


City of Edmonds
Municipal Energy Plan

Executive Summary

Cascadia Consulting Group

December, 2011

Project Overview

Purpose

- ✓ Document energy use, efficiencies, and accomplishments
- ✓ Recommend energy efficiency actions and initiatives

Approach

- ✓ Compiled baseline energy use data
- ✓ Audited selected facilities
- ✓ Extensive staff Interviews
- ✓ Researched best practices and record of success
- ✓ Identified and evaluated opportunities
- ✓ Conducted qualitative and quantitative assessment to develop recommendations

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Categorizing the City's Energy Use





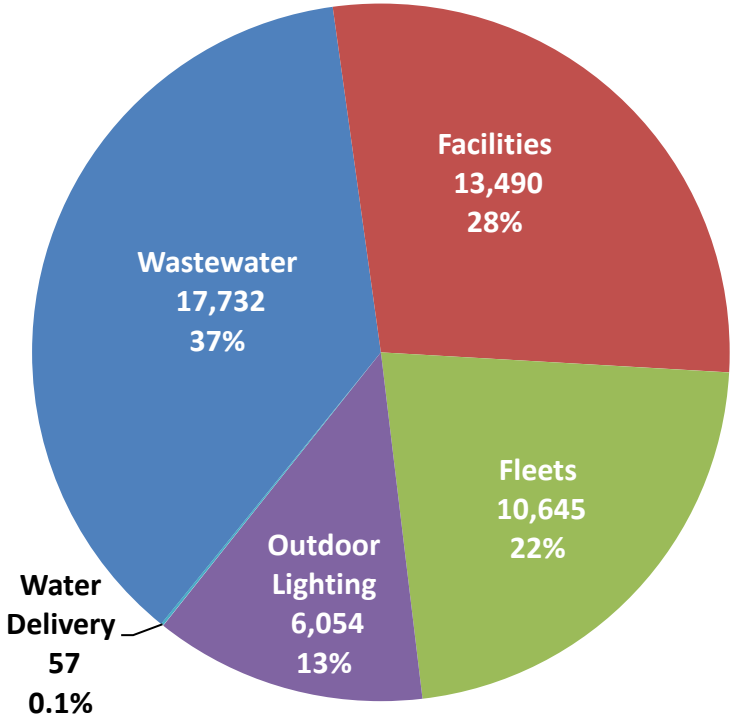
Facilities	Electricity and natural gas for lighting, heating/cooling, plug load (computers, etc.), other stationary equipment
Fleets	Gasoline and diesel for police fleet, other city vehicles, and small and heavy equipment
Outdoor Lighting	Electricity for traffic signals and street lighting
Water Delivery	Electricity for pump stations
Wastewater	Electricity, natural gas, and diesel for treatment plant

Overall Government Operations

2010 Energy Use & Expenditures

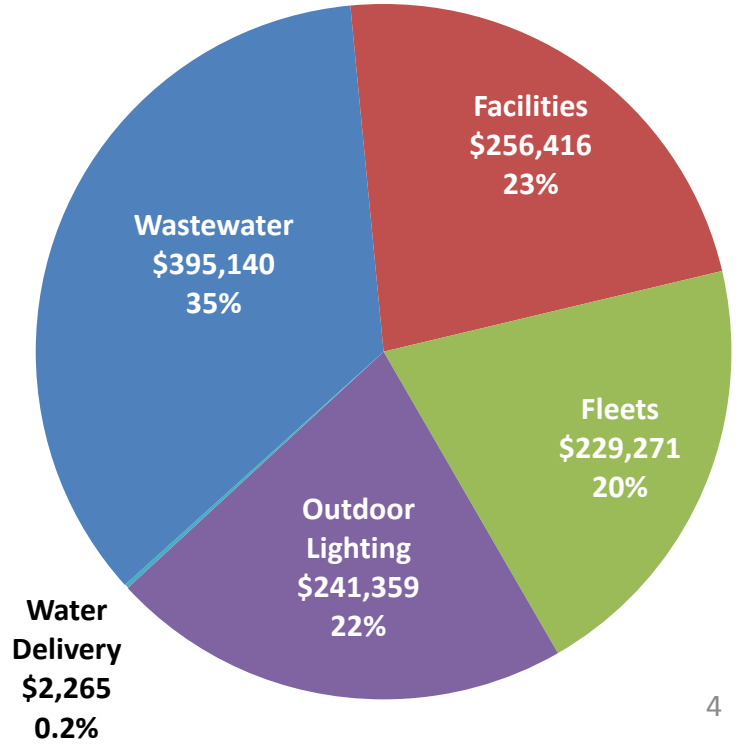
2010 Energy Use by Sector (MMBTU)

