



October 2015

Climate Action Plan Update and Status Report



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Introduction

Background

For approximately 1,000 years before the Industrial Revolution, the amount of Greenhouse Gas (GHG) emissions in the atmosphere remained relatively constant. During the 20th century, however, scientists observed a rapid change in the climate change GHG emissions that are attributable to human activities, such as use of fossil fuels to power vehicles and buildings, and disposing of waste in landfills that release GHG emissions.

The Intergovernmental Panel on Climate Change (IPCC) has identified four major GHG emissions—water vapor, carbon dioxide (CO₂), methane (CH₄), and ozone (O₃)—that are the likely cause of an increase in global average temperatures observed within the 20th and 21st centuries. CO₂ is one the most prevalent GHG emissions resulting from human activity. According to the IPCC, the amount of CO₂ has increased by more than 35 percent since preindustrial times and has increased at an average rate of 1.4 parts per million (ppm) per year since 1960, mainly due to combustion of fossil fuels and deforestation.

Climate-change impacts are affected by varying degrees of uncertainty. IPCC's 2007 Fourth Assessment Report projects that the global mean temperature increase from 1990 to 2100, under different climate-change scenarios, will range from 1.4 to 5.8 degrees Celsius (°C) (2.5 to 10.4 degrees Fahrenheit (°F)). In the past, gradual changes in the earth's temperature changed the distribution of species, availability of water, etc. In California potential impacts resulting from climate change are:

- Poor air quality made worse due to more severe heat waves
- Accelerated sea level rise, impacting beaches and infrastructure
- Decreasing Sierra Nevada snow pack, affecting adequate water supplies
- Increased and more severe wildfire seasons
- Reduction in available renewable hydropower
- Increasing threats from pests and pathogens from warmer weather
- Declined productivity in agriculture due to irregular blooms and harvest and increased pests and pathogens.
- Altered timing for wild life migrations and loss of species, impacting food chain and ecosystems.

With this understanding, many local, state, and federal governments around the world are taking action to reduce global GHG emissions. The purpose of Menlo Park's Climate Action Plan (CAP) is to provide strategies that reduce local greenhouse gas (GHG) emissions and assist Menlo Park to meet or exceed the emission reduction targets of AB 32 (California's Global Warming Solutions Act of 2006). AB 32 sets a goal for the state to reduce greenhouse gas emissions to 1990 levels by 2020, and 80% below 1990 levels by 2050. In April 2015, the Governor of California issued an executive order to establish a GHG reduction target of 40% below 1990 levels by 2030.

Menlo Park's first Climate Action Plan was approved by the City Council in 2009 and the Council stated that the Climate Action Plan was intended to be a 'living document' to be updated periodically as current strategies are implemented and as new emission reduction strategies and technologies emerge that effectively reduce emissions. On an annual basis, the Council reviews and approves a report on Menlo

Park’s Greenhouse Gas Inventory trend and five year Climate Action Plan strategies and implementation status.

Menlo Park City Council Actions

The City of Menlo Park has taken a number of actions in recent years to address climate change. To provide context and facilitate retrieval of that history, Figure 1 below provides an overview of Menlo Park’s climate action planning to date. Appendix A provides a history of the Climate Action Planning reports which have been presented to the City Council.

In addition to the milestones and City Council actions shown below, the City’s Environmental Quality Commission meets monthly to discuss a variety of climate action planning related topics, and the City’s environmental staff provides leadership in completing climate action planning projects, along with other compliance and regulatory duties. A number of Menlo Park non-profit organizations support these efforts as well.

