

MUNICIPAL REDUCTION GOALS AND MEASURES

CLIMATE ACTION PLAN



CHAPTER 4

4

Municipal Reduction Goals and Measures

This chapter summarizes the Climate Action Plan’s goals and measures to reduce municipal greenhouse gas emissions from sources within the city boundaries.

Summary of Goals and Measures

The following goals and measures are organized by buildings, streetlights, vehicle fleet, waste reduction, and education and outreach consistent with the baseline greenhouse gas (GHG) emissions inventory. Each goal is tied to a specific reduction of GHG emissions as well as energy (electricity and therms), fuel, and waste reductions. GHG reductions are provided in supporting tables for each measure. Detailed GHG reduction calculations are presented in **Appendix 2**. The Climate Action Plan goals and measures are presented below in summary form. Detailed descriptions follow starting on page 4-6.

Each goal is tied to a specific reduction of greenhouse gas emissions.

Along with a narrative description of each measure, the following implementation information is presented with each goal when available:

Terms and Definitions

2010 “Existing and In-Progress” Reductions: The annual reductions in energy/vehicle miles traveled (VMT)/waste/water and GHGs resulting from implementation of the goal prior to or concurrent with this Plan (2005–2010).

2020 and 2030 Reductions: The annual reductions in energy/VMT/waste/water and GHGs in calendar years 2020 and 2030 as a result of staggered goal implementation and ramp-up.

Responsible City Department(s): City department or outside agency responsible for implementation.

Supporting Department(s) or Agencies: City department or outside agency that can support the responsible City department with the implementation of the specific measure.

Cost to City: Overall cost to the City for implementation of the goal. Costs are cumulative and in current (2010) dollars.

Cost Savings: Annual cost savings from decreased energy or fuel consumption.

Timeframe: The period of time estimated for staff to initiate measure implementation and achieve measure reductions.

Summary of Potential Greenhouse Gas Reductions

The goals and measures presented here have the potential to reduce the City of Walnut Creek’s municipal GHG emissions by 1,963 metric tons (MT) of CO₂e by 2020 and 3,516 MT by 2030. These reductions are equivalent to a change of approximately -39% and -71% from the municipal baseline, respectively, from 2005 baseline levels. (Also refer to Figures 4-1, 4-2, and 4-3.)

It is important to note that achievement of the City’s reduction targets is dependent on successful implementation of both municipal and community-wide measures. Municipal emissions

account for a small subset of overall community-wide emissions, and therefore municipal measures alone are not sufficient to achieve the comprehensive bulk of the City’s targets. More information on community-wide targets and measures is provided in Chapter 5 (Community Reduction Goals and Measures).

Tables 4-2 and 4-3 and Figures 4-4 and 4-5 present the potential GHG emissions reductions (MT CO₂e) to municipal emissions for 2020 and 2030 by goal and then by sector. They also identify Walnut Creek’s progress in achieving these goals since the baseline year of 2005. The goals and measures are presented in detail later in this chapter.

Table 4-1. Municipal GHG Reductions by Goal

Goal	To Date	2020	2030	
B 1	Integrate energy efficiency and other green building practices into new City facilities.	-26	-93	-160
B 2	Conduct efficiency audits and implement energy/water efficiency retrofits to existing City facilities.	-129	-152	-153
B 3	Establish energy and water management and operations policies and practices for City facilities.	-37	-961	-2,253
B 4	Consider clean energy alternatives for City facilities and operations.	-0	-246	-243
S 1	Implement energy management and operations practices for City-owned streetlights.	0	-134	-268
MWR 1	Implement waste reduction practices in all City facilities.	0	-6	-12
MWR 2	Encourage recycling of used materials whenever feasible at City facilities.	0	-1	-3
MT 1	Increase the number of fuel-efficient vehicles in the City's fleet.	-112	-158	-158
MT 2	Establish energy-efficient fleet management and operation practices.	0	-172	-161
MT 3	Provide alternative transportation options for all City employees.	0	-3	-4
MEO 1	Inform City employees of sustainability initiatives/upgrades to City facilities and engage employees in behavior-based programming to complement these efforts.	-9	-36	-93
Total Reductions		-313	-1,963	-3,516
Business-as-Usual Emissions (Municipal Emissions Only)		4,506	4,640	4,781
Net Emissions		4,192	2,677	1,265
Percentage Change to Municipal Emissions from 2005 Baseline Year Levels		-5%	-39%	-71%