Total: 47,929 MMBTU

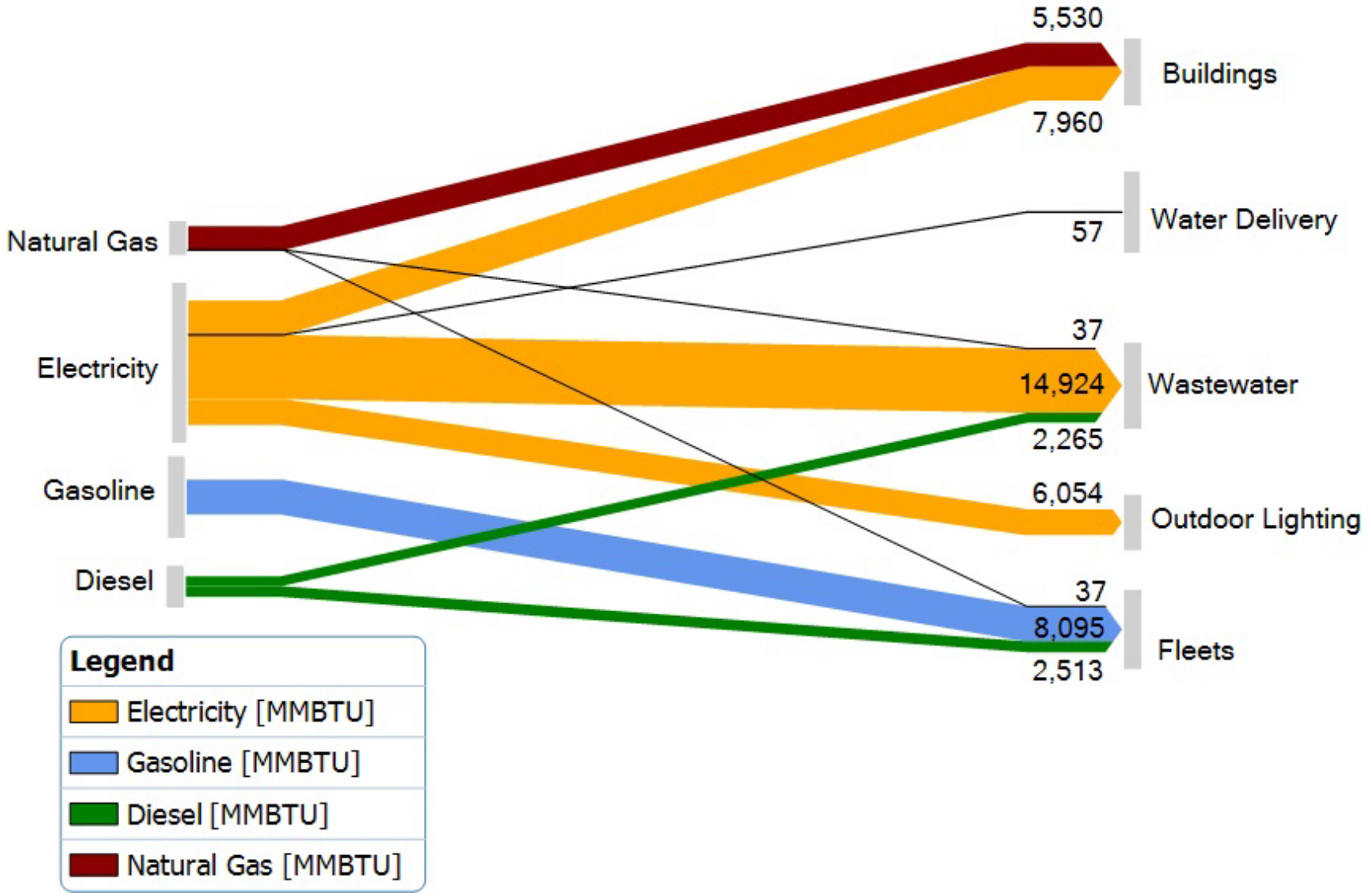


2010 Energy Cost by Sector ($)

Total: $1,124,451



Key Findings: *2010 Energy Use*



