

City Of Piedmont Council Agenda Report

DATE: May 5, 2014

TO: Mayor and Council

FROM: Paul Benoit, City Administrator

SUBJECT: Informational update on the Climate Action Plan implementation, a 2010 Greenhouse Gas Emissions Inventory, and implementation of Environmental Task Force actions.

BACKGROUND:

On March 15, 2010 Council adopted the Piedmont Climate Action Plan (CAP), which includes 32 measures that the City can implement in order to reach its greenhouse gas emissions target of 15% below 2005 levels by the year 2020. This report provides a brief update on the implementation of the adopted actions and measures in the form of a 2010 Greenhouse Gas Emissions (GHG) Inventory (Exhibit B, page 23) and a discussion of activity since 2010 and recent energy related grant activity.

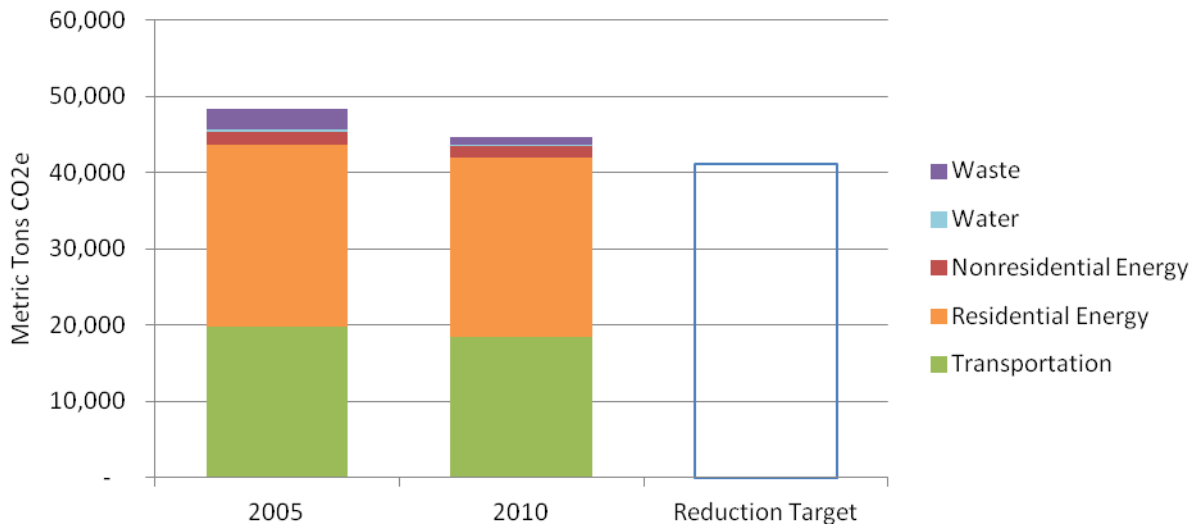
On January 4, 2010 Council adopted 31 actions recommended by the Environmental Task Force (ETF) to increase waste diversion and energy efficiency in Piedmont. In response to Council's request for periodic status reports and because the waste reduction and energy efficiency actions are related to Piedmont's climate action goals, an update on the implementation of ETF actions is included as an attachment to this report (Exhibit A, page 15).

2005 GREENHOUSE GAS EMISSIONS INVENTORY:

With funds provided by StopWaste.org, Piedmont completed a 2005 Greenhouse Gas Emissions Inventory in 2006. The 2005 Inventory is the City's baseline inventory against which later inventories will be compared in order to measure the City's accomplishments in meeting its greenhouse gas emissions reduction goal. As data and methodologies pertaining to greenhouse gas emissions were revised and improved in subsequent years, the 2005 Inventory was updated when the Climate Action Plan was completed in 2010 and again as part of the 2010 Inventory. The inventory indicates that in 2005 greenhouse gas emissions in Piedmont totaled approximately 48,300 metric tons of carbon dioxide equivalent (CO₂e).

