City of Seattle

Resource Conservation Management Plan

Energy Efficiency

20% by 2020

Prepared by

SEATTLE OFFICE OF
Sustainability & Environment

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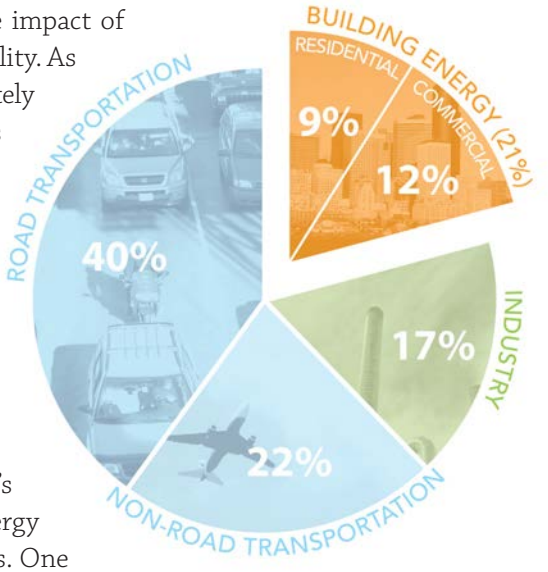
Introduction

The City of Seattle has set an ambitious target to be a carbon neutral community by 2050. Since building energy use accounts for 21%[1] of Seattle's total carbon footprint and most of the buildings that will shape the City in 2050 have already been built, reducing the impact of existing buildings is important to achieve carbon neutrality. As an owner of more than 650 buildings, totaling approximately 10 million square feet, the City of Seattle recognizes its own impact and leadership role. As such, in 2011, Mayor McGinn announced a goal to achieve 20% energy savings in municipal buildings by 2020. This Resource Conservation Management Plan (RCMP) outlines the actions necessary to meet the 20% energy efficiency goal by 2020 (from a 2008 baseline) for existing buildings.



Resource conservation is not new to the City. Capital departments, those who own and/or manage the City's buildings, have made significant investments in the energy and water efficiency of their facilities over the past years. One of the key findings from the Seattle Municipal Buildings 2011–2012 Energy Performance Report[2] is that where the City has made investments in energy efficiency, we see better performing buildings with correspondingly lowered utility costs. Due to these departmental energy efficiency efforts, however, many of the shorter payback projects, such as lighting, have already been implemented leaving a need for deeper efficiency investments. Nor are improvements consistent across the City's full building portfolio. The Energy Performance Report highlights that while many buildings are performing well, there is still significant opportunity for improvement in others.

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1 2008 Seattle Community GHG Inventory

2 A detailed analysis of the performance of the City's buildings, The Seattle Municipal Buildings 2011–2012 Energy Performance Report, was published in May 2013 and is available on OSE's website at: www.seattle.gov/environment/green_govt.htm

To address the gap between existing efforts and the work needed to reach the 20% energy reduction goal, in 2012, the Mayor's Office directed the Office of Sustainability and Environment (OSE) to establish a Citywide Resource Conservation Management Initiative to centralize resource use monitoring and to work with capital departments to build on their existing efforts to improve the efficiency of City facility operations. This first phase will focus on energy use, and over the next several years, the initiative will also review all aspects of resource use in City buildings, including energy, water, waste, and stormwater.

The 20% savings goal requires a coordinated citywide effort to address all facets of energy use. The City has never before developed a comprehensive strategy to guide energy efficiency and resource conservation investments across all departments and facilities. Integrated resource conservation can efficiently 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.

A 20% energy savings across the City's building portfolio is both attainable and cost-effective. An OSE commissioned study of the portfolio's conservation potential completed in December 2012 estimated the cost of reducing annual energy use 20% to be about half of the cost of purchasing energy to meet those needs over the life of the efficiency measures. A 20% energy use reduction by 2020 (compared to 2008) would also result in utility cost savings of roughly $2.75 million per year after reaching the 20% reduction goal. Incremental savings would be realized each year, dependant on the improvements completed to date.[3]

Reducing the energy use of existing facilities is expected to save money over time by reducing utility expenses, but the benefits are much broader than financial. The City's goal to achieve a carbon neutral community by 2050 speaks to the value of both fiscal and environmental stewardship. As such, the plan takes a long view towards payback—beyond a simple return on investment within 5–7 years—by considering how actions today will help us to steward resources 20 to 30 years from now. This plan is therefore a means to reduce City facility operating costs and operate City facilities in a manner consistent with community values.

3 *Ecotope, prepared for Seattle Office of Sustainability, Preliminary Energy Conservation Analysis for City of Seattle Buildings, December 2012.*

The recommendations in this Resource Conservation Management Plan (RCMP) cover the full range of activities for effective resource conservation, from capacity building to physical improvements. It builds on the foundation already established by capital departments while acknowledging that greater staff capacity and investment will be necessary. It recognizes that although all of the fundamental building blocks of a comprehensive plan are not yet in place, current progress towards conserving resources is needed. Accordingly, a major thrust of this plan is to create effective systems and tracking resources in the near term, while also identifying and preparing for important future physical improvements.

The RCMP lays out a three-part strategy for achieving the 20% energy efficiency goal:

- Measurement & tracking of energy performance (M&T) to assess savings opportunities, prioritize investments, and demonstrate results.
- Improved operations & maintenance (O&M) to capture savings by ensuring City facilities are operated to maximize their energy efficiency potential.
- Capital investment in energy efficiency projects (EEP) that achieve significant resource savings.