Accomplishments

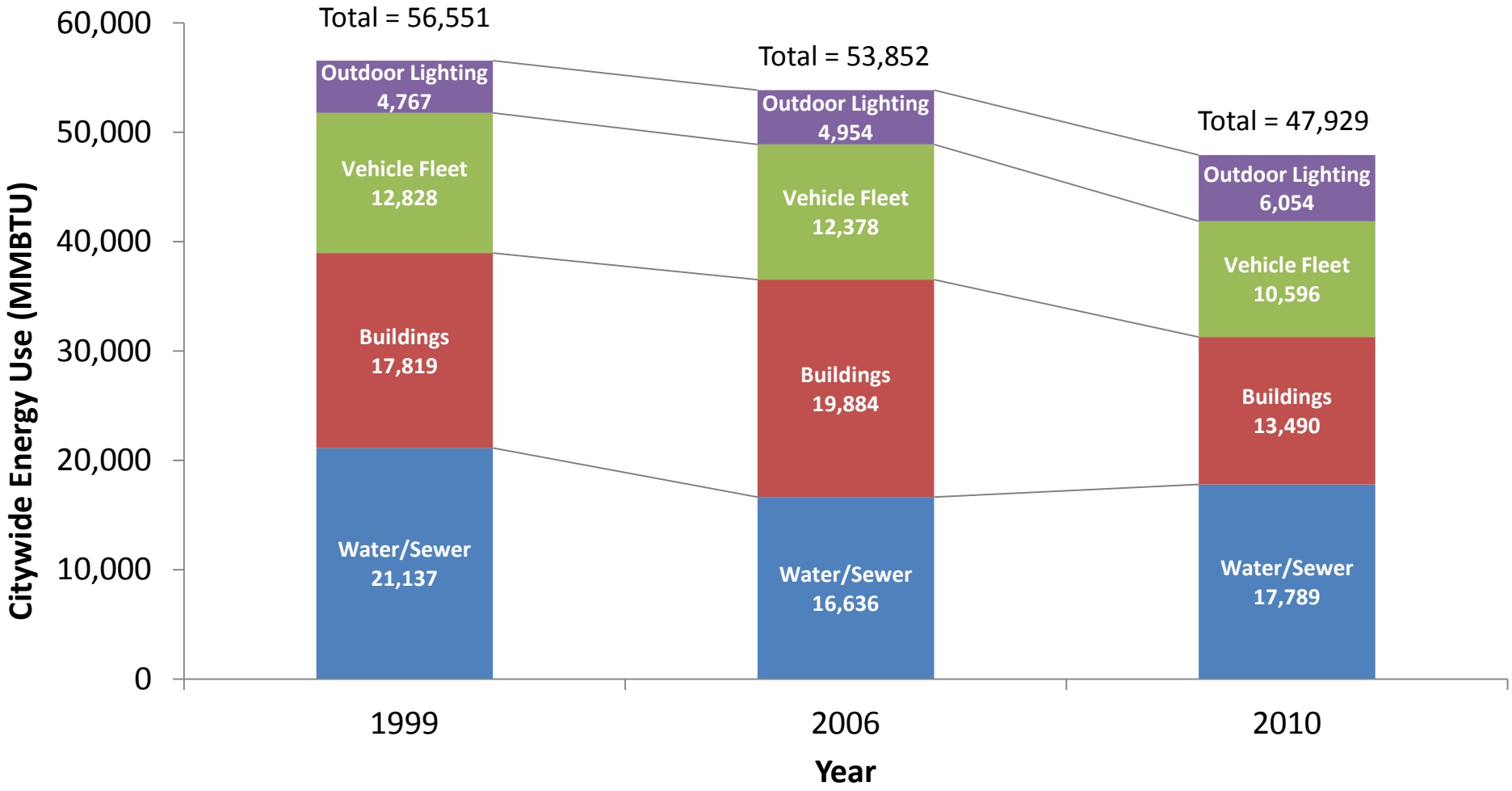
Edmonds City Government has taken important steps to reduce its energy consumption