2010 GREENHOUSE GAS EMISSIONS INVENTORY:

GHG Emissions 2005 & 2010

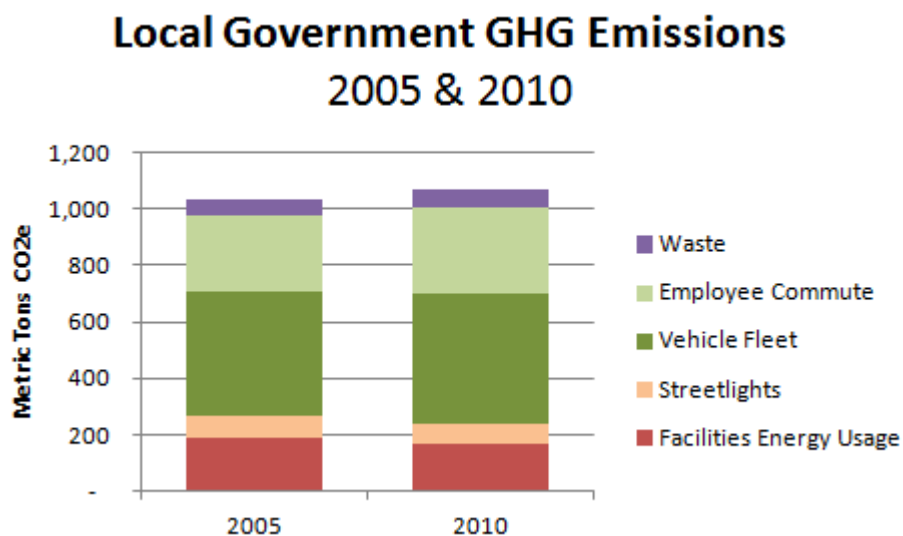


With funds provided by PG&E’s Green Community Program, the Alameda County Waste Management Authority (StopWaste.Org) assisted its member local governments in the completion of municipal and community greenhouse gas emissions inventories for the calendar year 2010. Community emissions include municipal emissions, but municipal (City government) emissions are also studied separately. Piedmont completed its 2010 GHG Emissions inventory at the close of 2013 and it is attached as Exhibit B. As noted in the inventory, Piedmont’s GHG emissions in 2010 were 44,800 metric tons CO₂e. This is a 7% reduction from 2005 levels and although this is a significant reduction that gives the appearance of Piedmont being on track to meet its 2020 goal, it is important to look at other key data provided in the inventory to determine the thoroughness and effectiveness of the City’s GHG reduction efforts, for example:

- As noted on page 6 of the attached inventory, 2010 was a “wet” year in comparison to 2005. The greater rainfall provided PG&E with greater capacity for hydroelectric generation, which reduced PG&E’s electricity GHG emissions factor for the year. This is the key factor accounting for a significant portion of Piedmont’s 7% emissions reduction.
- The transportation and residential sectors are responsible for the vast majority of Piedmont’s GHG emissions, respectively accounting for 41% and 52% of the community’s emissions in 2010.
 - Contributing 41% of the community’s GHG emissions, transportation is a sector over which the municipal government has very little control. The programs and infrastructure changes that may result from an implementation of Piedmont’s Pedestrian and Bicycle Plan, currently in development, may lead to a healthier City, but is likely to have marginal effects on GHG emissions. Transportation emissions dropped by 7% between 2005 and 2010, largely due to a 7.8% reduction in passenger vehicle miles driven (see page 7 of the inventory). A 0.4% increase in fuel efficiency played a small part in emissions reductions. If the national and regional economic recession of 2010 led to the reduction in vehicle miles driven for that year, an improved economy in future years may have the opposite effect.

- Energy use by Piedmont’s residential sector accounts for just over half (52%) of the City’s GHG emissions. The Inventory notes (on page 8) that the residential sector consumed 5% less electricity and 3% more natural gas in 2010 as compared to 2005. A greater number of heating degree days in 2010 are the likely cause in the increased natural gas consumption and emissions. It may prove very difficult to meet the 15% reduction goal if there is no significant reduction in energy consumption in residential buildings.
- The three other CO₂e-producing sectors in Piedmont – nonresidential energy, water, and waste – contributed 7% of the community’s 2010 emissions, compared to 9% of 2005’s emissions.
 - Piedmont’s nonresidential sector consists of the city’s schools, religious institutions, municipal facilities, and commercial buildings. Between 2005 and 2010, this sector saw a 19% decrease in emission from electricity and an 18% increase in emissions from natural gas, for a resulting 7% decrease in nonresidential emissions (page 9 of the inventory). The factors such as PG&E’s energy mix and weather that influenced residential emissions, are the same for nonresidential. In addition, one of the three PUSD elementary schools was closed in 2010 for renovation.
 - GHG emissions result from the treatment and transportation of water, which contributed 1% of Piedmont’s emissions in both 2005 and 2010. Consumption of water was 10% greater in 2010 than in 2005, resulting in a 1% increase in emissions from water use.
 - The methane produced by decomposing organic materials in landfills is the waste stream’s contribution to Piedmont’s GHG emissions. Piedmont sent 63% less tons of organic materials to landfills in 2010 than it did in 2005, resulting in a 60% decrease in landfill GHG emissions. This dramatic decrease is a direct result of the July 2008 implementation of weekly curbside collection of unlimited amounts of yard waste and food scraps, the high participation rate of residents and businesses in this program, and the restriction against using or dumping organic materials at landfills in the City’s waste hauling contract.