Figure 4-1. 2020 Municipal Reductions by Goal

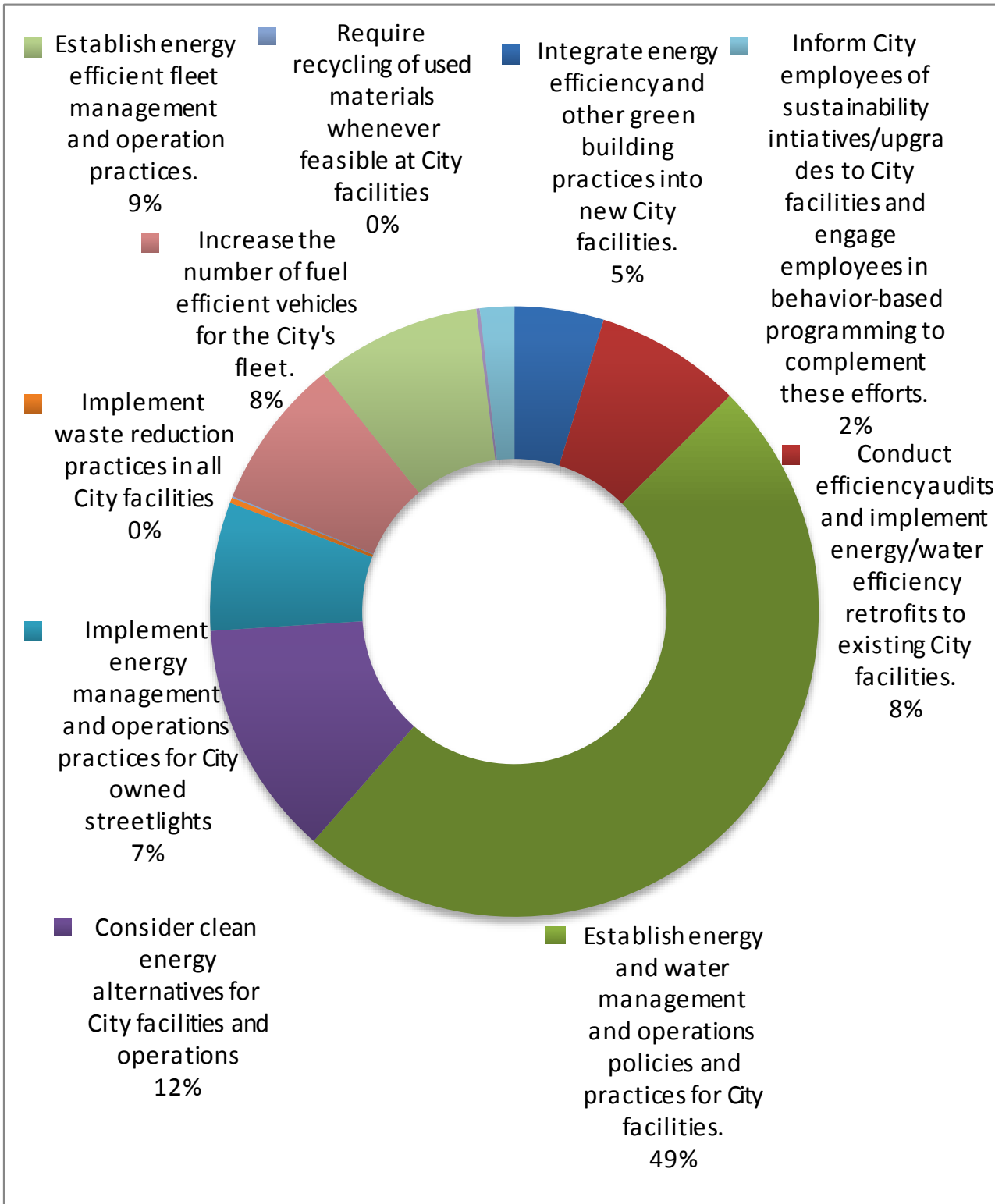


Figure 4-2. 2030 Municipal Reductions by Goal

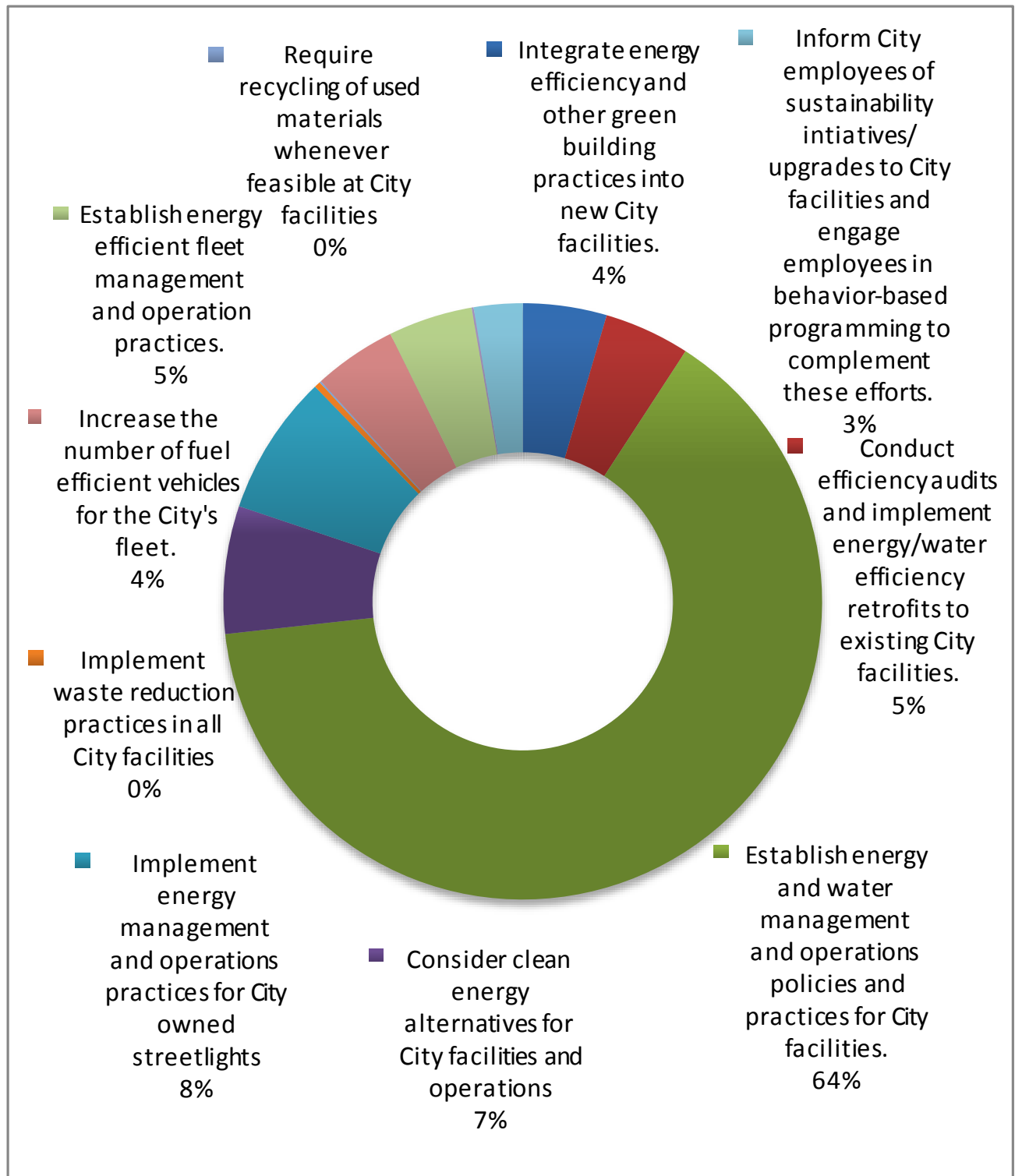


Table 4-2. 2020 Municipal Reductions by Sector and Source

Reductions by Sector, 2020	BAU	With CAP
Buildings	2,548	1,096
Streetlights	669	535
Waste	245	238
Vehicle Fleet	1,178	844
Total	4,640	2,677
Percentage Change from Baseline	6%	-39%

Figure 4-3. 2020 Municipal Reductions by Sector

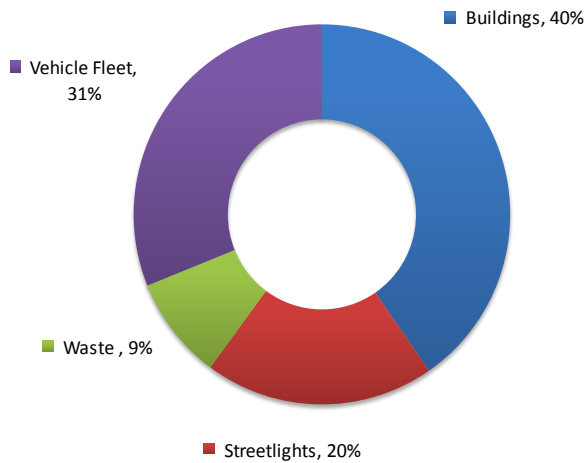
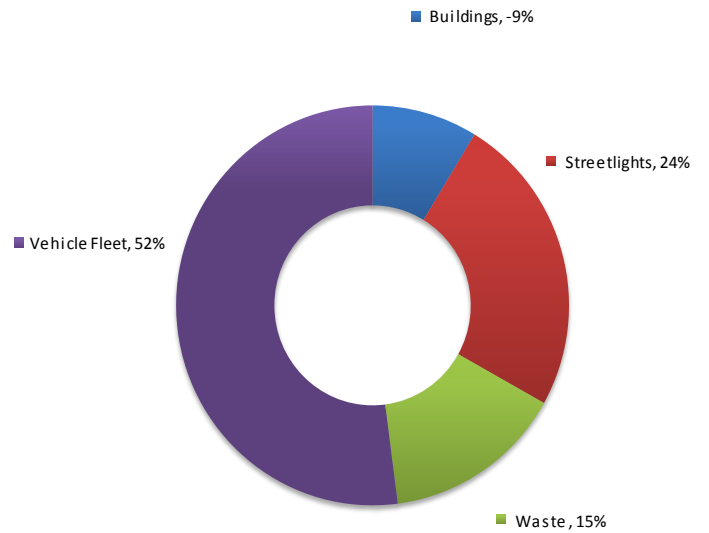