- ✓ **Reduction in energy use by 15%** from 1999 to 2010
- ✓ Since 2006, Edmonds has realized over **$400,000 in reduced municipal government energy costs**, equivalent to a 6% reduction over that time frame
- ✓ **Invested $1.8 million in upgrades** that will reduce city expenditures by $100,000 annually*

*$0.3 million of the $1.8 million invested were supported by utility incentives.

Overall Government Operations

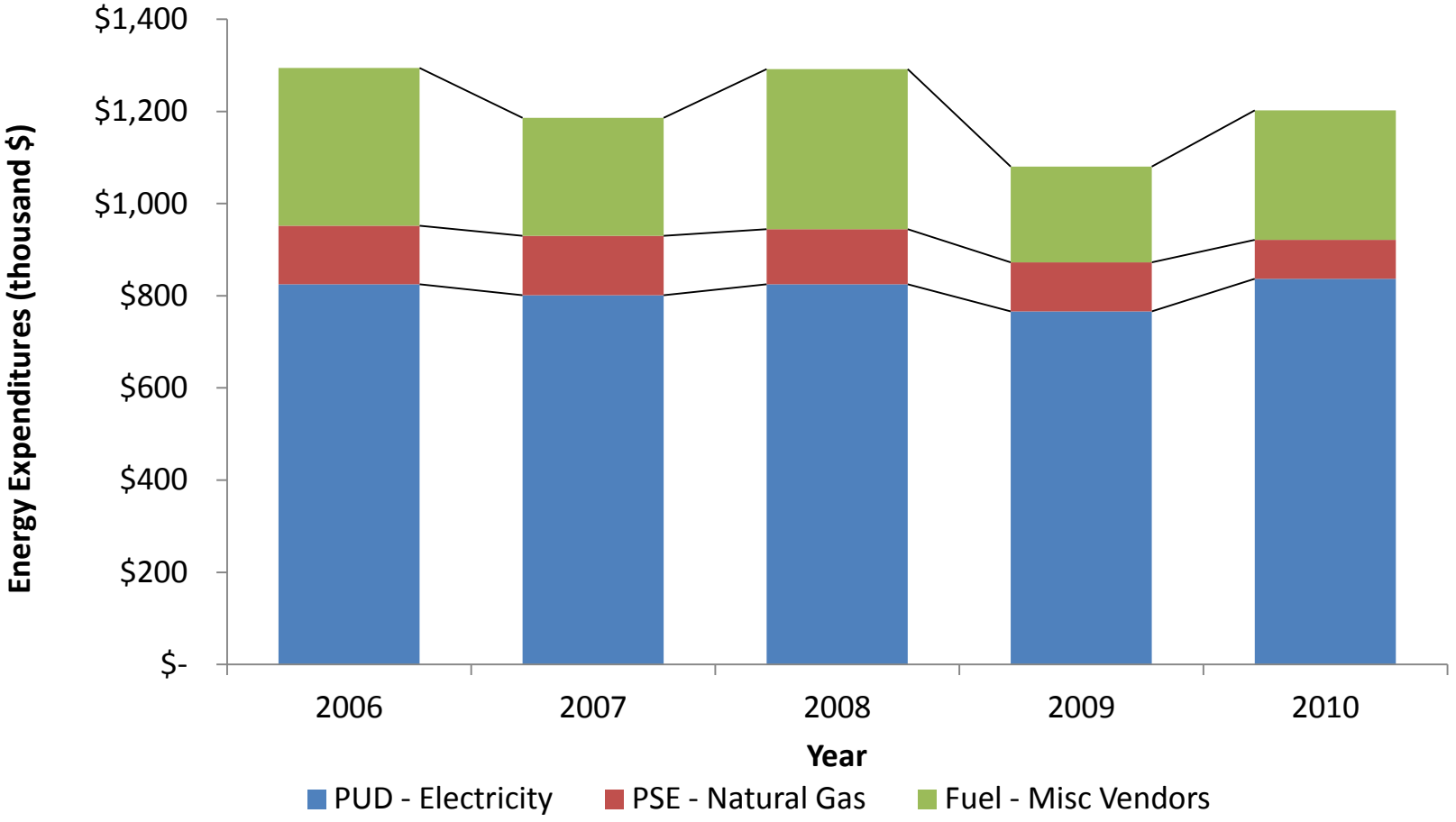
Historical Energy Use



Total municipal energy use has decreased 15% since 1999.

Overall Government Operations

2006-2010 Trends in Energy Expenditures



Note: These estimates based on billing from vendors. Expenditures in one year may account for some energy use in the years before or after, as energy use precedes billing.

Accomplishments

Edmonds City Government is transforming the way it does business

- ✓ Entire diesel fleet converted to biodiesel mix
- ✓ LED signal lighting upgrades resulting in 60% energy savings
- ✓ Installed LED street lighting in Emerald Hills and working to improve street light efficiency on Main Street
- ✓ Maintains four hybrid vehicles and has purchased two electric vehicles for the City's fleet
- ✓ Tracks facility energy use and cost using EPA's Energy Star Portfolio Manager
- ✓ Converted 217 computer monitors from CRT to LCD and retired nine servers