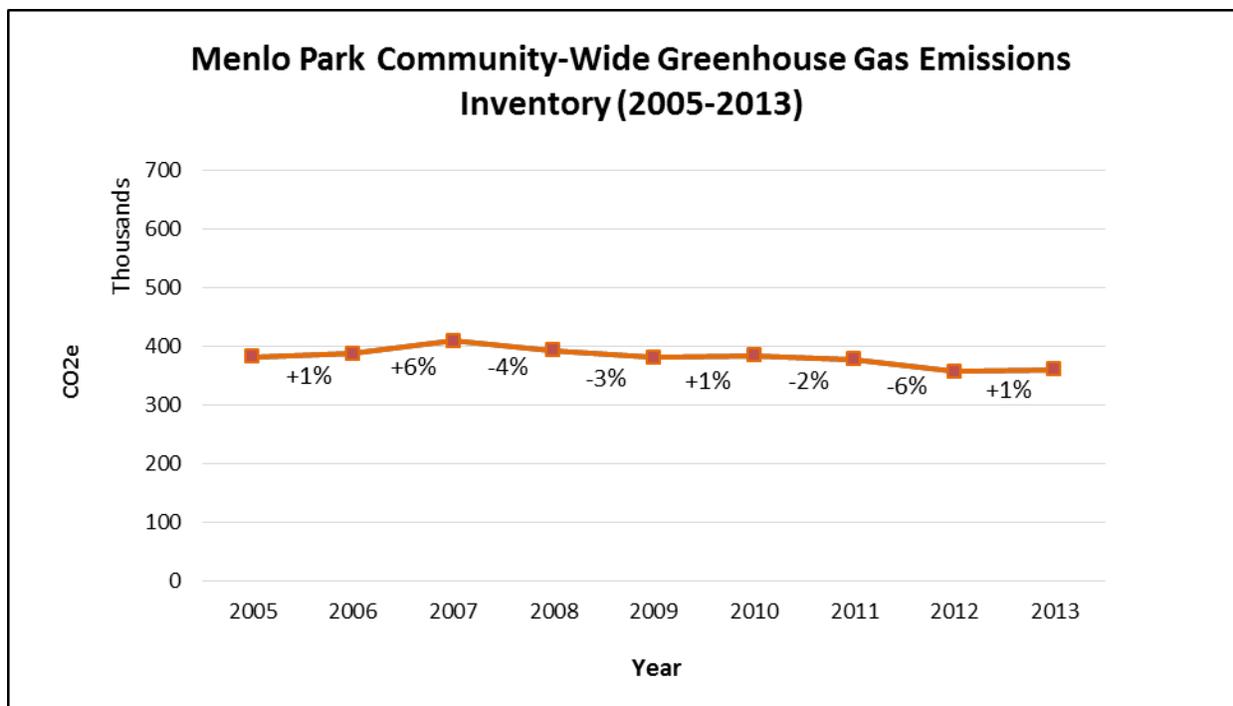
Figure 1 – Previous Menlo Park Climate Action Planning Milestones

Year	Milestone
2005	Green Ribbon Panel – 100+ participants
2005	1st Greenhouse Gas (GHG) Inventory
2008	Approval to develop a Climate Action Plan (CAP)
2009	1st CAP drafted and approved
2011	CAP update
2013	CAP update and adoption of 27% GHG reduction goal from 2005 levels by 2020
2014	CAP update

Community-Wide Greenhouse Gas Inventory Results Between 2005 and 2013

Using ICLEI's (Local Governments for Sustainability) updated Clean Air and Climate Protection (CACP) Software, Menlo Park was able to complete greenhouse gas inventories between 2005 and the current inventory using the most current available data for 2013. GHG emissions were measured from building energy usage, solid waste sent to the landfill, estimated fuel consumption, and methane produced from a closed landfill (Bedwell Bayfront Park) in Menlo Park.¹ Figure 2 shows the annual trend in community-wide greenhouse gas emissions from all sources combined, while Figure 3 shows Menlo Park's inventory for 2013 broken down by source.