The Resource Conservation Plan assumes a multi-faceted, multi-year approach, with incremental savings each year. It will evolve over time, as improvements are made and as more accurate data becomes available. This plan lays out recommendations for actions in the near term, with the understanding that progress and direction will need to be re-evaluated before committing to longer term actions. For 2013–2014, the RCMP focuses on achieving energy savings through expanded measurement and tracking coupled with implementation of operations and maintenance improvements, while also conducting analyses to identify additional O&M strategies and high impact EEP investments. The EEP strategies identified would become part of a package for capital investment in 2015–2016. Continued assessments of buildings will set the stage for additional energy efficiency improvements in subsequent years. Attachment A summarizes the RCMP's three part strategy. Attachment B summarizes the actions in this plan.

Background

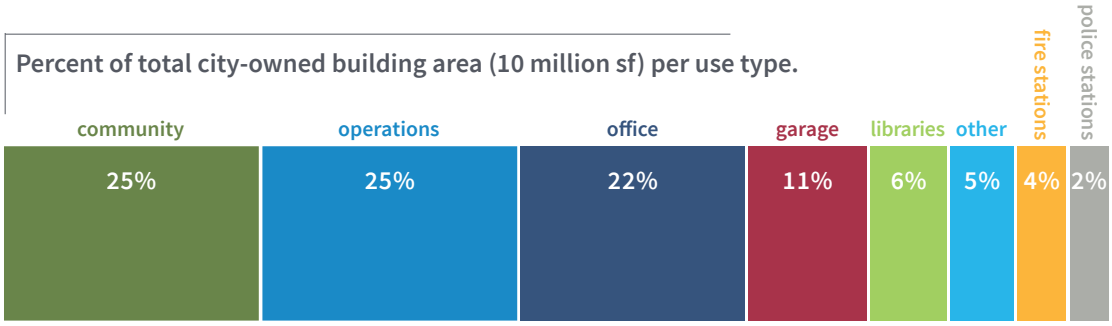
The City's Municipal Building Stock

While the energy efficiency of buildings of all vintages can typically be improved, much of the City's building stock was constructed before increased attention to energy efficient design. Of the 650 municipally-owned buildings, only 32[4]—those built after the City's 2000 Sustainable Buildings Policy—were constructed to green building standards[5]. 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 also contains a large diversity of facility age, physical characteristics and specialized functions that is somewhat unique to local governments. City-owned buildings range from small storage sheds, to libraries, to the Seattle Municipal Tower, an office building of more than one million square feet. Offices, community facilities (e.g. performance halls and community centers), and operations support buildings make up the majority of the square footage. Libraries, police stations, and fire stations are numerous but each building is relatively small, so they account for a smaller percentage of the total building area.

4 As of September 30, 2013.

5 New construction is covered under the 2011 City's Sustainable Buildings & Sites Policy. Visit www.seattle.gov/dpd/GreenBuilding/CapitalProjects for more information.



Building Energy Performance

Preliminary information acquired from energy benchmarking, the City operations greenhouse gas (GHG) inventory and departmental energy tracking indicates that overall energy consumption, calculated as total energy use across the City's building portfolio, has declined approximately 1% per year since 2008.[6] In 2012 this savings was about 34 million kBtu/year, representing an annual utility cost reduction of approximately $500,000. The savings reflect departmental efforts to reduce energy use and the investments made in energy and water efficiency at City facilities—which have resulted in corresponding utility cost savings.

If this 1% annual reduction trend continued through 2020, without any additional efforts, an approximate 11% energy savings could be achieved, which is just half of the City's 20% reduction goal. Without a dedicated focus on energy efficiency the trend could also flat line or additional demands (such as data centers or increases in plug loads) could negate savings. Furthermore, the 1% savings realized from 2008–2011 does not account for the impact of the economic downturn—reduced facility hours and building occupancy resulting from layoffs that likely reduced energy use. In fact, preliminary information for the City's 2012 energy benchmarking suggests smaller savings than in previous years[7].

6 Total annual consumption for all City buildings (including pumping stations, transfer stations and sub-stations) was taken from the corporate GHG Inventories (2008–2011). A rudimentary weather normalization was performed at the annual level. For 2012, results from the benchmarking of City buildings, weather normalized through Portfolio Manager, was used to estimate reductions between 2011 and 2012. All of this was combined to arrive at an estimated reduction of 4% from a 2008 baseline through year-end 2012.

7 Based on 81 of the City's benchmarked buildings for which weather normalized energy consumption data was available for both 2011 and 2012, energy consumption increased by 1.4% year-to-year on a kBtu per square foot basis. These buildings account for 5.5 million square feet and represent about half of the total square footage of the City's building portfolio.