Table 4-3. 2030 Municipal Reductions by Sector and Source

Reductions by Sector, 2030	BAU	With CAP
Buildings	2,675	-143
Streetlights	669	401
Waste	259	244
Vehicle Fleet	1,178	855
Total	4,781	1,261
Percentage Change from Baseline	9%	-71%

Figure 4-4. 2030 Municipal Reductions by Sector



MUNICIPAL

BUILDING EFFICIENCY (B)



Building energy use accounted for 52 % of the City’s municipal GHG emissions inventory in 2005. As a result, implementation of energy conservation strategies into building design and construction provides an opportunity for substantial reduction in energy consumption and associated GHG emissions.

As the majority of the City’s existing building stock was constructed before California Title 24 established minimum standards for energy efficiency, there are considerable opportunities to improve the efficiency of existing buildings through measures that improve lighting, water, and HVAC efficiency and utilize renewable energy sources.

Walnut Creek has taken early actions to improve the efficiency of its existing buildings, with the recent retrocommissioning of City Hall’s energy management system and the installation of energy efficient lighting in the City’s community centers, parking garages, and Corporation Yard. In addition, the U.S. Green building Council recently awarded the new downtown library a Leadership in Energy and Environmental Design (LEED) Gold certification; the second highest rating given by the U.S. Green Building Council for new construction.

The measures and actions contained in this section continue the City’s leadership in the areas of green building and procurement practices, energy efficiency, and waste reduction. In addition, this section includes actions that increase the City’s use and generation of renewable energy through the installation of photovoltaic solar arrays on select municipal buildings.

GHG Reduction Potential

1,452 MT CO₂e
74% of total Municipal
GHG Reductions



INTEGRATE ENERGY EFFICIENCY AND OTHER GREEN BUILDING PRACTICES



B 1.1: Municipal Green Building Policy

Measure Description: Adopt a green building policy for new construction and major renovations of municipal facilities that exceeds current Title 24 energy standards to facilitate the continued implementation of municipal green building and establish the City as a leader in the community.

Building energy use accounted for 52% of the City’s municipal GHG emissions inventory in 2005. As a result, implementation of energy conservation strategies into building design and construction provides an opportunity for substantial reduction in energy consumption and associated GHG emissions. California Title 24 establishes minimum standards for energy efficiency in new and renovated buildings; however, further emissions reduction can be achieved. Additionally, setting standards that reach beyond Title 24 presents an opportunity for cities to demonstrate community leadership.

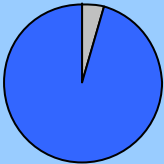
While not yet adopting a green building policy, the City of Walnut Creek has taken the initiative to begin “greening” some of its facilities. Most notably, the City constructed a new Leadership in Energy and Environmental Design (LEED)-certified downtown library. The City is also investigating the feasibility of having City Hall certified as a LEED building. This measure gives the City credit for projects completed, including City Hall and the library.

Green buildings conserve water, contribute to improved air quality, and lead to improved occupant health and comfort.

	Action	Timetable	Responsibility
A	Develop a Municipal Green Building Policy for new construction and major renovations that exceeds Title 24 energy standards	Short Term (1–2 years)	PS
B	Incorporate the Municipal Green Building Policy standards into the City’s Maintenance Master Plan (MMP)	Medium Term (2–5 years)	PS
C	Develop a Municipal Green Building Policy page on the City’s sustainability website to highlight municipal green building efforts	Short Term (1–2 years)	PS

GHG Reduction Potential:
-93 MT CO₂e/yr

Municipal Percentage Reduction:



5%

Cost to City:
\$210,000
Medium

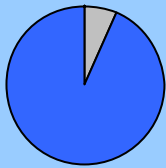
Annual Cost Savings:
\$45,000

MUNICIPAL

AUDIT AND IMPLEMENT ENERGY/WATER EFFICIENCY

GHG Reduction Potential:
-143 MT CO₂e/yr

Municipal Percentage Reduction:



7%

Cost to City:
\$80,000
Low

Annual Cost Savings:
\$6,500



B 2.1: Municipal Energy Audits and Upgrades

Measure Description: Continue to conduct energy audits of all City facilities, identify opportunities for energy savings, and implement recommended, cost-effective energy efficiency retrofit upgrades, including solar and tankless water heaters, and energy-efficient ventilation and air conditioning.

Energy efficiency upgrades present the greatest opportunity for energy conservation in the building sector. A variety of measures can be applied to increase building energy efficiency through basic lighting, appliance, insulation, and HVAC upgrades. Implementation of efficiency measures in City facilities provides an opportunity to demonstrate benefits and set a model for community programs.

The City of Walnut Creek has been proactive in conducting energy audits and retrofit upgrades in its facilities. Retrofit projects have already been conducted at Tice Valley Gym, Ceramics Studio, and City Hall/Police Department. The energy savings and costs associated with these proactive actions are included in the measure.

Many efficiency measures result in improved health and productivity of occupants; productivity gains have been shown to have significant fiscal payoff. Additionally, efficiency projects provide an opportunity for public education.

	Action	Timetable	Responsibility
A	Conduct an energy audit of all City facilities and develop benchmarking program utilizing Energy Star’s Portfolio Manager software tool.	Short Term (1–2 years)	PS
A	Replace aging water heaters with tankless water heaters	Short Term (1–2 years)	PS
B	Continue to install energy-efficient lighting in City facilities	Short Term (1–2 years)	PS
C	Identify opportunities to improve the efficiency of existing HVAC and energy management systems	Medium Term (2–5 years)	PS

AUDIT AND IMPLEMENT ENERGY/WATER EFFICIENCY



B 2.2: Water-Conserving Equipment in Municipal Facilities

Measure Description: Install water-conserving equipment (e.g., faucets, high-efficiency toilets, and, if applicable, showerheads) in all City facilities.