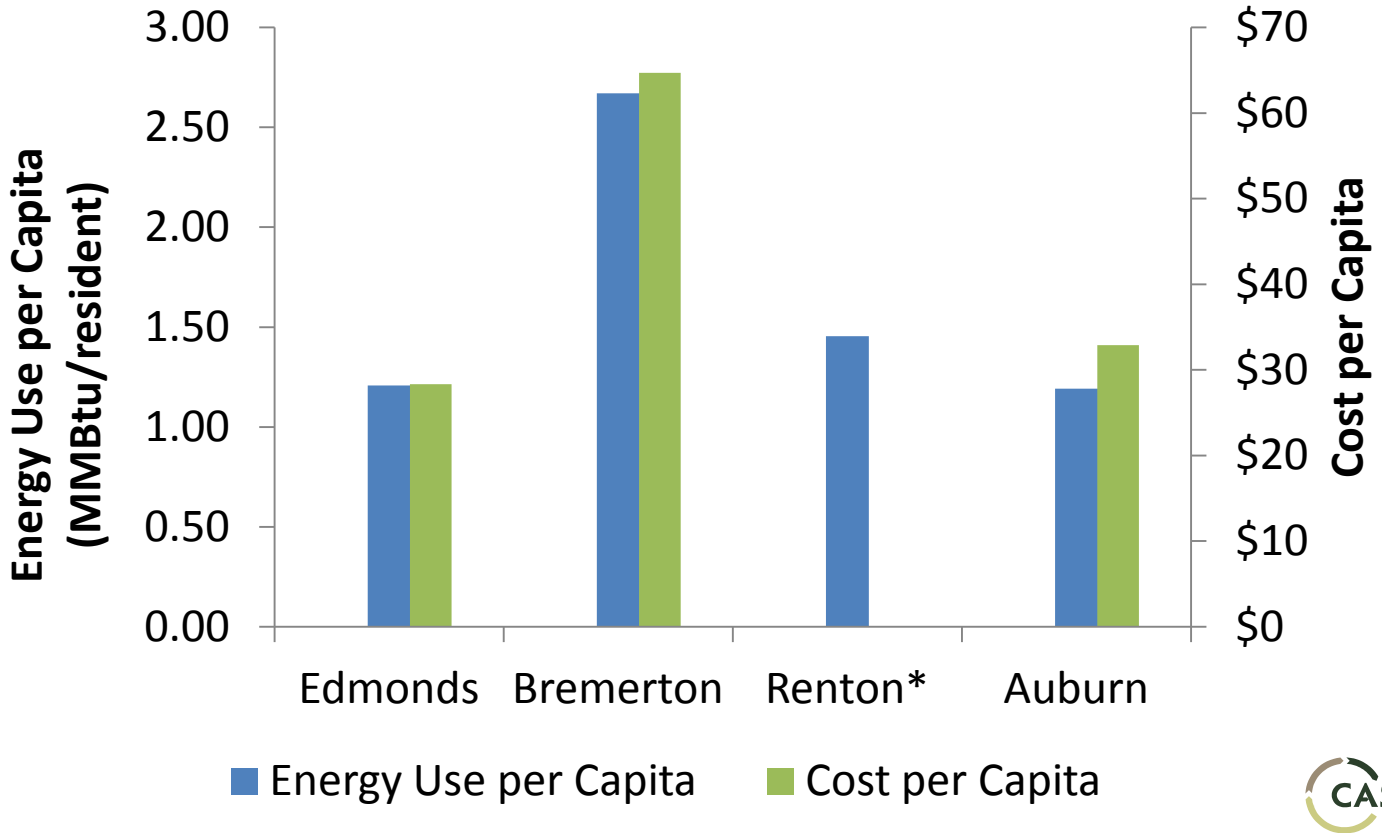
Accomplishments

Edmonds City Government is transforming the way it does business

- ✓ Green Team convened to look for opportunities to make city operations more sustainable
- ✓ Installed low-flow showerheads at Yost Pool
- ✓ Installed GPS tracking system on water shutoff truck to track idling and optimize routing
- ✓ Installed one solar-powered school zone flasher and working to install more
- ✓ Installed new alarms at water pump stations to monitor inefficiencies and ensure proper pump functioning
- ✓ Installed turbo-blower and upgraded D-O control at Wastewater Treatment Facility, saving $20,000 a year in energy costs