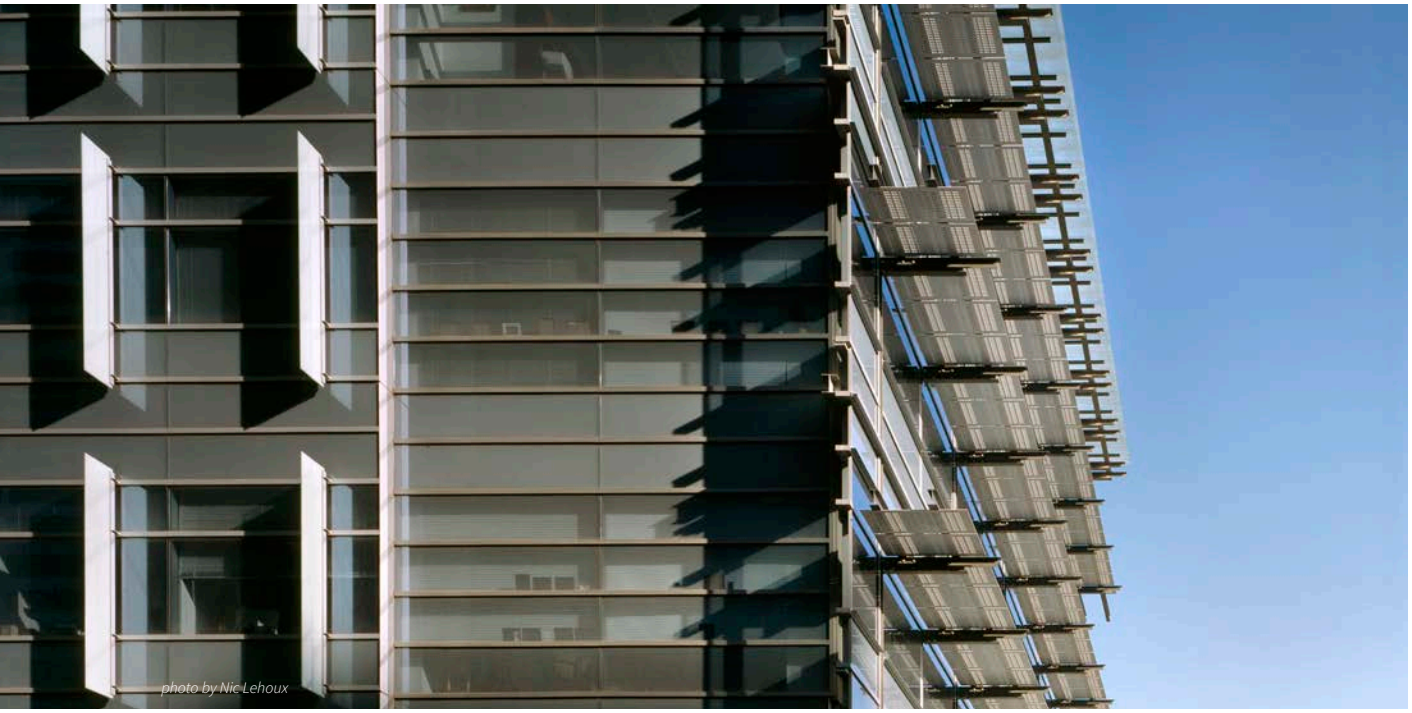


photo by Nic Lehoux

Accomplishments to Date

Capital departments have been working for a number of years to improve the operations and efficiency of their facilities. Beginning in 2011, Seattle Center, Parks, and Finance and Administrative Facilities (FAS) began participating in the Citywide Municipal Retrofit program. Under this program, significant upgrades at 16 facilities have been completed, worth $3.27 million, which provided leverage for the Community Power Works grant.

FAS has undertaken many efficiency projects—most notably its work resulted in the Seattle Municipal Tower using about 40% less energy than a typical office building of its size. Parks has led an aggressive campaign to manage water usage and cost, and implement energy efficiency upgrades at pools and community centers. The Seattle Center recently upgraded its campus cooling system, which is expected to cut electric use by 13%. Seattle Public Libraries' ongoing program has effectively reduced resource use at the Central and branch libraries. In 2012, the libraries used 42% less energy on average than other US libraries. Improvements at Seattle Public Utilities' (SPU) Operations Control Center buildings helped reduce the facility's energy use intensity (EUI) from 140 kBtu/sf in 2011 to 104 kBtu/sf in 2012. Similarly, Seattle City Light (SCL) has made energy efficiency improvements at its South Service Center and Newhalem campus. Overall, conservation efforts have saved the City $1.25 million since 2008.

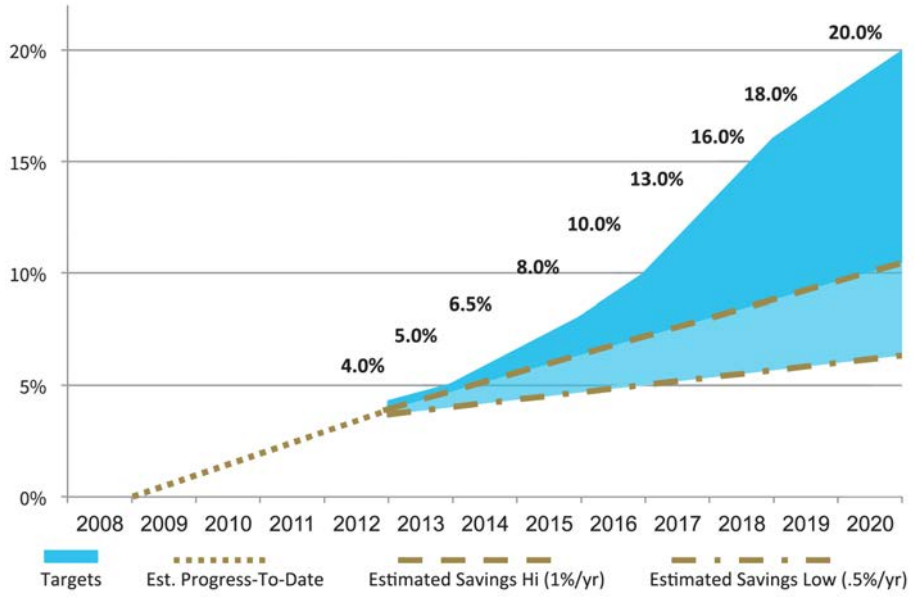
The Citywide Resource Conservation Advisor position added in 2012 has allowed the City to leverage the work already underway by capital departments and develop a centralized approach. Past year accomplishments include:

- Coordinated energy performance benchmarking of City-owned facilities and publically disclosed results in the Seattle Municipal Buildings 2011–2012 Energy Performance Report.
- Used monthly utility consumption to create energy signature analyses of fire stations and branch libraries to identify potential operational savings opportunities.
- Conducted building and energy characteristic analyses on thirty community centers, fire stations, branch libraries and operations support facilities and provided recommendations for no and low-cost O&M improvements, and identified more extensive EEPs.
- Established a RCMP Technical Advisory Group with facilities staff from capital departments, and SCL and SPU conservation staff.

These accomplishments have been critical to gain a better understanding of our existing building stock and how it is performing, and to identify energy efficiency opportunities. Combined with additional building analyses in 2013, the City is well positioned to begin implementing incremental changes in 2014, which will in turn help the City to realize greater energy and cost savings.

