better Buildings Challenge. In 2013, the City adopted a Citywide Resource Conservation Management Plan (RCMP) and dedicated a staff position to implement the plan.

The RCMP lays out a three-part strategy for achieving the 20% energy efficiency goal: measurement and tracking; operations and maintenance (O&M); and capital energy efficiency progress. To date, the City has conducted energy billing signature analysis of fire stations, branch libraries and community centers, building characteristics audits of 70 facilities (over 2.5 million square feet) to identify O&M and capital investment opportunities, and in-depth energy audits of potential capital energy efficiency projects at seventeen buildings. The City has achieved an approximate 4.5% cumulative reduction in the energy use of City-owned buildings from 2008 to 2014, with additional savings expected from activities underway, all while adding approximately 560 staff.

While the progress is encouraging, substantial work is still required to meet the City's goal by 2020. Key lessons learned that will help guide ongoing work include:

- Central coordination between many Capital departments is essential for maintaining focus on this goal;
- Sharing information with facilities managers about building performance, and how it compares to other City facilities, drives action to increase efficiency;
- Buildings where energy efficiency investments have been made are generally demonstrating energy savings; and
- Goals for long-term efficiency can compete with more immediate resource needs. The City continues to look at how long-term efficiency can be considered as part of asset preservation.

Climate Action Champion

In seeking to reach Seattle's carbon neutrality goals, the City undertook an assessment of government owned buildings to determine their climate impact and assess the state of energy efficiency work being undertaken on those buildings. The city realized that most of the buildings that will shape the City in 2050 have already been built, therefore, reducing the impact of existing buildings is critical to achieving the City's goal. Seattle has adopted several strategies to reduce emissions from existing buildings, including leading by example with its own facilities. Seattle is participating in the US Department of Energy Better Buildings Challenge to reduce emissions in its portfolio of buildings by 20% by 2020, and

has adopted a Resource Conservation Management Plan to guide action to achieve that goal. Participation in this program has helped Seattle move closer to its goals and has helped reduce emissions from the aging government infrastructure.

Project Spotlight: 2013 Resource Conservation Management Plan

As an owner of more than 650 buildings, totaling approximately 10 million square feet, the City of Seattle recognizes its own energy impact and the importance of leading by example. In 2011, the City announced a goal to achieve 20% energy savings in municipal buildings by 2020, consistent with its commitment to the US Department of Energy Better Buildings Challenge.

Until adoption of the Resource Conservation Management Plan (RCMP) in 2013, the City had not developed a comprehensive strategy to guide energy efficiency and resource conservation investments across all departments and facilities. Integrated resource conservation can help address systemic and policy issues that cut across departments, promote focused citywide high-impact resource conservation, allow for effective project prioritization, and create opportunities to better leverage external resources.

Much of the City's building stock was constructed before increased attention to energy efficient design. Of the 650 municipally-owned buildings, only 34—those built after the City's 2000 Sustainable Buildings Policy—were constructed to green building standards. In addition, approximately 30% of City buildings were built before 1980, the year the first Washington State Energy Code was adopted. The City building portfolio contains a large diversity of facility age, physical characteristics and specialized functions that is somewhat unique to local governments. In light of this, a policy addressing these older buildings was necessary to achieve the deep reductions outlined in the City's reduction goal.

While City building energy use decreased from 2008 to 2012, continuing that trend will not be sufficient to meet the City's 20% reduction goal. Further, the energy reductions came during a time of reduced staffing citywide and reduced hours at community facilities. To address the gap between the existing efforts and the improvements needed to meet the 20% goal, the City adopted a Citywide RCMP in 2013 and created a dedicated position, Citywide Resource Conservation Advisor, to implement the plan. The RCMP lays out a three-part strategy for achieving the 20% energy efficiency goal:

- Measure & track energy performance (M&T) to assess savings opportunities, prioritize investments, and demonstrate results.
- Improve operations & maintenance (O&M) in City facilities to maximize their energy efficiency potential.
- Make Capital investments in energy efficiency projects (EEP) that achieve significant savings.

The City has been conducting energy benchmarking on City facilities since 2011. While Seattle mandates that all owners benchmark buildings 20,000 sq. ft. and greater, the City goes beyond these minimum requirements, benchmarking buildings down to 10,000 sq. ft. as well as all public service facilities – community centers, libraries, fire stations and police stations – regardless of size, covering over 80% of total square footage. In addition, the City voluntarily publicly reports municipal energy use data each year.