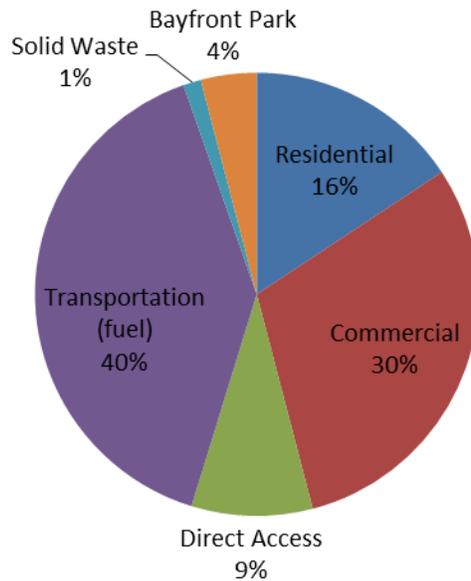
Figure 2 – Community-Wide Greenhouse Gas Emission Inventory 2005-2013



For reference, GHG emission can also be expressed as carbon dioxide equivalents (CO₂e). The trends show GHG emissions going up or down slightly each year, based on factors such as the PG&E energy emissions factors, economic growth or decline.

¹ Energy data obtained from PG&E. Transportation calculated using total gasoline sales data provided by Menlo Park's Finance Department with an assumption that 95% of sales are fuel sales, and applying the average cost per gallon of gasoline in California from the California Energy Almanac produced by the California Energy Commission. Solid Waste Data obtained CalRecycle, and Bayfront Park data was provided by Fortistar, contracted operator of the landfill. *Final CO₂e count being verified by staff, direct access figures are under review as of 7/15/15.

Figure 3 – 2013 Menlo Park Community-Wide Greenhouse Gas Emissions by Source



In 2013, the City of Menlo Park’s community-wide emissions totaled 360,427 tons of CO₂e. Appendix B shows the GHG emissions attributed directly to City of Menlo Park operations, which are a small portion of Menlo Park’s overall GHG emissions.

Emissions from electricity and natural gas use in the residential sector totaled 16%, followed by commercial customers at 30%, and Direct Access energy users at 9%. Emissions from transportation (fuel purchases) totaled 40%, followed by the closed Bayfront Park landfill at 4% and solid waste at 1%.

When compared to Menlo Park’s 2012 community-wide inventory (356,521 tons) there is a 1% increase in emissions. This one percent increase can be attributed to the following community trends:

- Increase in energy consumption in both the residential and commercial sectors. For example, there was a 3.4% increase in residential energy use and 5.5% increase in commercial energy use from 2012-2013.
- Increase in development projects occurring in Menlo Park, which can be seen in the differences in finalized building permits for new construction that went from 78 building permits in 2012 to 117 in 2013, a 50% increase over 2012.
- In 2012, the former Sun Microsystems corporate campus was not occupied by Facebook as remodeling was occurring at the site. In 2013, Facebook moved 6,500 employees to the former Sun Microsystems campus. Facebook has submitted plans for campus expansion which will

roughly triple its current size by 2020. Rebuilding and infill new construction in the residential and commercial sector are expected to result in continued rise in energy demand in Menlo Park for several years to come.

- PG&E emission factors slightly increased from 0.4440 lbs. CO₂/kWh to 0.4990 lbs. CO₂/kWh between 2012 and 2013

The current trend will not meet State AB 32 goals to reduce emissions to 1990 levels by 2020 and 80% below 1990 levels by 2050, unless significant local policies and programs are implemented to achieve this statewide goal. The next section provides an overview of strategies that Menlo Park will review and potentially implement over the next five years.

Recommendations for Greenhouse Gas Reduction Strategies Between 2015 and 2020

The following list of measures, in Figure 4, are recommended community and municipal strategies to aid in meeting Menlo Park's GHG emissions reduction targets. Additional measures may be needed at the international, national, statewide, and local level in order to fully reach Menlo Park's climate action goals.