Emissions from Municipal Operations



Piedmont’s municipal operations are a subset of the community emissions analysis above, but are studied separately because the City has direct control over the operations and can lead by

example in GHG emissions reduction efforts. As noted on pages 11 through 15 in the 2010 Inventory, municipal operations represent about 2% of the overall community's emissions. Municipal emissions were about 3% greater in 2010 than in 2005, increasing from 1,036 to 1,067 metric tons CO₂e.

PROGRESS SINCE 2010:

Piedmont's Climate Action Plan was adopted in 2010 and the section immediately below discusses the implementation of measures in the CAP. GHG Inventories are "snapshots" of specific years that can be used to measure progress in emissions reductions. Not captured in the 2010 Inventory are the programs and initiatives from 2011 onward. A 2015 Inventory will capture the emissions reductions of these programs within a full analysis of the community for another snapshot of progress. Until such an inventory is undertaken, the following summaries of programs and actions, and the grants that funded them, is provided.

Solar Energy System Permit Fee Incentive

Actually implemented on July 1, 2008, 1¾ years before its CAP was adopted, Piedmont incentivized the installation of solar energy systems on private property by changing the building permit fee for such projects to a flat fee of \$300, rather than one based on construction costs. In addition, the California Solar Rights Act requires that local governments use an administrative, nondiscretionary review process for on-site solar energy systems. Plus, there are several state and federal financial incentives that make solar energy systems affordable. The result is that Piedmont has issued 171 permits to private property owners for the installation of solar energy systems since July 2008.

Streetlight Replacements

In July 2011 the City replaced 84 streetlight fixtures with new high-efficiency LED fixtures that also provided increased visibility. The new streetlights are located in the Civic Center, and along portions of Oakland, Highland, Grand, Linda and Lake Avenues. \$58,369 of the \$69,500 cost for the project was provided by an Energy Efficiency and Conservation Block Grant of federal ARRA funds distributed by California Energy Commission. Estimated annual savings from the project include:

\$3,039.89

23,596 kWh

28,895 lbs. CO₂e (14.45 metric tons or 0.03% of 2010 community emissions)

EPA Climate Showcase Grant funded Projects

In 2010, Piedmont, along with the cities of Albany, El Cerrito and San Pablo and non-profit partner Strategic Energy Innovations (SEI), formed the Small Cities Climate Action Partnership (ScCAP), which was awarded a grant in the amount of \$497,488 from the EPA's extremely competitive Climate Showcase Grant Program. This provided Piedmont with \$75,202 in pass-through funds for climate action projects and committed the City to a match of \$38,700 (from the City's facilities maintenance fund dedicated to City Hall HVAC replacement). Several projects were developed with this grant funding, including the following:

HVAC Replacement for Piedmont City Hall/Fire Department

\$25,000 of ScCAP grant funds were directed to the replacement of the HVAC system for Piedmont City Hall/Fire Department. The project was intended to update the system with one that was energy efficient and that provided cooling as well as heating. The total cost of the project was \$210,000. Estimated annual savings from the project include:

\$3,039.89

<8,151> kWh (the new HVAC included air-conditioning, increasing electrical load)

676 therms

1.52 metric tons CO₂e (0.003% of 2010 community emissions)

Swim Center Pool Covers

\$7,087 of ScCAP grant funds were directed to cover the full purchase cost of new energy efficient pool covers for the medium and large pools at the Piedmont Swim Center. Estimated annual savings from the project include:

\$10,590

11,147 therms

60.2 metric tons CO₂e (0.13% of 2010 community emissions)