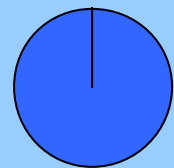
Water treatment and distribution account for a significant portion of municipal energy consumption. In Northern California, the average energy required to deliver 10,000 gallons of water is 54 kWh for indoor use and 35 kWh for outdoor use.¹ Minimizing water consumption therefore has significant energy savings potential.

Toilets, in particular, account for one-third of commercial water use. High-efficiency toilets can use 60% to 80% less water than conventional toilets, while water use in urinals can be eliminated completely.² Associated energy reduction can be significant because of reduced demand as well as reduced wastewater treatment requirements. Additionally, because water heating is an energy-intensive activity, efficient use of water for faucets and showers in public facilities can have a significant impact on energy use and emissions.

	Action	Timetable	Responsibility
A	Replace traditional toilets with waterless urinals and high-efficiency toilets	Medium Term (2–5 years)	PS
B	Bring existing plumbing fixtures up to current standards	Medium Term (2–5 years)	PS
C	Continue water audits of all municipal buildings and operations	Ongoing	PS
D	Install water-efficient fixtures in all municipal facilities	Ongoing	PS

GHG Reduction Potential:
-9 MT CO₂e/yr

Municipal Percentage Reduction:



Less than 1 %

Cost to City:
\$0
Low

Annual Cost Savings:
\$0

¹ (California Energy Commission, 2005)

² (US Environmental Protection Agency and Department of Energy, 2009)

MUNICIPAL

AUDIT AND IMPLEMENT ENERGY/WATER EFFICIENCY

GHG Reduction Potential:

Less than 1 MT CO₂e/yr

Municipal Percentage Reduction:



Less than 1%

Cost to City:

\$500

Low

Annual Cost Savings:

\$500



B 2.3: Reflective Roofing on City Facilities

Measure Description: Continue to install reflective roofing on select City facilities to reduce building energy (heating/cooling) consumption.

Cooling accounts for a substantial portion of commercial building energy consumption, second only to lighting. A reflective roof significantly reduces building energy use by minimizing the heat entering the building through the roof. Energy Star-certified reflective roof products reflect the sunlight striking the roof, lowering roof temperature by up to 100 °F.³

This measure quantifies the impacts of the planned installation of 42,000 square feet of reflective roofing at the City’s library. While this measure does not explicitly call for the additional installation of reflective roofing on other municipal facilities, such an expansion will yield additional benefits with financial payback for City investment.

	Action	Timetable	Responsibility
A	Install cool roof coating on all applicable City buildings	Long Term (5–10 years)	PS
B	Specify cool roof coating materials in the City’s Maintenance Master Plan for scheduled roof replacements or major repairs	Long Term (5–10 years)	PS

³ Ibid.

ENERGY AND WATER MANAGEMENT



B 3.1: Loans for Energy Efficiency and Renewable Energy

Measure Description: Establish a reinvestment loan fund to cover first costs for energy efficiency/renewable energy projects at City facilities.

A municipal reinvestment fund is a pool of money that is “loaned” out internally and “repaid” through energy cost savings. It is similar to a revolving loan fund, except that

for internal projects there is no need to loan money. In addition, since money for this kind of fund comes from general fund allocations on an annual basis, there is no actual repayment. Rather, the municipality tracks savings and reports annually to demonstrate value for annual budget allocations. The most basic elements of the fund are its initial seed amount and the repayment mechanism. The repayment mechanism defines how savings are credited to the fund and what, if any, cap is put on the fund.

A municipal reinvestment fund is designed to support ongoing environmental improvements that are outside of specific project and departmental structures. It is also designed to pay for itself overtime. The program will become self-sustaining as energy and water savings from projects implemented through the fund reduce costs to the City.

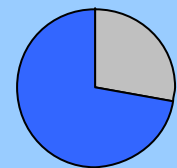
In addition to energy cost savings, a municipal reinvestment fund provides benefits through:

- Elevated awareness of energy management that increases staff skills and improves the chances that additional opportunities for resource savings will be identified.
- Review and identification of projects can contribute significant value to other city projects.
- The continual stream of funding for energy efficiency measures provides an incentive to internally embrace environmental performance.
- Having funds focused on resource conservation reduces internal competition for other essential municipal priorities such as community center upgrades, sidewalk repair, or tree planting.
- Demonstrated leadership and commitment to energy conservation.

	Action	Timetable	Responsibility
A	Establish an Energy Efficiency Internal Service Fund for the completion of energy efficiency projects that will reinvest energy savings for the purpose of completing additional projects	Short Term (1–2 years)	PS
B	Develop a list of projects that are to be funded through the ISF	Short Term (1–2 years)	PS

GHG Reduction Potential:
-753 MT CO₂e/yr

Municipal Percentage Reduction:



38%

Cost to City:
\$450,000
Medium

Annual Cost Savings:
\$350,000

ENERGY AND WATER MANAGEMENT

GHG Reduction Potential:
-48 MT CO₂e/yr

Municipal Percentage Reduction:



2%

Cost to City:
\$15,000
Low

Annual Cost Savings:
\$9,000



B 3.2: Energy-Efficient Electronics

Measure Description: Continue to replace in City facilities existing outdated electronic appliances and office equipment in favor of those that are more energy efficient.

To date, the City has already worked to implement this measure. By 2010, 30 computer monitors had been replaced and upgraded to the EPEAT Silver standard for monitor purchases. While there are incremental costs for this more energy-efficient model, the payback period that results from energy savings is less than a year.

Energy used for appliances and office equipment represents a large portion of commercial energy consumption. Energy Star, in partnership with the U.S. Environmental Protection Agency (EPA), certifies appliances and office equipment including computers, printers, copiers, water heaters, water coolers, and monitors that meet specified energy efficiency standards. Incrementally upgrading appliances and office equipment in City facilities to Energy Star models can significantly reduce municipal facility energy use.

In addition to energy savings, energy-efficient electronics can result in energy cost savings for minimal to no upfront cost.

	Action	Timetable	Responsibility
A	Continue to replace all aging monitors with energy-efficient monitors that meet EPEAT Silver requirements	Medium Term (2–5 years)	ASD
B	Continue server and desktop virtualization work	Short Term (1–2 years)	ASD
C	Replace aging and inefficient copiers and scanners with new energy-efficient models	Medium Term (2–5 years)	ALL

ENERGY AND WATER MANAGEMENT



B 3.3: Demand Response Programs

Measure Description: Continue to participate in demand response programs.

Demand response (DR) programs are incentive-based mechanisms used by utilities to encourage consumers to reduce demand during peak hours.

Participation by cities in DR programs sets a strong precedence for community members and decreases risks and costs of power outages, while providing the city with the associated incentives.

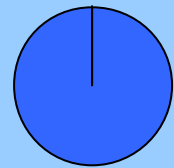
The City of Walnut Creek currently participates in a Pacific Gas and Electric (PG&E) DR program called the Smart AC Program, implementing such measures as the installation of 50 Smart AC thermostats in City facilities. Other potential DR programs in which the City can participate are PG&E’s Automated Demand Response Program and Scheduled Demand Response Program.