20% by 2020
ENERGY CONSERVATION PLAN

This RCMP addresses the gap between the estimated annual savings seen to date and the Mayor's 20% goal, as well as the need to offset any increases in energy loads. This, combined with the 3–4% that may already have been achieved, would result in a net 20% reduction. The overall reduction will need to be achieved incrementally. Projected cumulative reduction targets, resulting from the RCMP implementation, are shown below and compared to a yearly reduction of between 0.5–1% annually from the ongoing efforts of capital departments.



Annual Cumulative Energy Use Reduction Targets Compared to Baseline

Scope & Methodology

The 20% energy reduction by 2020 goal covers all of the energy sources used in City-owned buildings, including electricity, natural gas, steam, district chilled water, and district hot water. The plan will primarily focus on City-owned and occupied buildings, which covers over 90% of the City's building stock, with a lesser emphasis on buildings or spaces the City owns and leases to others, or leased space the City occupies. Buildings with process load dominated energy uses, such as pumping stations, will not be tracked as part of the building portfolio index. Managing departments of these buildings, however, are encouraged to use elements of this plan, such as resource accounting, to monitor and manage energy usage.

Progress towards the overall 20% by 2020 goal will be measured on a portfolio wide basis, against a 2008 baseline. The 2008 baseline is consistent with the 2009 Green Building Task Force recommendations and with the baseline for the community wide Climate Action Plan. Whereas the preliminary 1% yearly reduction estimate is based only on gross energy use, determination of the final baseline measurement and tracking going forward will be normalized for both weather and square footage. Energy consumption will be measured on a site[8] Energy Use Intensity (EUI) weather normalized basis. Lower EUI values indicate better performing buildings.

An EUI is determined by taking the total energy consumed in one year (measured in kBtu) and dividing it by the total floor space of the building, or group of buildings (in square feet), resulting in a kBtu/ft2 metric. An EUI is a valuable metric because it provides a means to measure performance and not just gross energy use. EUI normalizes for the size of the building stock, so that additions to the portfolio (a new community center, for instance) won't penalize the overall reduction goal, as long as additions are efficient.

A key component of the measurement and tracking activities in this plan will be to establish the energy use baseline against which savings will be measured. Current information relies heavily on the 2008 GHG inventory which includes facilities with process loads, such as pump stations, and differing means of counting building areas. To calculate the baseline, weather normalized 2008 energy use for each building, or the most recent year for which data is available for a given facility, will be used along with upgraded square footage calculations. The year over year EUI of the portfolio can then be tracked against the final 2008 baseline. Once the citywide weather normalized baseline has been established, and as progress is evaluated each year, adjustments to initial targets may be needed.

8 *Site EUI represents the amount of heat and electricity consumed on site by buildings; the same amount reflected in utility bills.*

Approach

This RCMP provides a guide to strategies and actions that will help the City progress towards the 20% energy reduction goal. The plan's recommendations cover the full range of effective resource conservation program activities, from capacity building to physical improvements. It recognizes that although all of the fundamental building blocks of a comprehensive plan are not yet in place, progress towards conserving resources is needed. As we gain better information on building performance and the effectiveness of improvements, the plan will be adapted to reflect changing needs. Accordingly, this plan aims to create effective systems and tracking resources in the near term, while also identifying and preparing for future physical improvements.

Plan components include:

1. Organizational Capacity: A coordinated citywide effort.
2. Measurement and Tracking (including continuous monitoring): Effective management of City building energy consumption.
3. Operations & Maintenance / Asset Management: Ensure that buildings are performing optimally.
4. Capital Investments in Energy Efficiency Projects: Implement energy efficiency measures required to meet goal.

1. ORGANIZATIONAL CAPACITY

With the exception of FAS, which manages facilities occupied by other departments, individual City departments are responsible for managing and maintaining their own facilities. Within these capital departments, FAS, Parks, Seattle Center and the Seattle Libraries have some centralized facility management, while Department of Transportation (SDOT), SPU and SCL have distributed management, associated with specific lines of business. Individual departments address resource conservation at a variety of levels ranging from resource accounting, to specific conservation projects, to formalized Resource Conservation Management (RCM) initiatives. Only two departments – FAS and Parks – have staff dedicated specifically to Resource Conservation Management.

Successful implementation of the plan relies on both centralized coordination and continued involvement of knowledgeable departmental facilities staff. The Technical Advisory Group that helped develop the RCMP will be a critical asset for implementation. Additional interdepartmental teams will be formed as needed to cover specific issues such as building data management, plug load management and financing.

2. MEASUREMENT AND TRACKING

Comprehensive resource accounting across all departments is critical as a baseline for ongoing tracking to understand what we have, how we are doing, and where we need to go next. While some capital departments already utilize resource accounting systems, in others, only accounting personnel see the utility bills. Resource tracking systems that make energy use data more centralized and accessible will provide an accurate means to assess progress towards the 20% reduction goal, help identify resource-saving opportunities, facilitate timely identification and resolution of operating issues, and allow performance tracking of building-specific energy efficiency projects. Additionally, resource accounting will improve the accuracy of the Corporate Greenhouse Gas Inventory and streamline annual reporting.

The EUI of each building will be used to assess whether efficiency improvements result in annual savings in subsequent years. While EUI is useful for tracking performance and understanding trends, it doesn't account for any changes of use, such as staffing levels, frequency of events, or changes in hours of operation. Therefore a deeper understanding of building performance may require additional metrics about changes in use.

3. OPERATIONS & MAINTENANCE / ASSET MANAGEMENT

Operations and maintenance (O&M) improvements and asset management practices require the least in up-front capital costs and will form a significant portion of the work needed to meet the energy reduction goal. O&M efforts such as optimizing lighting controls, adjusting temperature set points and shutting off systems after hours can all reduce consumption. To maximize O&M improvements and minimize lost opportunities, guidelines covering operational best practices and upgrade-at-replacement measures will be created. Utility bill analysis and building energy assessments completed in 2013 identified low- and no-cost O&M improvements that will be implemented in several buildings in 2014. Additional building assessments will identify further opportunities.