Residential Energy Upgrade Incentive

\$5,860 of ScCAP grant funds were directed towards providing fourteen residential homeowners a rebate for having an energy assessment of their home and improving their home's energy efficiency through participation in the Energy Upgrade California program. Despite extensive outreach (funded with \$2,800 ScCAP funds), including mailers to all property owners and community workshops, and additional rebates of up to \$4,500 provided by PG&E, participation was less than desired. Only 14 property owners participated, which is about 0.4% of approximately 3,800 households. In order to expend the grant funds within the required timeframe, the remaining funds initially dedicated to the residential program were directed to the Commercial Lighting program described below. However, the Energy Upgrade Program and associated rebates from PG&E continues to be available to property owners. As of January 2014, 23 Piedmont homeowners have taken advantage of this program and improved the energy efficiency of their homes for an estimated annual savings of 45 metric tons CO₂e (0.10% of 2010 community emissions).

Commercial Lighting Upgrade Incentive

\$19,140 of ScCAP funds were directed towards financial incentives provided to businesses, private schools and houses of worship that participated in the SmartLights program offered by Community Energy Services Corporation and East Bay Energy Watch. The SmartLights program helps small businesses complete comprehensive lighting retrofits and related energy efficiency upgrades. The financial incentives generated efficiency projects at 8 Piedmont businesses and 2 small lighting upgrades at City Hall and the Recreation Center. Estimated annual savings from the program include:

\$15,261

84,439 kWh

27.5 metric tons CO₂e (0.06% of 2010 community emissions)

Other Programs funded through ScCAP

In addition to the infrastructure upgrades noted above, the grant funds also were used to support several other projects and programs that have potential GHG reductions, including:

- Staff time spent on the development of Piedmont's **Environmental Preferable Purchasing Policy**, which was adopted by Council in November 2011. A Piedmont Environmental Purchasing (PEP) Team, made up of purchasing staff from each City department, meets quarterly to implement the policy and has upgraded recycling receptacles in City offices, replaced hand towels with an air hand dryer in the Police locker room, made progress in

recycled content office products and non-toxic cleaning products. Estimated annual savings from the policy are 0.21 metric tons CO₂e (0.0005% of 2010 community emissions).

- The assessment of energy management software for tracking municipal energy costs and use, resulting in the selection of **EnergyCAP Express** as the most useful and cost-effective tool. Strategic Energy Innovations (SEI), the consultant member of ScCAP, provided city staff 3 trainings on using the software. In Piedmont, utility bill monitoring enabled staff to identify 14 archaic wireless communication devices left on City streetlights by a bankrupt cellular provider. The removal of the devices allowed the City to eliminate those PG&E accounts and costs (over \$100/year). The monitoring also identified small or no-use meters such as irrigation, where the City could determine if it was feasible to eliminate the meter and bill. EnergyCAP provided use of its software free of charge through 2012 because the cities were a test case for municipal uses.
- Optony Inc, an independent solar consulting firm, developed a Joint Municipal Solar Procurement Feasibility Report and Technical Specifications that **assessed the solar potential of municipal facilities**. Based on the outcomes of the Feasibility Report, all cities entered into a cooperative agreement to issue a joint solicitation to procure solar power, with the City of El Cerrito acting as the lead. Based on that process, the cities selected Real Goods Solar to enter into further negotiations with each City. Four Piedmont sites were evaluated, with City Hall/Fire Department, Veterans Hall/Police Department, and Recreation Center being determined to not be cost effective for solar energy systems. The fourth site, the Corporation Yard where a 6.72 kW solar system was proposed atop a new vehicle wash cover, was determined to be cost effective at \$41,000 and City Council “green lighted” the project in 2012. The project has been stalled ever since Real Goods Solar revised their cost estimate for the project to \$86,000 in January 2013. Estimated annual savings from the Corporation Yard installation include:
 - \$5,066 (average over 30 years)
 - 7,641 kWh (average generated over 30 years)
 - 1.9 metric tons CO₂e (0.004% of 2010 community emissions)
- SEI helped coordinate free **energy efficiency assessments of City facilities** provided by the Municipal Implementation Team (MIT) of East Bay Energy Watch and funded by PG&E. The resulting assessments of City Hall/Fire Department, Veterans Hall/Police Department, Community Hall and Recreation Center identified potential upgrades and equipment replacements that would receive a PG&E rebate, most notably furnace replacements at Community Hall and Police/Veterans, which, like most upgrades identified in the assessments, are not identified as near-future projects in the City’s Capital Improvement Plan. Should the upgrades be installed, estimated annual savings might include:
 - \$2,542
 - 4,807 kWh
 - 1,703 therms
 - 10.4 metric tons CO₂e (0.02% of 2010 community emissions)
- SEI and MIT assisted each city in uploading data to the EPA’s **Portfolio Manager** online program for tracking and benchmarking energy use in municipal buildings. It was determined that Piedmont’s municipal buildings do not fit into the software’s building categories for benchmarking. EnergyCAP Express was found to be a better program for analysis and reporting.