In addition to energy costs savings, DR programs offer reliability benefits because demand response lowers the likelihood and consequences of forced outages that impose financial costs and inconvenience on customers.

	Action	Timetable	Responsibility
A	Continue to participate in PG&E’s Demand Response Program	Ongoing	PS
B	Identify additional City facilities to include in the existing demand response program	Short Term (1–2 years)	PS
C	Create educational materials to inform building managers of demand response programs and create incentives/awards for high-performing facilities	Short Term (1–2 years)	PS

GHG Reduction Potential:
-12 MT CO₂e/yr

Municipal Percentage Reduction:



1%

Cost to City:
\$4,000
Low

Annual Cost Savings:
\$48,000

MUNICIPAL

ENERGY AND WATER MANAGEMENT

B 3.4: Reduced Lighting Usage: Lights-Out Policy at City Facilities

Measure Description: Reduce lighting use by instituting a lights-out-at-night policy at City facilities where feasible.



Lighting accounts for one of the largest portions of electricity consumption in commercial buildings, a significant portion of which is wasted by lights left on

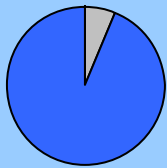
when not in use. A combination of timers and motion sensors with good workspace policies and employee education can eliminate much of this wasted energy.

In addition to energy savings, instituting a lights-out-at-night policy will result in significant energy cost savings with minimal to no upfront cost.

	Action	Timetable	Responsibility
A	Develop a Lights Out Campaign to encourage facility users to turn off lights when not in use	Short Term (1–2 years)	PS
B	Institute a lights-out-at-night policy and program lighting controls to ensure lights are off after operating hours	Short Term (1–2 years)	PS
C	Create a “Lights Out Award” to recognize individuals for efforts to conserve energy	Short Term (1–2 years)	PS

GHG Reduction Potential:
-140 MT CO₂e/yr

Municipal Percentage Reduction:



7%

Cost to City:
\$0
Low

Annual Cost Savings:
\$30,000

ENERGY AND WATER MANAGEMENT



B 3.5: Drought-Tolerant Landscaping at Municipal Facilities

Measure Description: Expand current energy-efficient and drought-tolerant landscaping practices at City facilities to exceed current levels.

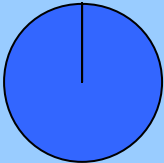
Native plant species require less water and maintenance than non-native plant species. Therefore, use of local native plants reduces energy use in landscaping by minimizing water requirements for irrigation.

In addition to reducing water and energy use in landscaping, use of native plants minimizes adverse impacts to natural habitat, prevents pollution through reduced use of landscape chemicals, allows for integrated pest management, minimizes stormwater runoff, and improves air quality.

	Action	Timetable	Responsibility
A	Continue to incorporate native, drought-tolerant plants and trees in City-owned medians, parks, and landscaped areas	Ongoing	PS
B	Continue to use state-of-the-art water conserving technology, including climate-controlled irrigation systems and micro-perforated drip irrigation systems, in all City parks	Ongoing	PS

GHG Reduction Potential:
-3 MT CO₂e/yr

Municipal Percentage Reduction:



Less than 1%

Cost to City:
\$0
Low

Annual Cost Savings:
\$0

MUNICIPAL

ENERGY AND WATER MANAGEMENT

GHG Reduction Potential:
-6 MT CO₂e/yr

Municipal Percentage Reduction:



Less than 1%

Cost to City:
\$6,000
Low

Annual Cost Savings:
\$1,000



B 3.6: Expand Tree Cover at Municipal Facilities

Measure Description: Reduce energy use by planting trees to shade City facilities where feasible.

Trees strategically planted around buildings can provide shade and wind blockage, thereby reducing buildings' cooling and heating requirements. In addition, evapotranspiration contributes to reduced ambient air temperature; trees planted near paved surfaces reduce the heat island effect.

In addition to decreasing the cooling and heating needs of buildings, trees improve air quality and provide aesthetic value.

	Action	Timetable	Responsibility
A	Develop an Urban Forest Plan that identifies opportunities to reduce the heat island effect and cool buildings through strategic tree planting	Medium Term (2–5 years)	PS

CLEAN ENERGY ALTERNATIVES



B 4.1: Solar Electric Arrays

Measure Description: Conduct a solar feasibility study and install solar electric (PV) arrays at/on appropriate City facilities, and identify additional opportunities for increasing renewable energy systems, including wind energy generation.

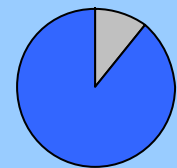
Use of on-site PV systems on municipal buildings generates clean energy for building use while increasing the visibility of solar energy in the community. Installation of PV should be combined with lower-cost efficiency measures to improve payoff. Local governments can borrow money at low interest rates through bond issues, making solar more cost effective than it is for individuals or businesses.

This measure demonstrates the impact of the City’s investment in will utilize money from the Energy Efficiency and Conservation Block Grant (EECBG) program to install 1,068 kW of solar panels on City facilities, including on buildings, parking garages, and carports. All potential projects could generate up to 1,374,412 kWh of annual electricity and provide 25-year electricity savings of over \$6 million. The solar feasibility study also outlines possible financing mechanisms. The City will finalize solar projects for installation in 2011.

	Action	Timetable	Responsibility
A	Utilize Energy Efficiency Block Grant funding to install solar on City Hall	Short Term (1–2 years)	PS
A	Install solar electric arrays on select City-owned facilities identified as “Priority A” in the Solar Feasibility Study	Medium Term (2–5 years)	PS
B	Explore opportunities to partner with energy service companies to install solar on additional City facilities outlined as “Priority B” in the Solar Feasibility Study	Medium Term (2–5 years)	PS

GHG Reduction Potential:
-244 MT CO₂e/yr

Municipal Percentage Reduction:



12%

Cost to City:
\$6,000,000
Medium

Annual Cost Savings:
\$200,000

MUNICIPAL

CLEAN ENERGY ALTERNATIVES

GHG Reduction Potential:
-2 MT CO₂e/yr

Municipal Percentage Reduction:



Less than 1%

Cost to City:
\$12,000
Low

Annual Cost Savings:
\$500



B 4.2: Solar Water Heating

Measure Description: *Install solar water heating at/on appropriate City facilities.*

Water heating can account for a significant portion of a building’s energy use. Solar water heating systems can provide significant energy savings at a relatively low cost. Solar water heating is one of the most cost-effective forms of renewable energy and is a proven and reliable technology with a long lifetime and low maintenance costs.

	Action	Timetable	Responsibility
A	Conduct an audit of City facilities to identify opportunities to replace existing gas or electric water heating systems with solar heating systems	Long Term (5–10 years)	PS

MUNICIPAL STREETLIGHTS (S)



Street lighting can account for a substantial portion of the energy budget for local governments. Based on the GHG emissions inventory conducted for the year 2005, electricity use from streetlights represented 15% of the City’s total emissions.