4. CAPITAL INVESTMENTS

There is a limit as to how well O&M staff can make an intrinsically inefficient building perform. Meeting the energy conservation goal will require up-front investment in the City's building stock to realize utility cost savings over time.

Capital investments for energy efficiency projects cover a range of project types:

- **Investments in building function** Energy efficiency strategies with broader scopes (e.g., retro-commissioning or plug load management) or that require capital investments beyond typical O&M activities and budgets.
- **Incremental Capital Investments** Incremental energy efficiency investments as part of planned asset preservation and/or capital projects (e.g., upgrade a boiler scheduled for replacement to a more efficient option or install additional insulation in conjunction with a seismic upgrade).
- **Large Capital Investments** Building energy projects that achieve significant resource savings (e.g., the 2010 Lighting Upgrade Project in the Seattle Municipal Tower or the comprehensive renovation of the Southwest Community Center and Pool mechanical, lighting, and control systems).

This plan's goal supports the larger environmental goals of the City. To meet climate goals, the City will need to reconsider investment criteria and reasonable payback periods. For example, to meet the long-term goal of carbon neutrality by 2050, measures with a longer than traditional payback, but which provide important efficiency savings and are cost-effective over the life of the measure, may well be considered valuable investments.

Energy tracking and building analyses conducted in 2013–2014 will be used to identify and prioritize energy efficiency opportunities and to develop a comprehensive capital investment package in 2015–2016. Multiple facilities, lower and higher cost measures, and differing paybacks can be grouped together to create a viable package that is cost-effective over time and provides the best energy efficiency return. Projects will be prioritized on the basis of: their fit with other facets of asset management and operations; concurrence with City environmental, leadership and community goals; and cost-effectiveness.

An important part of plan implementation will be determining an appropriate funding approach for the energy efficiency capital investment package that supplements efficiency efforts already underway by individual departments. Known funding mechanisms are presented in Appendix C. Multiple funding mechanisms may be needed to align with the varied nature of projects and financial requirements. A working group will be established to investigate and recommend a financing mechanism(s). Additionally, a standard cost-effectiveness framework will be needed to screen projects for financing. Utility incentives and other sourced grants and credits should also be actively pursued to aid funding these investments.

Recommendations

The recommendations below lay out a range of near-term activities that will help move the City towards achieving the 20% energy reduction goal by 2020. A number of these activities are already underway, and funding is included in the proposed 2014 budget to maintain this work and to begin work on additional activities. Priority actions for 2014 include centralized resource accounting, O&M improvements, and the analysis and prioritization necessary to develop a package of energy efficiency projects for capital investment in 2015–2016.

1. Organizational Capacity

Maintain a centralized resource conservation management program in coordination with capital departments (ongoing). The Citywide Resource Conservation Advisor, based in OSE, will coordinate across departments, create and maintain centralized resource tracking, develop operational guidelines, manage processes for ongoing assessment, project prioritization and building audits, identify appropriate budgeting mechanisms and financing opportunities, and provide technical assistance to department staff. A Technical Advisory Group consisting of the Resource Conservation Advisors, facilities staff, and SCL & SPU conservation staff, helped guide development of the RCMP and will guide implementation.

Ensure adequate staffing and resources for resource conservation management within each capital department. Capacity at the individual department level is needed to track performance, meet annual benchmarking requirements, assist in identifying energy saving opportunities and implement energy efficiency projects.

2014 Designate staff responsible for benchmarking, and for coordinating with OSE on centralized resource tracking and on individual building assessments.

2015 Designate staff charged with monitoring and managing resource use (energy and water), and provide adequate staff and/or contracting resources necessary to implement and maintain energy efficiency improvements.

Improve citywide awareness of, and commitment to, resource conservation (2015–2016). An effective plan relies on a strong leadership commitment, and the awareness and engagement of facilities staff, general City employees and other building occupants. Training needs for facilities staff, employee involvement, and communication and accountability strategies at the department and Citywide level will be reviewed and recommendations made to further leverage resource conservation efforts.

2. Measurement & Tracking

Benchmark and publicly disclose energy consumption for City buildings (annually). The City has undertaken an important leadership role through the Energy Benchmarking and Disclosure Ordinance, raising public awareness of building energy performance. This role can be further leveraged by going beyond the minimum ordinance requirements to benchmark the majority of the City's building stock and by publically disclosing ongoing City benchmarking efforts. Buildings 20,000 SF or larger, as well as all branch libraries, were benchmarked in 2013 and the results publicly reported; those 10,000 SF or larger, as well as additional select building types, such as fire stations and community centers, will be benchmarked in 2014. Benchmarking and public disclosure will continue annually thereafter.

Implement centralized resource accounting for City-owned buildings to cover electricity, natural gas, steam, and district-supplied energy (2014). Comprehensive resource tracking is fundamental to conservation. Approximately 65% of the City's buildings currently have utility data tracked in a variety of a resource accounting systems. This effort will implement a common accounting system and expand the effort to cover nearly the entire City portfolio.

Establish a baseline EUI and assess progress towards meeting the goal (2015 and annually). Establish portfolio-wide energy use intensity (EUI) baseline, utilizing 2008 building specific energy use, or the most recent year for which accurate data exists for each building. The weather normalized aggregate portfolio-wide percent improvement over the 2008 baseline will be calculated annually.

Implement an improved process to update basic City-owned building data (2013–ongoing). Currently, building information, such as ownership, location, use, age and size, is primarily maintained by each department, with a few central datasets existing for particular purposes (e.g., risk and claims). OSE will coordinate with property managing departments and database managers to ensure records are current and improve consistency across datasets. Recent benchmarking efforts and facility energy and characteristic audits, as well as departmental master planning and capital projects, all provide current information useful for updating the City's building stock data.