Figure 4 – Menlo Park Five Year Community GHG Reduction Strategies 2015-2020

Fiscal Year 2015-16

- Complete installation of Solar PV on four City buildings
- Complete installation of four Electric Vehicle (EV) Charging stations at City public parking locations
- Incorporate CAP strategies and GHG emission reductions into General Plan update
- Complete energy efficient upgrades and renewable energy installation at city facilities
- Consider Community Choice Energy (CCE) options to gain additional renewable power in Menlo Park's portfolio
- Complete evaluation of methane capture and treatment at Bedwell Bayfront Park (Closed Landfill)

Fiscal Year 2016-17

- Incorporate Zero Net Energy and LEED Silver requirements into Planning requirements and Building Codes to increase efficiency in new buildings
- Implement Energy Star ratings requirement, or other performance tracking methodology, into Planning requirements for new buildings
- Consider changes to City's solid waste, recycling, and organics collection franchise that encourage zero waste and decrease waste to landfill
- Consider developing an energy efficient/renewable energy plan for commercial and residential sector to re-invigorate energy upgrades for existing buildings
- Re-invigorate a social marketing program to increase biking, public transit, and walking in the community
- Implement CCE, if selected as an option

Figure 4 – Continued

Fiscal Year 2017-18

- Support Transportation Commission’s car sharing program
- Support Bicycle Commission’s bike sharing program
- Consider program to increase Caltrain ridership by downtown employees
- Encourage local food production through social marketing, education, and community garden programs
- Consider large scale renewable energy generation within Menlo Park (such as solar farm on a portion of open space, or large number of solar roof-top installations)

Fiscal Year 2018-19

- Revisit City Environmental Purchasing Program (EPP) to consider requiring new City buildings, facilities, and vehicles meet certain minimum environmental attributes
- Revise 2004 City Street Tree Master Plan, with the support of the City Arborist, to increase urban tree canopy
- Consider fuel switching strategies to move residential and commercial energy from natural gas and other fuels to renewable electricity portfolio
- Consider consumption based community engagement program to reduce GHG impacts of plug load, food and consumer goods purchased in Menlo Park

Fiscal Year 2019-20

- Consider replacement of all remaining City non-LED street lights with LED fixtures
- Consider height and density limit adjustments to promote active and public transportation
- Consider resiliency strategies for protecting Menlo Park land in the projected Sea Level Rise (SLR) zone
- Robust Climate Action Plan update community engagement program to craft Menlo Park’s strategy looking forward to 2040

For All Years 2015-2020:

- Continue implementation of City EPP, residential and commercial water, waste and energy efficiency programs

The above is a recommended timeline only. New policies and programs related to GHG reductions may require a comprehensive cost-benefit analysis. Nearly all policies and programs would require City Council approval prior to implementation. In addition, the five year strategy also reflects what can be accomplished with current staff resources.

Status on Projects Approved by Council from 2014 Update

In April 2014, Council approved of a five-year CAP strategy. The following is the status of projects previously discussed. The projects are listed roughly in the order in which they were originally planned to be implemented. The progress highlights the varied speed in which projects can move forward within the context of the larger City effort.