- Staff also set up **MyEnergy and Business Tools** (PG&E's online energy use and tracking tools) accounts to monitor energy usage of individual accounts through the PG&E website. These online tools, which allow the City to monitor its municipal energy use and costs should prove useful as PG&E implements time-of-use rates.

PG&E's Innovator Pilot Program Grant

With SEI acting as the lead, the ScCAP partnership was successful in applying for \$215,000 of funding through the Pacific Gas & Electric Company's Innovator Pilot Program. With this funding, ScCAP was able to expand the partnership to seven cities (adding three Bay Area cities: Benicia, Moraga, and Orinda) and to provide more support in setting up energy management tools and analyzing outcomes in all cities. In July 2012, PG&E extended its funding with SEI through Q3 2013 to provide intern support to all the cities in implementing specific energy efficiency measures. Of the total grant funding, \$6,000 was provided to Piedmont and is directed to cover the \$1,920 annual fee for use of EnergyCAP Express, an energy management software tool, through December 2015. In addition, SEI, working closely with city staff, developed municipal **Energy Action Plans** for each city, which provide a summary of energy use history and trends for the City's facilities, identifies future energy efficiency projects, and sets energy reduction goals for energy use reduction in the next 3-5 years. On whole, the plan mirrors and supplements the energy reduction measures in the Climate Action Plan. Piedmont and the other cities can use the Action Plan when implementing future capital improvement projects.

CaliforniaFIRST

In December 2009, the City Council adopted a resolution joining the California Statewide Communities Development Authority (CSCDA), a joint powers authority that offered Piedmont the opportunity to participate in a PACE program called CaliforniaFIRST. Property Assessed Clean Energy (PACE) programs provide the financial instrument to offer property-assessed loans to property owners that voluntarily choose to participate in the program so that they can make energy efficiency upgrades on their homes. Unfortunately, PACE programs around the nation were halted in 2010 when the Federal Housing Finance Agency (FHFA) issued a statement that "first liens established by PACE loans are unlike routine tax assessments and pose unusual and difficult risk management challenges for lenders, servicers and mortgage securities investors." However, in September of 2013, Governor Jerry Brown signed Senate Bill 96 into law, authorizing the California Alternative Energy and Advanced Transportation Financing Authority (CAEATFA) to establish a PACE Loss Reserve Program to address FHFA's financial concerns. This Program is designed to put first mortgage lenders in the same financial position they would have been in without the existence of a PACE loan. On March 19, 2014, CAEATFA announced the PACE Loss Reserve Program had been approved and implemented. A few days later, CaliforniaFIRST announced that its residential PACE program will launch this summer in 17 California counties and 167 cities, including Piedmont. Staff will keep Council and the community abreast of the launch in Piedmont as details are announced.

San Francisco Bay Area Regional Energy Network (BayREN)

Recognizing the need for expanded collaboration with and participation by local governments to achieve market transformation toward energy efficiency, the California Public Utilities Commission (CPUC) authorized two pilot RENs, the Southern California REN and the San Francisco Bay Area REN. The CPUC provided \$26,567,750 to BayREN, which supports programs directed to single- and multi-family energy efficiency, building codes and standards, and financing of upgrades that continue to be available to the Piedmont community. These programs include:

- Enhance Energy Upgrade California for single-family and multi-family properties through marketing efforts, incentives, alternative upgrade packages, increased homeowner decision making support, and options for greater saturation. As of January 2014, only 23, or 0.6% of Piedmont households have participated.
- Leverage local governments' unique position to influence adoption and enforcement of local building codes and standards to ensure upgrades comply with existing energy efficiency codes, as well as providing "reach codes" to increase energy savings. Building Department staff is taking advantage of training offered by the BayREN program.
- Provide implementation of statewide and local financing programs to ensure that upgrades are financially accessible to more homeowners, such as continuing the rebates of up to \$4,500 available to Energy Upgrade California participants.