Improve data management capability for building stock characteristics (2015–2016). More detailed information regarding building physical attributes (e.g., insulation levels) and mechanical systems will provide a better understanding of the building stock and form the basis for more in-depth investigations. After assessing options, a recommendation for an enhanced building characteristics data management system will be developed.

Improve whole-building and high-energy use metering (2015–2016). Measuring energy use at the building level is a minimum requisite to effective resource conservation management. Strategies will include:

- installing individual building metering at master-metered/campus style facilities to better measure energy use at each building,
- improving metering at independent (non-campus) buildings that don't yet have their energy inputs measured, and
- separately-metering significant external loads (e.g. electric vehicle charging) and data centers to accurately reflect building-only energy use.

Pilot the use of interval data in assessing consumption (2014–2015). Benchmarking and energy billing analysis aid in understanding building performance monthly and annually. Interval consumption data (provided every 15 minutes) can be used in larger, more complex buildings to improve performance tracking and identify more opportunities for reducing energy use. The City is evaluating software platforms that enhance interval data usability and will pilot one or more of these systems in 2014.

3. Operations & Maintenance / Asset Management

Implement O&M improvements (2014–2015). Building energy assessments conducted on thirty community centers, fire stations, branch libraries and operations support facilities in 2013 identified low- and no-cost O&M improvements that could reduce energy use. For example, recommendations at some of the branch libraries include changing control settings and adding de-stratification fans to reduce heating and cooling loads. Much of the work can be implemented by facility management staff, with the assistance of consulting technical expertise to optimize energy management systems, and resources to purchase and install energy efficient equipment.

Establish guidelines for resource-efficient operational practices (2015). O&M improvements can pay dividends, ensure that capital investments yield optimal results, and have been found cost-effective over a range of conditions. These guidelines will focus on opportunities that can be recommended as best practices in most buildings, such as, HVAC system controls, scheduling and set points; ventilation loads and proper economizer function; and lighting system controls, sensors and scheduling.

Create guidelines for resource efficiency upgrade-at-replacement measures (2015). Conservation opportunities often have the lowest cost for implementation during equipment replacement or renovation—and this may be the only cost-effective chance to secure the efficiency measure. It is a "lost opportunity" when these situations pass by without implementation; the City's goal is zero lost opportunities.

Develop guidelines for resource efficiency retrofit measures (2015). Many potential conservation retrofit measures and strategies are cost-effective over a range of conditions and will be evaluated and recommended as best practices.

Improve office equipment energy use and reduce plug load (2015–2016). Reducing loads on electrical outlets (plug loads) in offices has been cited as a significant cost-effective opportunity to decrease electric consumption. Simple daily activities like turning off equipment and lights when not in use add up to substantial energy savings. System-level plug load management strategies that could be included with operational upgrades in 2015 will be analyzed. An interdepartmental team will evaluate potential system strategies, and identify and develop recommendations for occupant engagement opportunities.

Assess new utility incentive approaches (2014–2016). In coordination with Seattle City Light, innovative incentive approaches will be investigated that would encourage greater operational improvements and facility upgrades.

4. Capital Investments

ANALYSES & PRIORITIZATION

Conduct energy assessments and develop Facility Action Plans (2013–2014). As part of a Resource Conservation Management (RCM) funding agreement with Puget Sound Energy, the OSE Citywide Resource Conservation Advisor and facility management staff from Seattle Center, SPU, Libraries and SDOT are evaluating total energy use in selected gas heated buildings to identify operational and resource conservation opportunities. Results will be used to develop Facility Action Plans outlining strategies to aid facility managers. Separate RCM agreements between PSE and FAS and between PSE and Parks will result in additional Facility Action Plans for FAS and Parks managed facilities.

Conduct energy billing signature analyses of well-defined building segments (2012–2014). Monthly utility information is used to understand the relative performance of buildings within a building type, to identify potential operational savings opportunities and as a first step towards also identifying worthwhile capital investments. Fire stations and branch library analyses were completed in 2012. Community centers will be evaluated in 2014.

Perform building and energy characteristic assessments (2013–2014). Characteristic assessments document basic physical attributes, mechanical systems and building operations to better understand energy performance and conservation opportunities. Characteristic assessments of thirty buildings, including fire stations, community centers, branch libraries and operations facilities, were completed in 2013. An additional thirty assessments will be conducted in 2014 with buildings chosen on the basis of high EUI and total energy consumption. Results will identify low-cost operational improvements that can be implemented in 2015, as well as energy efficiency investment opportunities for further evaluation.

INVESTMENT PACKAGE

Develop proposals for extensive energy use reductions in priority buildings (2013–Q1/2014). The cost and feasibility of a minimum 20% energy reduction will be evaluated in up to five FAS managed buildings. 4–6 additional in-depth energy improvement assessments will be conducted in non-FAS facilities, with recommendations incorporating both up-front and life cycle costs.

Develop a comprehensive package of energy efficiency projects (Q1/2014). Results from benchmarking, energy signature analyses, characteristic assessments, facility action plans, and in-depth audits will be used to prioritize buildings and energy conservation measures. A cost-effective investment package will then be developed that groups together multiple facilities, lower and higher cost measures, and differing paybacks for implementation in 2015–2016.