Walnut Creek was one of the first cities in the Bay Area to utilize Pacific Gas and Electric Company’s (PG&E) LED Street Light Turnkey Replacement Program. As part of the program, the City was able to replace all existing city-owned street lights along Ygnacio Valley Road with PG&E-approved LED street lights, resulting in improved quality of light and significant energy and cost savings.

The actions included in this section continue the City’s efforts to leverage existing grants and PG&E sponsored financing programs to retrofit the City’s remaining street lights. In addition, the actions call for partnering with PG&E to retrofit PG&E-owned street lights within Walnut Creek.

GHG Reduction Potential

152 MT CO₂e
7% of total Municipal
GHG Reductions



STREETLIGHT ENERGY MANAGEMENT

GHG Reduction Potential:
-134 MT CO₂e/yr

Municipal Percentage Reduction:



7%

Cost to City:
\$350,000
Medium

Annual Cost Savings:
\$80,000



S 1.1: High-Efficiency Streetlights

Measure Description: Continue to replace low-efficiency streetlights with high-efficiency light-emitting diode (LED) fixtures as funding becomes available.

Street lighting can account for a substantial portion of the energy budget for local governments. Based on the GHG emissions inventory conducted for the year 2005, electricity use from streetlights made up 15% of the City’s total emissions.

LED technologies achieve between 40% and 60% energy savings over conventional high-pressure sodium streetlights).⁴ The corresponding emissions reduction potential is significant.

The City is currently taking advantage of Pacific Gas and Electric’s On-Bill Financing Program, which provides 0% interest loans to the City for energy efficiency projects. The City also replaced 162 streetlights with LED fixtures in 2010 using funding from the Energy Efficiency and Conservation Block Grant Program.

In addition to energy savings, converting to LED streetlights will result in significant energy cost savings.

	Action	Timetable	Responsibility
A	Convert all City-owned streetlights to LED	Short Term (1–2 years)	PS
B	Partner with PG&E to convert all utility-owned streetlights within the city	Short Term (1–2 years)	PS

⁴ (Los Angeles Profile, 2009)

MUNICIPAL WASTE REDUCTION (MWR)



Municipal waste accounts for 5% of the total municipal GHG emissions. Measures to decrease waste production and increase waste diversion include regulating waste production, providing recycling programs, and developing education and outreach campaigns to change consumption and disposal behaviors.



The City has already taken action to reduce municipal waste through efforts to promote recycling in City facilities, parks, and downtown streets. Limiting use of disposable items, such as water bottles and plastic bags, plates and utensils, has also reduced the amount of waste the City sends to the landfill. The measures included in this section expand upon the City’s existing efforts, including actions that

reduce paper use through the utilization of a paperless records management program and setting printer defaults to two-sided printing.

GHG Reduction Potential

7 MT CO₂e
<1% of total Municipal
GHG Reductions



MUNICIPAL

WASTE REDUCTION

GHG Reduction Potential:
-6 MT CO₂e/yr

Municipal Percentage Reduction:



Less than 1%

Cost to City:
\$0
Low

Annual Cost Savings:
\$3,000



MWR 1.1: Waste Prevention

Measure Description: *Require waste prevention in day-to-day operations (e.g., two-sided copying, reduced paper requirements) in all City facilities.*

GHG emissions from municipal waste represent about 5% of the total emissions from City facilities (based on the 2005 GHG emissions inventory). Although it represents a small portion of the overall municipal GHG emissions portfolio for Walnut Creek, there is still opportunity to reduce emissions within this municipal sector.

In-house paper-saving policies and practices, including conservative default office equipment settings and switching to electronic from paper filing, is an effective and low-cost way to cut down on office paper waste.

The City has already begun instituting waste prevention practices. For example, the Police Department has implemented a paperless records management system. Expansion of similar practices across all City facilities can result in greater waste prevention and GHG emissions reductions.

	Action	Timetable	Responsibility
A	Develop a paperless records management program, including an electronic timecard management system	Medium Term (2–5 years)	ASD, PS
B	Set default printer and copier settings to duplex	Short Term (1–2 years)	ASD
C	Ban the distribution of plastic bags from all City programs and facilities	Short Term (1–2 years)	ARCS, PS

RECYCLING OF USED MATERIALS



MWR 2.1: Expand Recycling Programs

Measure Description: Expand City Hall, Police Station, and City parks recycling programs into all City facilities.

Recycling utilizes less energy than manufacturing with raw materials. Organic matter such as wood, paper, food, and yard waste decomposes anaerobically in landfills, producing large quantities of methane, a greenhouse gas

that is 21 times more powerful than carbon dioxide. Therefore, recycling organic matter reduces landfill emissions.

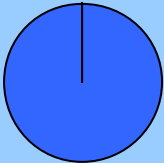
The City already has a recycling program in place in its facilities. An expansion of the current program can help to further reduce GHG emissions.

In addition to reducing emissions, recycling is valuable to natural resource conservation. Recycling facilities can also provide a significant number of local jobs.

	Action	Timetable	Responsibility
A	Require recycling at all events, regardless of expected attendance	Short Term (1–2 years)	PS
B	Provide recycling receptacles at all City-owned facilities	Short Term (1–2 years)	PS

GHG Reduction Potential:
-1 MT CO₂e/yr

Municipal Percentage Reduction:



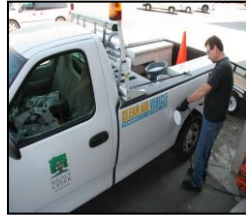
Less than 1%

Cost to City:
\$0
Low

Annual Cost Savings:
\$0

MUNICIPAL

MUNICIPAL TRANSPORTATION (MT)



The vehicle fleet accounts for a significant portion of the City’s GHG emissions—27% based on 2005 emissions levels. The City’s municipal fleet operations have taken early steps to reduce the City’s transportation related emissions through fleet size reductions, use of alternative fueled vehicles, and utilization of green maintenance practices. The measures included in this section will result in a 17% reduction in municipal GHG emissions.

The measures range from increasing the City’s use of electric, hybrid, and compressed natural gas (CNG) vehicles to improving scheduling and routing efficiencies. In addition, this section includes measures that encourage City employees to participate in commuting and ride-share programs and promotes the use of bicycles and walking.

GHG Reduction Potential

112 MT CO₂e
17% of total Municipal
GHG Reductions



INCREASE NUMBER OF FUEL-EFFICIENT VEHICLES



MT 1.1: Purchase of Alternative Fuel/Fuel-Efficient Vehicles

Measure Description: Continue to require the purchase of alternative fuel and/or fuel-efficient vehicles.

The vehicle fleet accounts for a significant portion of the City’s GHG emissions—27% based on 2005 emissions levels. It is recommended that the City continue to

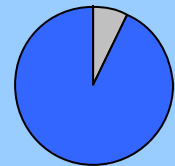
purchase new vehicles for the City fleet to ensure that alternative fuel/fuel-efficient models are selected.