Accomplishments

2010 Key Performance Indicators



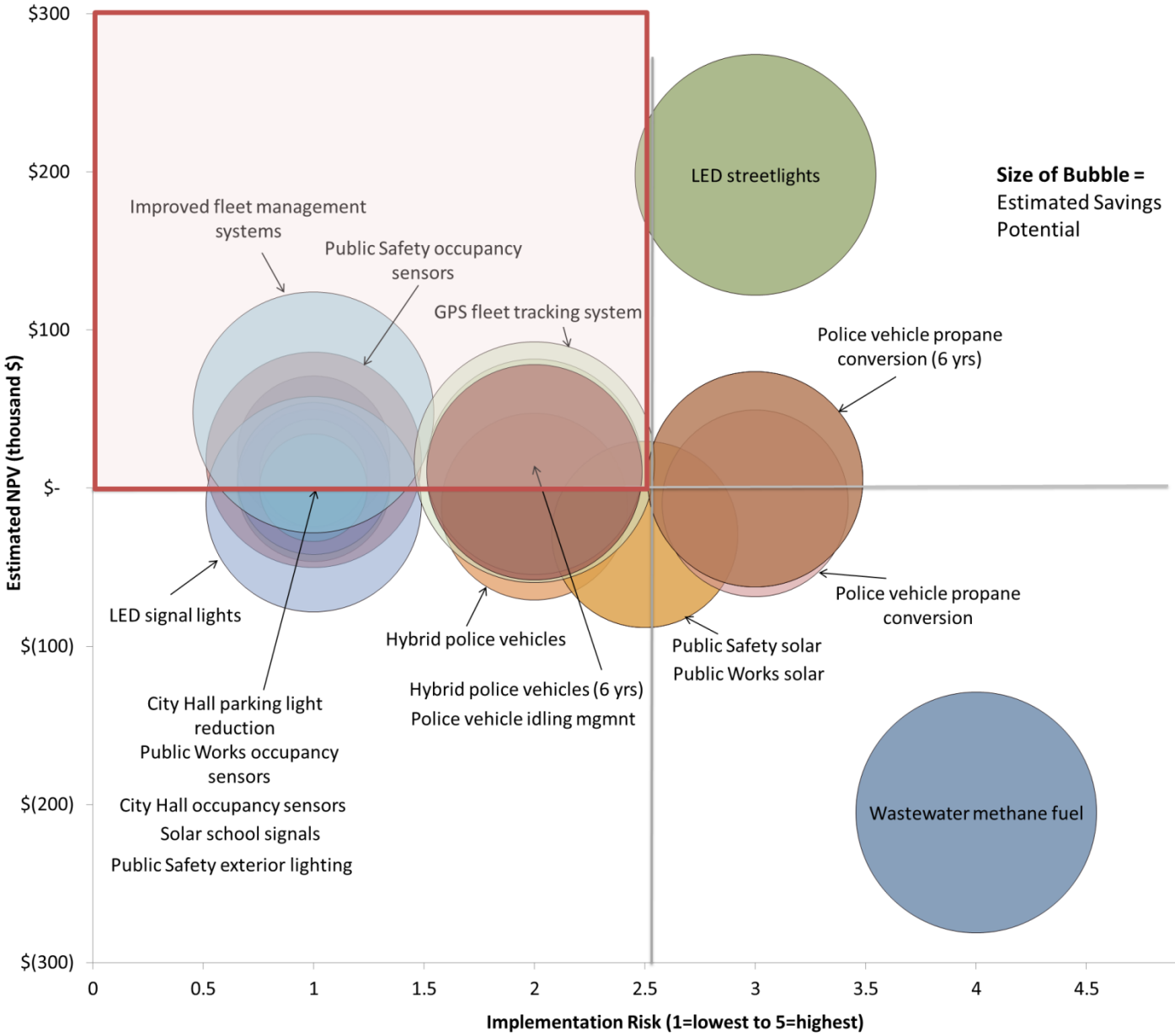
Note: Because of inherent differences associated with these inventories, this analysis should be viewed as a very general way to compare Edmonds' energy consumption and cost relative to other Northwest cities.
*No cost data were available for Renton

Opportunities

Many cost-effective opportunities exist to further reduce energy use across all functions and departments

- ✓ 30 opportunities identified and 17 ranked by capital costs, energy savings and efficiencies, Net Present Value, and implementation risk
- ✓ Top recommendations include strategies addressing vehicle fleets, building energy use, lighting

Opportunity Assessment



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Identified Opportunities

Short-term, Low Cost Opportunities

Category	Opportunity
Fleets	✓ **Join Evergreen Fleets**
Fleets	✓ **Install better systems for tracking mileage, fuel use, and costs**
Fleets	✓ **Introduce minimum fuel efficiency standards for new fleet vehicles and require consideration of fuel efficiency in evaluating new fleet vehicle purchases.**
Fleets	✓ **Employ a 'right vehicle, right job' approach to fleet management**
Fleets	✓ **Annually publish and distribute actual vs. expected fuel efficiency for each vehicle**
Fleets	✓ **Designate a high efficiency "community vehicle" for staff to use when cargo space is not required**
Fleets	✓ **Formally incorporate fuel-efficient driving practices into on-boarding and employee training protocols**
Fleets	✓ **Introduce minimum fuel efficiency standards for new fleet vehicles and require consideration of fuel efficiency in evaluating new fleet vehicle purchases.**
Facilities	✓ **Enforce use of pool cover**
Facilities	✓ **Add weather stripping on entry doors of Public Safety building**
Facilities	✓ **Upgrade incandescent lighting in the courtroom to LED bulbs/fixtures (Public Safety building)**