Planned Implementation FY 2011-12

<p>Participation in Energy Upgrade California</p>	<p>In April 2015, the City, San Mateo County, and Bay Area Regional Energy Network (BayREN) cosponsored a homeowner energy efficiency workshop at the Belle Haven neighborhood center. The workshop was attended by 30 residents. The City continues to conduct outreach regarding energy efficiency opportunities for both residents and businesses, through bill inserts, Facebook, Twitter and NextDoor social media campaigns. The State Energy Watch program provides up to \$4,500 in rebates to homeowners and \$750 per unit to multi-family dwelling owners that complete energy efficient upgrades. City Council approved a rebate program in 2011 that provided partial payment to residents for completing a home energy audit, and full rebate if any recommended energy efficient upgrades are made. According to San Mateo County Energy Watch reports, Menlo Park had the third highest participation rate in the program for the county behind San Mateo and San Bruno. Approximately 25 projects were completed in Menlo Park. The City maintains a small fund for energy audit rebates; however, the nearby non-profit agency that offered audits to residents has experienced program changes which have resulted in a reduced number of requests for the funds.</p>
<p>Status</p> <p>Current, On-Going, with Program Changes</p>	
<p>Establish Climate Action Plan Greenhouse Gas Reduction Target</p>	<p>A GHG reduction target of 27% by 2020 from 2005 level was adopted by Council in March 2013.</p>
<p>Status</p> <p>Completed in 2013</p>	
<p>Mandatory Commercial Recycling Ordinance</p>	<p>State-wide mandatory commercial recycling was enacted in 2013 via AB 341 and State-wide mandatory commercial organics recovery was enacted in 2014 via AB 1826, thus removing the perceived need for local ordinances. The South Bay Waste Management Authority (also referred to as SBWMA or RethinkWaste) is taking the lead in publicizing and implementing these laws on behalf of its member agencies, including Menlo Park.</p>
<p>Status</p> <p>Removed</p>	

<p>Energy Performance Contracting and Solar Power Purchase Agreements</p>	<p>Environmental Programs worked with San Mateo County Energy Watch to provide a free energy audit of the City’s administration building, and an Energy Management System (EMS) was recommended. The City Council appropriated over \$1M in the Capital Improvement Program (CIP) for FY 2014-15, and FY 2015-16 for the energy efficiency projects at City facilities, these include variable frequency drives, Energy Monitoring Systems (EMS) and new chillers, which are estimated to save 578 tons of CO2e. On October 6, 2015 the City Council accepted the chillers and variable frequency drives as completed by the contractor. The EMS implementation is underway, thus the project is halfway completed relative to its budget.</p> <p>In 2013, Council also approved participating in the regional renewable energy procurement project (R-REP) to install solar on four city facilities (Arrillaga Gymnasium, Arrillaga Gymnastics Center, Onetta Harris Center, and Corporation Yard). Construction of the solar power facilities is underway and is expected to be completed in November 2015.</p> <ul style="list-style-type: none"> • The combined solar system sizes equal 390.4 kW • The annual solar output is estimated to be 580,889 kWh
<p>Status</p> <p>Nearing Completion in 2015</p>	<ul style="list-style-type: none"> • Over the course of the 20 year Power Purchase Agreement (PPA), the City is expected to save over \$461,000 in energy costs (when compared to PG&E), with minimal capital outlay by the City • The installations are estimated to reduce the City’s Municipal GHG emissions by 419 metric tons annually, which is equivalent to removing eighty-eight passenger cars from the road every year.

<p>Adopt Environmental Purchasing Policy for City Operations</p>	<p>Implementation and reporting on the results of the policy are still in progress. The City established an Environmental Purchasing Policy (EPP) working group consisting of members from all departments that helped craft the policy, which was adopted in 2014. The committee has not met since adoption due to other city priorities and limited staff resources. Reporting is expected to begin in FY 2015-16.</p>
<p>Status</p> <p>Completed in 2014</p>	

Improve Methane Capture at Bedwell Bayfront Park	Delays are due to expected changes in methane production due to the age of the landfill and unexpected changes in regulatory standards for operating the closed landfill. A consultant was hired to study this issue in FY 2013-14 and a revised plan is expected in 2016.
Status In Progress	

Phase II Sustainable Building Standards Development	Staff anticipates bringing changes to the building code to City Council along with required updates required under the California universal building code, which is updated every three years. Expected completion FY2016-17.
Status In Progress, projected completion FY2016-17	

Planned Implementation FY2012-13

Expand Green Business Certification Program	San Mateo County revived the program using a one-year Climate Fellow staff person in FY2014-15. Menlo Park businesses were certified. City staff helped to publicize the program and the businesses in 2015. Follow up is needed to ensure the County continues the program on an on-going basis.
Status Implemented in FY2014-15	