The City has replaced five traditional-fuel vehicles with alternative fuel vehicles. Currently, the City has a number of electric and hybrid vehicles as well as vehicles that run on compressed natural gas (CNG) and biodiesel. When appropriate hybrid vehicle models are available to purchase, the City plans to continue purchasing hybrid and fuel-efficient vehicles instead of standard vehicles to upgrade the City’s aging fleet.

	Action	Timetable	Responsibility
A	Improve fuel efficiency of the City vehicle fleet by purchasing low- or zero-emission vehicles to replace vehicles that are retired from the fleet	Ongoing	PS
B	Continue to reduce baseline emissions for City fleet vehicles	Ongoing	PS
C	Continue to purchase high-mileage vehicles when vehicles are retired	Ongoing	PS

GHG Reduction Potential:
-158 MT CO₂e/yr

Municipal Percentage Reduction:



8%

Cost to City:
\$100,000
Low

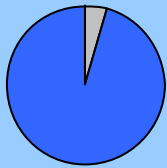
Annual Cost Savings:
\$18,000

MUNICIPAL

ENERGY-EFFICIENT FLEET MANAGEMENT

GHG Reduction Potential:
-91 MT CO₂e/yr

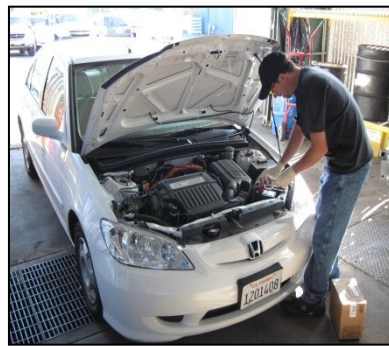
Municipal Percentage Reduction:



5%

Cost to City:
\$0
Low

Annual Cost Savings:
\$25,000



MT 2.1: Reduce Fleet Size

Measure Description: Continue to reduce fleet size (i.e., total number of vehicles) by retiring older and underused vehicles.

This measure quantifies the reductions that will result from the City’s plans to retire vehicles and downsize its fleet. While downsizing has yet to be implemented, this measure formalizes downsizing plans and estimates the impacts of implementation.⁶ The City will also investigate

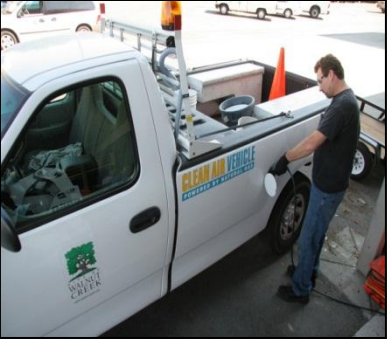
strategies to limit the use of City vehicles and facilitate the use of non-vehicular travel when feasible. For instance, the City will investigate creating caps on vehicle use that deter unnecessary vehicular travel.

Many vehicles in the City’s fleet are old and extremely fuel-inefficient and/or underutilized. Implementing a policy of retiring older vehicles can significantly reduce the amount of gas required for City transportation. Additionally, it can potentially reduce time spent by City staff for maintaining vehicles. To date, the City has removed a total of ten vehicles from the City's fleet.

	Action	Timetable	Responsibility
A	Continue ongoing needs assessment, evaluating the City’s vehicles	Ongoing	PS
B	Reassess the City’s fleet replacement criteria	Short Term (1–2 years)	PS
C	Explore opportunities to partner with a car-share program	Short Term (1–2 years)	PS
D	Where feasible, establish usage maximums to reduce the total use of City vehicles, such as maximum annual miles traveled or annual maximum days of use for City vehicles or City departments	Short Term (1–2 years)	PS

⁶ The forecast of vehicles to be retired was provided by Joe Jorgensen, Supervisor – Vehicle & Equipment Maintenance Division, City of Walnut Creek.

ENERGY-EFFICIENT FLEET MANAGEMENT



MT 2.2: Reduce Idling

Measure Description: Institute a policy to limit idling of City fleet vehicles.

Idling vehicles unnecessarily burn fuel. Implementing a policy to limit idling can reduce fuel use and associated emissions at no cost.

Vehicle idling is linked to increased cases of asthma, allergies, heart and lung disease, and cancer; reduction in

idling can therefore help reduce health risks.

	Action	Timetable	Responsibility
A	Create a policy to reduce unnecessary idling of City fleet vehicles	Short Term (1–2 years)	PS
B	Require as part of purchasing specifications that all diesel-powered vehicles have automatic idle shut-down features	Short Term (1–2 years)	PS
C	Create a policy that instructs vehicle operators on the appropriate vehicle warm-up time based on seasonal climate conditions	Short Term (1–2 years)	PS

GHG Reduction Potential:
-43 MT CO₂e/yr

Municipal Percentage Reduction:



2%

Cost to City:
\$0
Low

Annual Cost Savings:
\$12,000

MUNICIPAL

ENERGY-EFFICIENT FLEET MANAGEMENT

GHG Reduction Potential:
-39 MT CO₂e/yr

Municipal Percentage Reduction:



2%

Cost to City:
\$0
Low

Annual Cost Savings:
\$11,000



MT 2.3: Fleet Maintenance

Measure Description: Continue to implement a maintenance regime for increased efficiency for City vehicles (e.g., regularly check tire pressure).

Underinflated tires equate to less than optimal fuel economy. Therefore, regular maintenance of the municipal fleet, including checking vehicles' tire pressure, can be a low-cost way to increase fuel efficiency and decrease fuel use.

	Action	Timetable	Responsibility
A	Create and implement a daily vehicle inspection policy that includes checking tire pressure	Short Term (1–2 years)	PS
B	Establish minimum vehicle utilization requirements for use of City vehicles	Medium Term (2–5 years)	PS
C	Establish standards in purchase specifications to require fuel efficiency and sustainable material use in manufacturing	Medium Term (2–5 years)	PS

ESTABLISH ENERGY-EFFICIENT FLEET MANAGEMENT AND OPERATION PRACTICES



MT 2.4: Scheduling & Routing Efficiency

Measure Description: Improve scheduling and route efficiency for using City vehicles.

The City will undertake this supportive measure to identify opportunities for improved scheduling and routes for City vehicles in order to reduce vehicular use and fuel combustion. Staff supervisors and fleet maintenance will work together to review routes

and schedules and determine strategies for reduced fleet use. There may be opportunities to link trips for regular maintenance or other activities

	Action	Timetable	Responsibility
A	Review City fleet schedules and identify opportunities for routing and schedule efficiencies	Short Term (1-2 years)	PS
B	Create a tracking system to monitor fleet efficiencies	Medium Term (2-5 years)	PS

SUPPORTIVE MEASURE

Cost to City:
\$0
Low

Annual Cost Savings:
\$10,000

MUNICIPAL

ALTERNATIVE TRANSPORTATION OPTIONS

GHG Reduction Potential:
-3 MT CO₂e/yr

Municipal Percentage Reduction:



Less than 1%

Cost to City:
\$0
Low

Annual Cost Savings:
\$0



MT 3.1: Municipal Commuter Programs

Measure Description: Continue to implement incentive programs to reduce municipal employee commute (e.g., parking cash-out, telecommute, bike checkout).