FUNDING AND FINANCE

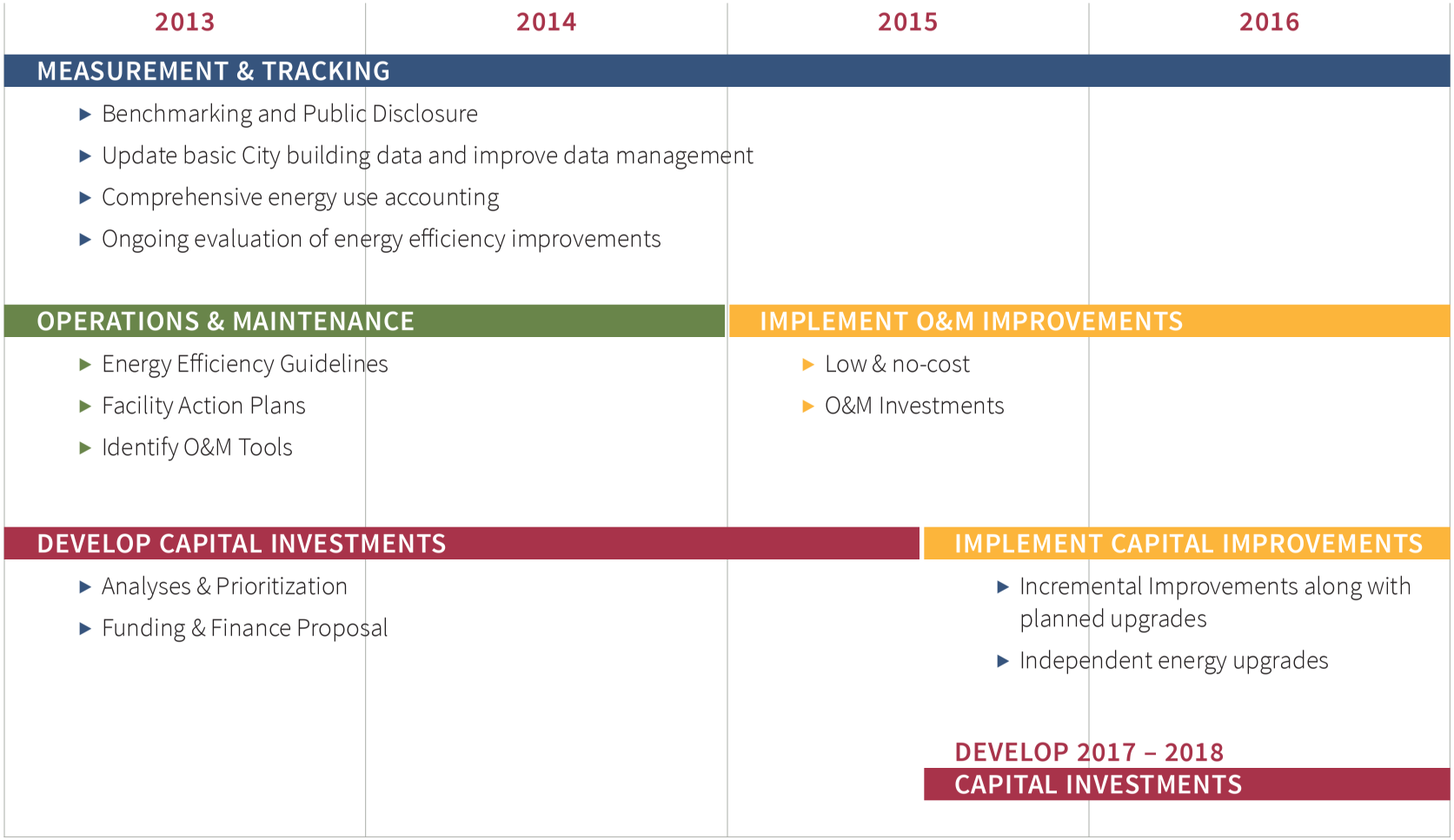
Develop funding proposal for an initial package of energy efficiency projects (Q1-Q3/2014). OSE will work with the City Budget Office and the technical advisory group to assess potential funding mechanisms for implementation of the comprehensive energy efficiency package and to recommend an approach for the 2015–2016 budget cycle.

Develop a standard methodology for determining the cost – effectiveness of resource conservation projects (2014–2015). The City does not have a standard definition or methodology for determining cost-effective conservation within its buildings. Some departments use various values of simple payback (first cost/first year savings), while a more rigorous methodology, Life Cycle Costing, is referenced in other City policies and documents. However, standard values and sources for key drivers are not established. These include discount rate, inflation and utility rate escalations among others. A stakeholder working group will be formed to identify a consensus methodology for determining cost-effectiveness for the purposes of resource conservation.

Evaluate funding approaches that could reward greater energy efficiency efforts by capital departments (2014–2015). A number of factors can create split incentives, for instance managing a building whose utility bills are paid by another City department or utility savings that are re-allocated away from operating budgets. A working group will look at opportunities to reinvest utility savings into facility management and resource conservation work.

Appendix A

RCMP Strategy Overview



Appendix B

Recommended Actions

	Builds on existing work	New Action	Start
ORGANIZATIONAL CAPACITY **Goal: Coordinated citywide effort**			
Maintain a centralized conservation management program	x		2012
Ensure adequate staffing and resources for resource conservation management	x		
Benchmarking, resource tracking and building assessments			2014
Implement and maintain energy efficiency improvements			2015
Improve Citywide awareness of, and commitment to, resource conservation	x		2015
MEASUREMENT & TRACKING **Goal: Effective management of City building energy consumption**			
Benchmark and publicly disclose energy consumption for City buildings	x		
Buildings 20,000 square feet and greater			2013
Buildings 10,000 square feet and greater and select building types			2014
Implement centralized resource accounting for City-owned buildings	x		2014
Establish a baseline EUI and assess progress towards meeting the goal	x		2015
Implement an improved process to update basic City-owned building data	x		2013
Improve data management capability for building stock characteristics	x		2015
Improve whole-building and high energy-use metering		x	2015
Pilot the use of interval data in assessing consumption		x	2014
OPERATIONS & MAINTENANCE / ASSET MANAGEMENT **Goal: Ensure that buildings are performing optimally**			
Implement O&M Improvements	x		2014
Establish citywide guidelines for resource efficient operations practices	x		2015
Create guidelines for resource efficiency upgrade-at-replacement measures		x	2015
Develop guidelines for resource efficiency retrofit measures		x	2015
Improve office equipment energy use and reduce plug load	x		2015
Assess new utility incentive approaches		x	2014
CAPITAL INVESTMENTS **Goal: Implement energy efficiency measures required to meet goal**			
Analysis & Prioritization			
Conduct energy assessments and develop Facility Action Plans	x		2013
Conduct energy billing signature analyses of well-defined building segments	x		2012
Perform building and energy characteristic assessments	x		2013
Investments			
Develop proposal for extensive energy use reductions in priority buildings	x		2014
Develop a comprehensive package of energy efficiency projects		x	2014
Funding & Finance			
Develop funding proposal for an initial package of energy efficiency projects		x	2014
Develop standard methodology for cost–effectiveness of resource conservation projects		x	2014
Evaluate funding approaches to reward greater energy efficiency efforts		x	2014