In addition to going above the benchmarking requirements, the City sought to assess opportunities for improvement. The City has conducted energy billing signature analysis of fire stations, branch libraries and community centers, building characteristics audits of 70 facilities (over 2.5 million square feet) to identify O&M and capital investment opportunities, and in-depth energy audits of potential capital energy efficiency projects at seventeen buildings. These actions informed a scope of work for energy efficiency improvements including anticipated costs and projected energy savings.

O&M improvements were undertaken at branch libraries and at a number of operations support facilities. At the branch libraries, operational and mechanical control improvements led to an aggregate energy use reduction of 8.2% (weather normalized) from 2012 to 2014. At the support facilities, savings were 8.9% (weather normalized) from 2013 to 2014.

Based on the building assessments mentioned above, the City funded a package of energy efficiency improvements at sixteen facilities in the 2015-2016 budget and work is underway on these projects. Combined, these projects are expected to reduce the City's total building energy use by 2.6% and annual utility costs by \$260,000, with an expected pay back of 5-6 years.

There has been an approximate 4.5% cumulative reduction in the energy use of City-owned buildings from 2008 to 2014 from current projects, and additional savings are expected from activities underway. City buildings benchmarked in Portfolio Manager, 80% of the portfolio, show no change (weather normalized) in energy use between 2013 and 2014 across all city buildings. While 70% of buildings actually made energy use reductions, the 30% that did not offset the gains made. This is partially due to the fact the City added 559 staff in 2014, which contributed to the rising energy use in 30% of buildings.

The City remains committed to meeting the 20% energy reduction goal by 2020 and continues to identify and pursue projects, policy updates, and programmatic efforts to help achieve this goal. The City's progress to date reflects a broad range of actions a City can take to save energy, and the challenges common in managing a large portfolio of buildings.

Co-benefits for the Community

The City believes that by taking a leadership role to improve the performance of our own facilities, it can encourage the private market to act. This action will reduce energy bills for local business, spurring growth and employ contractors who work on energy efficiency improvements. Additionally, saving energy creates a multitude of community benefits including health- and environment-related benefits from reducing fossil fuel use, and lowering energy bills. The investments made today will have benefits beyond carbon reductions and will influence future options for businesses and residents to make choices that reduce carbon emission in Seattle.

Ongoing challenges and lessons learned

As is common in the management of large portfolios of buildings, the City has identified several challenges to achieving the vision, including:

- Generally, individual capital departments manage and maintain their own facilities, which makes centralized coordination, building energy benchmarking, and ongoing tracking challenging.
- Only two of the seven capital departments have staff dedicated specifically to Resource Conservation Management, limiting the capacity of departments to engage in the overall effort.
- Funding to continue the effort is not guaranteed and must be requested as part of the next two budget biennium cycles.

The City has also identified some key lessons learned which are informing ongoing efforts to:

- Considering energy efficiency in City asset management planning is important for meeting City goals.
- Improved performance in several City buildings can be directly attributed to the improvements made to O&M or capital upgrades, validating the efforts made.
- Comparing buildings to their peers by publicly releasing the Energy Benchmarking scores of municipal buildings helped direct departmental attention to improving the efficiency of their lowest performers.

Resources/Learning More

1. <http://www.seattle.gov/environment/buildings-and-energy/city-facilities/resource-conservation-management>

Contacts

Wes Hoppler, Citywide Resource Conservation Advisor, wes.hoppler@seattle.gov
Sandra Mallory, Sustainable Building Program Manager, sandra.mallory@seattle.gov

Authors

Sandra Mallory, Seattle Office of Sustainability & Environment
Christie Baumel, Seattle Office of Sustainability & Environment

Project Impact

- Goal: 20% energy reduction by 2020
- Progress to date: 4.5% energy reduction by 2014.

Project Costs and Funding

8% of the energy savings are anticipated through the ongoing actions and the existing budgets of Capital Departments. The remaining 12% are covered under funding specific to the RCM program.

\$3.2 million is allocated in the 2015-2016, from Seattle's Real Estate Excise Tax, to cover building improvements and analysis for future projects. \$700K is anticipated in utility rebates toward these projects.

To remain on track, an additional \$7 million investment in energy efficiency improvements will be needed through 2020. This cost incorporates anticipated utility rebates of approximately 25%.

Project Facts

Project Duration

2011 - 2020

Project Cost

See below

Project Staff Required

Citywide Resource Conservation Advisor
+ Resource Conservation Management
and facility staff in each Capital
Department

Population Served

City of Seattle

Community Type

Urban

Partners

City Capital Departments

Tools & Resources

Seattle Municipal Buildings Energy
Performance Reports: 2011-2012,
2012-2013 7 2013-2014.