Maximize Recycling and Composting at all City facilities to a 75% measured diversion rate	Staff has provided outreach on how to properly use the programs to City staff, reporting and follow up are pending additional staff time availability.
Status Current, On-Going	

Consider Adopting Zero Waste Policy	This project is currently planned for the FY2016-17 CIP and would need to coincide with possible Collection Franchise negotiations.
Status Moved to FY2016-17	

Implement Civic Green Building Policy for New City facilities or major renovations	Due to limited staff resources, this project is on hold until the Environmental Purchasing Policy is fully implemented. In 2014 the City's Environmental Purchasing Policy was adopted, additional staff time is needed to complete department level follow up, training and reporting. Environmental staff is planning to assist the City Hall remodeling team in choosing green building materials whenever possible. If the project qualifies, the City may certify the project under the LEED O+M (Operations and Management) framework.
Status On Hold	

Planned Implementation FY2012-13

Car Sharing and Public Transportation Marketing	These projects were de-emphasized in the CAP to reflect the Transportation and Bicycle Commissions as main drivers of these projects, and reduce duplication of effort.
Status Implemented FY 2014-15	

Social Marketing Program for Alternative Transportation	City staff and volunteers implemented a social media campaign for active transportation in 2014 via the transportation division's Facebook and Twitter accounts. Bicycle infrastructure improvements and campaigns to promote active transportation and commute alternatives to single occupancy vehicles were completed by the Bicycle and Transportation commissions and staff in 2014.
Status Implemented FY 2014-15	

Planned Implementation FY2014-15

Consider Electric Vehicle Charging Stations	In 2014 the City won a grant, as part of a regional effort, for EV chargers. Appropriate accessible parking locations for the chargers have been identified and the City is working on estimates for the costs to run electrical conduit and enhanced electrical service to the selected locations. Although the cost of the chargers and the installation of the chargers are covered by the grant, the City will need to contribute approximately \$30,000 to provide the conduit and electrical service upgrades required, and a small number of parking spaces will be lost as a result of accessibility requirements.
Status In Progress	

Recommended Next Steps of GHG Emission Reduction Strategies

This annual update and status report is intended to complete a high level analysis of the City's current GHG emissions and five year reduction strategies and identify new strategies for consideration over the next five years.

For FY2015-16 the City Council Approved \$100,000 in the Capital Improvement Plan (CIP) for Climate Action Plan activities. These funds will be used to pursue the strategies listed in Figure \$ for FY2015-16.

The next recommended steps include:

- City Council review the community and municipal GHG inventories for 2013 (above, accomplished at this meeting).
- Staff to continue to consider and implement strategies identified in the report through the annual Capital Improvement Plan and/or city budget process.
- EQC to advise staff and City Council regarding updates to the General Plan, which will facilitate GHG reductions in the near and long term.
- Staff to track statewide changes, such as Governor's Executive Orders, which impact the City's Climate Action Planning.