Appendix C

Potential Funding and Financing Sources

The General Fund is a flexible source that could be used to finance energy efficiency projects or could be combined with other funding sources to bring project paybacks into compliance with financing guidelines. The City of Seattle, however, continues to face budget challenges, even as the economy slowly improves. Thus energy efficiency projects funded through the general fund would need to be evaluated against the offsetting reductions that would likely be required.

Real Estate Excise Tax (REET) Funds are a funding source used primarily for the maintenance and development of City general government capital facilities, which could include energy efficiency projects. Because the REET is levied on real estate transactions, the amount of revenue the City receives from REET in any given year is determined by both the volume and value of transactions, making this a fairly volatile revenue source.

General Obligation Bond (LTGO) bonds could be an appropriate tool for financing energy efficiency capital projects when consistent with the City's debt policies. The term of LTGO bonds should not exceed the useful life of the financed improvements or the payback period, whichever is shorter.

Qualified Energy Conservation Bonds (QECBs) are an alternative to traditional LTGO financing, potentially carrying a much lower net interest cost. The City received authority to issue up to $6.2 million of QECBs. Approved use of QECBs include capital expenditures incurred for purposes of reducing energy consumption in publicly-owned buildings by at least 20 percent. This requirement may be applied to building system(s), an individual building, or group of buildings [Internal Revenue Bulletin 2012-28, July 9, 2012, Notice 2012-44]. Bond issuers must have a binding commitment with a third party to spend at least 10% of the bond proceeds within six months of bond issuance. All bond proceeds must generally be spent within three years or used to redeem bonds at the end of that three-year period. Only 2% of the bond proceeds can be used towards cost of issuance. A challenge of QECBs is that Low QECB volume allocations often do not have sufficient size to appeal to investors. Where appropriate, the City may want to consider a pooled issuance. Davis-Bacon prevailing wage requirements do not apply to issuer employees but do apply to contracts entered into for construction, repair, or alteration. The reason QECBs have a lower net interest cost to the city is because the federal government makes credit payments to reimburse issuers for a share of the interest. However, given federal government sequestration and the continuing fiscal crisis, it is likely that the federal government will withhold at least a share of this reimbursement. In fact, in FY 2012 it withheld 8.7% and for FY 2013, it will withhold 7.2%. As a consequence, there is some uncertainty about the magnitude of the savings over the term of the bonds. Finally, it is probably not practical for the City to issue less than the full $6.2 m allocation of bonds at any given time.

Energy Services Company (ESCO) Funds facilitate energy improvement financing without special government appropriations. The ESCO guarantees that installed energy conservation measures (ECMs) will result in a specified level of cost savings to the customer, which will be sufficient to pay the ESCO and the financing for the project. The ESCO conducts a comprehensive energy audit and identifies improvements that will save energy and reduce utility bills at the facilities. They also design and construct the project and can help arrange financing to pay for it. Building owners can use the guaranteed cost savings to pay for building improvements over the life of the contract. After the contract ends, all additional cost savings accrue to the owner. ESCO's typically act as a facilitator and third party financing from another source must be secured. The challenge to ESCO financing is that the costs to implement the measures can be significantly higher than if the auditing, modeling, and selecting projects were done in house. They also tend to focus exclusively on capital improvements—ESCOs earn a percentage based on the improvement cost, not on the savings generated. The higher implementation costs delay the City recouping energy savings.

EPACT (Energy Policy Act of 2005) The Internal Revenue Service allows a property owner, designer, or installer of energy efficient solutions to claim a federal tax deduction as an energy efficiency incentive under IRS code section 179-D. According to the code, the entity primarily responsible for designing the energy efficient aspects of government buildings may be able to take the federal property tax deduction on behalf of the public agency. This tax deduction is passed to the designer as the government agency does not pay tax and therefore would not get the benefit for the deduction. A portion (up to 75%) of the net-economic benefit of the federal tax deduction is then deducted from the total cost of the energy and infrastructure improvement project, providing an additional alternative funding mechanism to help accomplish needed energy and infrastructure improvements and provide for more efficient and sustainable operations.

Utility Rebates from energy efficiency projects can be applied to future energy retrofit projects. Seattle City Light rebates up to 70% for electricity conservation measures. Puget Sound Energy provides similar rebates for conservation projects, although the incentives for projects targeting natural gas consumption have dropped sharply in response to changing market conditions and lowered avoided costs.

Federal and State Grant Funding There are no known sources of federal grant funding at this time, but Seattle's leadership in the Better Building Challenge could position the City for future grant allocations as they become available. The State of Washington Department of Commerce has an Energy Efficiency Grant program for higher education and government entities.

Property Tax Levy Energy efficiency projects could be funded by capital levies, like the Parks, Fire Station or Library levies, and also could be the focus of a future levy proposal.

On-Bill Financing may become more widely available in the future for City projects. This provides a direct way for project savings to pay for the project.