Employee commute can account for a significant portion of a municipal GHG emissions inventory. A number of potential measures can be implemented to reduce emissions from employee commute.

In the United States, it is largely standard that employers provide easily accessible parking options to employees. Such accessible parking facilitates the use of single-occupancy vehicles. Hence, parking accessibility represents a hidden incentive for employees to drive to work. Because the cost of parking is passed on to clients, most commuters do not recognize the true cost of parking. With the directive of reducing single-occupancy automobile commuting, many employers are now introducing parking cash-out programs. These programs offer a payment option to employees who volunteer to give up their parking spaces. Reducing the number of single-occupancy vehicle commuters offers a significant opportunity for emissions reduction.

Offering telecommuting options to select City employees is another potential option to help reduce GHG emissions from employee commute. Additionally, implementing a bicycle checkout program for City employee commute use is another potential measure.

Taking cars off the road has a number of benefits, including improved air quality, alleviation of the effects of stormwater runoff, and reduced congestion.

The City already has in place a carpool program for City employees. Expanding this program to include the above recommended employee commute options can increase fuel and GHG emissions savings.

	Action	Timetable	Responsibility
A	Continue to provide commute alternative leave for City employees that walk, run, bicycle, or carpool to work at least 3 days per week	Ongoing	ASD
B	Continue to offer BART/County Connection tickets at a discounted rate	Ongoing	ASD
C	Conduct study to determine feasibility of telecommuting options	Short Term (1–2 years)	CDD, PS
D	Continue to offer and expand flexible working schedules, such as the 9/80 work schedule currently offered in several departments, which helps to reduce VMT	Ongoing	ALL

**ALTERNATIVE TRANSPORTATION
OPTIONS**



MT 3.2: Municipal Bicycle Program

Measure Description: Provide bicycles for daily trips for City employees.

Automobile use for City operations accounts for a significant portion of GHG emissions. Providing employees with bicycles as an alternative to automobiles for daily City operations, when feasible, is a cost-savings approach to reduce fuel use and associated GHG emissions from vehicle trips.

	Action	Timetable	Responsibility
A	Continue to provide bicycles to City employees for daily operations and short local trips, when utilization of a bicycle is practical	Ongoing	CDD, PS

GHG Reduction Potential:
Less than 1 MT CO₂e/yr

Municipal Percentage Reduction:



Less than 1%

Cost to City:
\$3,000
Low

Annual Cost Savings:
Less than \$100

MUNICIPAL

MUNICIPAL EDUCATION (MEO)



A substantial portion of energy, water, and resource consumption is a result of wasteful behavior patterns. Basic education about conservation practices can help develop positive changes in behavior and yield significant energy and water savings and waste reduction.



The measures included in this section focus on developing workplace sustainability education programs for City employees with an emphasis on energy/water conservation, waste reduction/diversion practices, and transportation/commute alternatives.

The measures included in this section help support other municipal actions. As a result, the emission reductions resulting from these measures are already accounted for in other municipal reduction measures related to energy efficiency, transportation, and waste reduction.

GHG Reduction Potential

SUPPORTIVE MEASURES



EDUCATE CITY EMPLOYEES ON SUSTAINABILITY INITIATIVES/UPGRADEDES



MEO 1.1: Employee Education

Measure Description: Conduct workplace sustainability education programs with City employees focused on energy/water conservation, waste reduction/diversion practices, and transportation/commute alternatives.

A substantial portion of energy, water, and resource consumption is a result of wasteful behavior patterns. Basic education about

conservation practices can impact behavior and yield significant energy and water savings and waste reduction. Education and outreach programs for City employees can be developed with limited cost and should be included in any emissions reduction effort.

Behavioral changes by City employees reach beyond the workplace and into their homes and everyday activities.

	Action	Timetable	Responsibility
A	Develop educational and outreach programs for City employees with an emphasis on appropriate energy/water conservation and waste reduction practices	Short Term (1–2 years)	PS
B	Develop a “City Employees Going Green” site on the City’s intranet with helpful tips and examples of successful green practices	Short term (1–2 years)	PS

SUPPORTIVE MEASURE

Municipal Percentage Reduction:



0%

Cost to City:

\$0
Low

Annual Cost Savings:

\$36,000

MUNICIPAL



MUNICIPAL ENVIRONMENTALLY PREFERABLE PURCHASING (MEPP)

Several City departments have already adopted environmentally preferable purchasing practices (EPP) into many daily operations, including the use of recycled-content printer paper, green cleaning supplies, and low-volatile organic compound (voc) paints. This section includes actions to expand the City's existing EPP practices and formally adopt a citywide environmental purchasing policy, currently in draft form.

GHG Reduction Potential

36 MT CO₂e
2% of total Municipal
GHG Reductions



EDUCATE CITY EMPLOYEES ON SUSTAINABILITY INITIATIVES/UPGRADEDES



MEPP 1.1: Expand Environmentally Preferable Purchasing

Measure Description: Create and implement environmentally preferable purchasing (EPP) categories and practices in City facilities.

Environmentally preferable refers to products or services that have a lesser or reduced effect on human health and the environment when compared with competing products or services. EPP policies help guide

City operations to achieve sustainability goals. EPP policies also utilize the city’s buying power to stimulate market demand for green products and services

EPP leads to improved worker safety and health, reduced liability, reduced health and disposal costs, and increased availability of environmentally preferable products in the local marketplace.

The City of Walnut Creek has been making progress in the environmentally preferable purchasing area. For example, a draft EPP policy is in the process of being reviewed and approved by the City. The draft EPP includes following required solid waste measures:

- Purchasing paper towels and copier/printer paper with at least 30% post consumer waste
- Eliminate the use of bottled water at city hosted events
- Eliminate the use of polystyrene in beverage and food service ware

Additionally, in terms of green cleaning products in the custodial division, soy- and citrus-based cleaners, which are non-petroleum-based products, have been used throughout City facilities since 2008.

This measure will allow the City to set an example for other local governments in this area by continuing to push for environmentally preferable purchasing policies and actions within both City facilities and the broader regional community. Such efforts will facilitate the achievement of emissions reductions elsewhere and solidify Walnut Creek’s status as a regional leader in environmental stewardship.

	Action	Timetable	Responsibility
A	Adopt the draft EPP	Short Term (1–2 years)	CMO, PS
B	Require the City’s existing and new vendors to comply with the EPP’s requirements	Short Term (1–2 years)	ALL

GHG Reduction Potential:
-36 MT CO₂e/yr

Municipal Percentage Reduction:



2%

Cost to City:
\$0
Low

Annual Cost Savings:
\$0