Appendix A – Previous Menlo Park Climate Action Planning City Council Reports

Council Report	Date	Action
07-075	5/1/2007	Adoption of a resolution appropriating \$35,000 from the General Fund Reserve for consultant and staff costs to conduct a Greenhouse Gas Emissions Inventory and authorizing the City Manager to enter into a contract for \$24,100 with ICLEI – Local Governments for Sustainability to conduct the inventory, and adoption of a resolution endorsing the U.S. Mayors Climate Protection Agreement, as modified. (Staff Report #07-075)
08-031	3/4/2008	Receipt of updates to the Menlo Park Greenhouse Gas Emissions Inventory Analysis; approval of a resolution authorizing the City Manager to execute a grant agreement in the amount of \$25,000 with the Bay Area Air Quality Management District for developing a Climate Action Plan and to execute a contract in the amount of \$30,600 with ICLEI-Local Governments for Sustainability to develop a Climate Action Plan; and appointment of a Council Member to the Core Team for planning. (Staff Report #08-031)
08-039	3/25/2008	Consideration of purchasing offset credit for Greenhouse Gas Emissions from City operations through the PG&E Climate Smart Program (Staff Report #08-039)
08-040	3/25/2008	Core Team for drafting the Climate Action Plan (Staff Report #08-040)
08-048	4/22/2008	Adopt the Climate Action Assessment Plan Report and authorize use of remaining funds from the Green@Home contract with Acterra to provide additional energy efficiency incentives that would increase Menlo Park's participation in the regional Energy Upgrade California Program (Staff report #11-128)
13-051	4/2/2013	Provide direction on the Climate Action Plan Update and Status Report, new measuring methodology for transportation greenhouse gas emissions, and a community greenhouse reduction target, and provide direction on funding in order to achieve target. (Staff report #13-051)
14-113	06/17/2014	Receive annual community greenhouse gas inventory information and approve updated five year Climate Action Plan strategy (Staff report #14-113)
14-115	06/17/2014	Approve a resolution authorizing the City Manager to execute an agreement with the Bay Area Climate Collaborative, ABM, and ChargePoint to install four electric vehicle charging stations in Menlo Park with grant funds from the California Energy Commission (Staff report #14-115)
14-178	10/07/2014	Approve a resolution making findings necessary to authorize an energy services contract for Power Purchase Agreements (PPA) at the Arrillaga Gymnasium, Arrillaga Gymnastics Center, Onetta Harris Center, and City Corporation Yard; authorize the City Attorney to finalize the agreement and authorize the City Manager to execute the agreement; and amend the existing consulting contract with Optony, Inc. to include construction management services (Staff report #14-178)

Appendix B - City of Menlo Park Municipal Operations GHG Emissions

The City of Menlo Park conducted the following Municipal GHG Inventory in 2009, which showed an increase in GHG of 594 tons due to expansion of City infrastructure/facilities and changes in emissions factors. The 2009 Municipal Inventory has not been officially updated; however, the City has tracked information reflecting the municipal energy saving projects conducted with the support of PG&E. The projects which were completed in 2010 through 2013 provide a GHG savings of 100 tons (a number of additional projects were conducted; however, they were not counted in this calculation, because the year of completion has not been established).

In addition, the City Council has approved the following municipal energy-efficiency related projects, which are in progress, and are expected to save an additional amount of more than 578 tons of GHG:

October 2014:

- Project: Approved \$64,272 in funding to install variable frequency drive systems at the Burgess Park and Belle Haven Park pools.

Estimated annual CO₂e reduction: 38 tons Status: in progress

- Project: Approved four Power Purchase Agreements (PPA) with Cupertino Electric as part of the Regional Renewable Energy Procurement Project (R-REP) with Alameda County to install solar PV systems on municipal buildings (rooftop and solar carport). Solar will be installed on the Arrillaga Family Gymnasium, Arrillaga Family Gymnastics Center, City Corporation Yard, and Onetta Harris Community Center.

Estimated annual CO₂e reduction: 419 tons Status: completion November 2015.

April 2015 (For the City's Administrative Building and Library):