Identified Opportunities

Overall City Practices

Opportunity
✓ Install and formalize systems to track, assess, and communicate energy use across departments and sources on a quarterly or seasonal basis
✓ Provide formal incentives or implement a challenge for employees to reduce their energy use (e.g., lowering vehicle fuel efficiency against a historical baseline)
✓ Incorporate daily best practices for conserving energy into on-boarding and annual staff training protocols
✓ Convene an annual training and brainstorming session with City staff to review best practices, discuss the newest relevant technologies, and share ideas
✓ Sustainable, dependable energy funding strategies (e.g., revolving energy fund)
✓ Incorporate energy considerations into standard City operations language

Top Recommendations

Recommendations: Grouped by Category	Capital Costs	Lifetime Energy Cost Savings	NPV	ROI
1. Invest in more efficient police fleet • Install idling management devices in newer police fleet vehicles • Pilot hybrid police vehicles (*3.7 year payback period*) • Introduce more advanced fleet management and tracking systems • Pilot propane-powered vehicle conversion for a subset of Crown Vics (*3.9 year payback period*)	$243,000	$445,000	$157,000*	**80%**
2. Invest in key short-term facilities upgrades • Add occupancy/vacancy sensors in City Hall and Public Safety building • Installation of fresh air ventilation for server room	$6,000	$17,000	$15,000	**170%**
3. Work with PUD to improve streetlight efficiency • Establish monitoring technologies to assess actual vs. billed streetlight energy use (does expected use for billing equal actual use?) • Push for additional pilot LED projects • Work with PUD to negotiate lower rates for LED streetlights	$1,052,000	$3,304,000	$200,000	**210%**
4. Where possible, de-lamp, reduce, or get off the grid • Continue choosing solar for new school zone signals • De-lamp or change bulb type of exterior lighting in Public Safety building • Reduce outer 5 garage parking lights by 6 hrs a day at City Hall	$1,500	$25,800	$25,000	**1,500%**
5. Conduct engineering and economic analysis of higher capital cost options • Recover energy from incinerated biosolids • Solar or geothermal water heating for Yost Pool boiler replacement • Cooler temperature asphalt mixes • Methane recovery from wastewater treatment plant	*Further analysis required*			
TOTAL	**$1,300,000**	**$3,800,000**	**$296,000**	

*Increasing the time-in-service of the City's police cruisers from three to six years could realize an additional $37,000 in present value energy cost savings.

Summary and Next Steps

Edmonds has already made significant achievements in reducing energy costs and improving efficiency

Edmonds can pursue energy savings opportunities that:

- ✓ Achieve an estimated energy cost savings of $3 million or more over next 20 years
- ✓ The opportunities, adjusting for capital outlays and an 8% discount rate, represent a positive net present value of approximately $300,000
- ✓ Free up funding for other City improvements
- ✓ Protect against future energy cost risks
- ✓ Reinforce Edmonds' position as a regional leader in energy efficiency and creative energy solutions

Edmonds can take real steps to plan for and hedge against future energy scenarios, including:

- ✓ Follow-on financial and engineering assessment of specific opportunities
- ✓ Application of the energy cost risk analysis framework to assess trade-offs associated with future energy investments

Acknowledgements

Department	Sub-Department	Contact	
City of Edmonds			
Public Works		Phil Williams	Director of Public Works
	Facilities	Jim Stevens	Facilities Manager
	Fleet Maintenance	David Sittauer	Fleet Maintenance Manager
	Streets	Tod Moles	Streets Manager
	Waste Prevention/Recycling	Steve Fisher	Recycling Coordinator
	Water/Sewer	Jim Waite	Water/Sewer Department Manager
	Engineering Division	Robert English	City Engineer
Development Services	Planning	Robert Chave	Planning Manager
Parks, Rec, Cultural Services		Rich Lindsay	Parks Maintenance Manager
Wastewater Treatment		Curt Zuvela	Edmonds Wastewater Treatment Plant Manager
Mayor's Office		Mike Cooper	Mayor
Public Safety		Gerald Gannon	Assistant Chief of Police
IT Services		Carl Nelson	Chief Information Officer
Community and Utilities			
Snohomish PUD		Art Arneson	