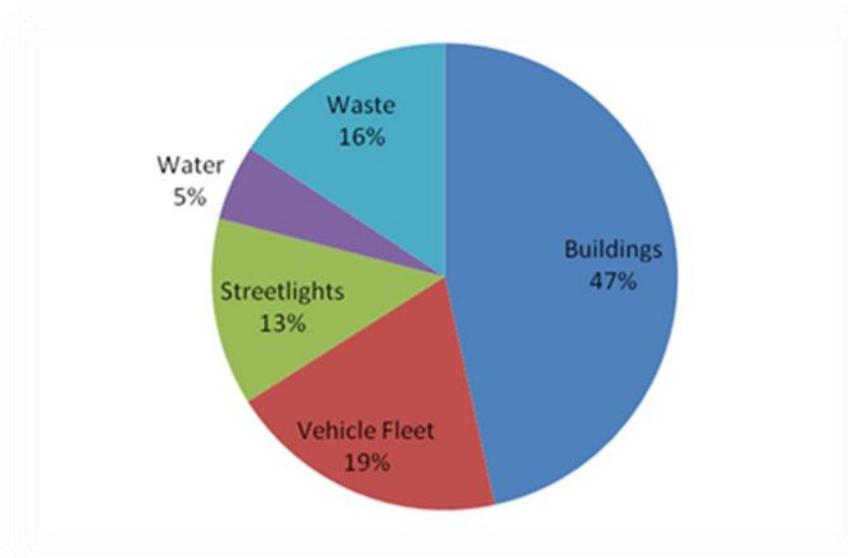
- Project: Approved \$375,000 in funding to purchase a new Energy Monitoring System

Estimated annual CO₂e reduction: 120 lbs Status: in progress

- Project: Approved \$606,160 in funding to purchase new chillers and variable frequency drives.

Estimated annual CO₂e reduction: 121 tons Status: Completed October 6, 2015

Municipal Operations Greenhouse Gas Emissions Inventory 2009 By Source (2,889 tons CO₂e)



Emissions from the City are embedded within the community-wide totals. Government operations are therefore a subset of total community emissions. In the year 2009, the City of Menlo Park’s municipal operations generated 2,889 tons of CO₂e, which constitutes 0.004% of the community’s total greenhouse gas emissions. This is a 25% increase compared to 2005 total emissions (2,305 tons).

Electricity and natural gas use in the City’s buildings contributed to 47%, the vehicle fleet contributed 19% of this total, and the remainder of CO₂e came from streetlights, waste, and the electricity for pumping water and storm water.

Municipal Buildings - Electricity and natural gas use in the City’s buildings contributed to 47% of CO₂e from municipal operations. This is up 14% compared to City buildings contributing 33% of CO₂e toward municipal operations in 2005. This increase can be attributed to a couple reasons; PG&E’s greenhouse gas CO₂ emission rates for electricity increased from kWh x (0.489 lbs/kWh / 2,204.6 lbs/metric ton) in 2005 to kWh x (0.641 lbs/kWh / 2,204.6 lbs/metric ton) in 2009. The increase in emissions rates means that each kWh consumed in 2009 contributed approximately 31.1% more CO₂ than in 2005. Another reason for the increase in fuel and electricity consumption from municipal buildings is the construction of new buildings from 2005-2009.

Vehicle Fleet - In 2009, Menlo Park’s municipal vehicle fleet is responsible for the second largest share of overall municipal emissions at 19%. Compared to 2005’s 28.4%, this is a 9.4% reduction. Menlo Park’s vehicle fleet consists of analyzing the fuel consumed by City vehicles and equipment, such as police vehicles, and the tractors used for landscaping

Streetlights - The energy consumed by the City’s street lights accounted for 13% of municipal operations greenhouse gas emissions in 2009. This analysis included the energy consumed by streetlights, traffic signals, park lighting, decorative lights, and parking lot lights. Compared to 2005’s 11.9%, this is a 1.1%

increase. This increase can be attributed to the addition of more streetlights, including signal cameras added throughout the city in 2008.

Water/Sewage - The emissions resulting from the energy used to pump water and waste water remained the same at 5% in 2005 and 2009. This analysis excludes pumping and treatment of wastewater that is carried out by the West Bay Sanitary District (WBSD), East Palo Alto Sanitary District (EPASD), and the South Bayside System Authority (SBSA).

Waste - In 2009, the relative contribution of landfilled waste from municipal operations to greenhouse gas emissions is 16%. Compared to landfilled waste contributing 20.8% to municipal operations in 2005, there is a 4.8% decrease. This decrease can be attributed to the reduction of solid waste sent to the landfill from year to year.