CLIMATE ACTION PLAN (CAP) IMPLEMENTATION:

The tables on pages 28 through 42 of the 2010 GHG Inventory (Exhibit B) provide a list with implementation status of the 32 measures (divided into 61 action items) that make up Piedmont's Climate Action Plan. These are the measures the City can implement so that it can meet its greenhouse gas (GHG) reduction target: 15% below 2005 levels by 2020. The measures address the areas of building and energy (BE), waste and water (WW), and transportation and land use (TL). As the tables indicate, 31 of the 61 action items are in an initial, partial or ongoing stage of implementation. They are:

1. BE 1.1- A Conduct energy audits of all municipal buildings.
2. BE 1.1- B Evaluate the potential to locate cost-effective renewable energy systems on City Properties.
3. BE 1.2- A Install electronic building performance displays in all publicly accessible buildings.
4. BE 2.1- B Work with StopWaste.Org to verify that the required efficiency upgrade package achieves at least 20% improvement in the average Piedmont home.
5. BE 2.2- A Evaluate various financing products that would encourage property owners to invest in energy efficiency upgrades and renewable energy systems in existing homes.
6. BE 2.2- B Consult with other agencies, utilities and private lenders to evaluate and develop cost effective financing products.
7. BE 2.2- C Develop a robust public outreach program to educate residents about the availability of energy efficiency improvement financing and benefits to home owners and community GHG reduction efforts.
8. BE 2.3 Educate residents about the availability of free home energy audit programs and encourage implementation of audit findings.
9. BE 3.2- A Identify and develop financial incentives and low-cost financing products and programs to encourage investment in energy efficiency and renewable energy within existing commercial buildings.
10. BE 3.2- B Consult with other agencies, utilities and private lenders to evaluate and develop cost effective financing products.
11. BE 3.2- C Develop a robust public outreach program to educate residents about the availability of energy efficiency improvement financing and benefits to home owners and community GHG reduction efforts.
12. BE 3.3 Provide outreach programs to community business, both retail and office, to effect energy reductions.

- 13. BE 4.1 Consider adopting additional standards for energy and water efficiency if necessary.
- 14. BE 5.1- A Develop a comprehensive renewable energy financing and informational program for residential and commercial uses.
- 15. BE 6.1 Work with Alameda County to convert street lights to LED bulbs or LED-solar systems.
- 16. WW 1.1- B Adopt a resolution to achieve 90% waste reduction and diversion by 2030.
- 17. WW 1.1- C Expand outreach programs to maximize participation in waste reduction and diversion programs.
- 18. WW 1.1- E Consider adopting an ordinance that requires all household and commercial food scraps and food-soiled paper to be placed in organics carts, all commercial food service providers to use recycling and organics services, and the City’s waste collector to minimize collection route distances and use fuel efficient vehicles
- 19. WW 1.2- A Establish an environmentally responsible government purchasing policy that includes a preference to products produced with little or no GHG emissions.
- 20. WW 2.1- A Encourage residential and commercial users to participate in EBMUD’s free water audit program.
- 21. WW 2.2- C Provide City staff training regarding State code requirement for graywater systems in order to help interested parties develop systems.
- 22. WW 2.4- B Develop program to encourage the use of ET controllers in private landscapes and require or facilitate use of ET controllers for new development and landscape projects over 2,500 square feet.
- 23. TL 1.1- A Prepare and adopt a Bicycle Master Plan that coordinates with City of Oakland bicycle planning initiatives.
- 24. TL 1.1- B Construct bicycle infrastructure improvements.
- 25. TL 1.1- C Conduct a pedestrian obstacle study.
- 26. TL 1.1- D Prepare and adopt a Pedestrian Master Plan.
- 27. TL 1.2- A Conduct bicycle parking analysis in City’s commercial and civic areas.
- 28. TL 1.4- B Prepare a Specific Plan for the Grand Avenue commercial area that identifies the potential for high-quality, pedestrian-oriented, mixed-use development.
- 29. TL 2.1- A Consult with AC transit to ensure Piedmont bus stops provide shade, weather protection, seating, lighting, and route information.
- 30. TL 3.3- C Provide shade, weather protection, seating, lighting, and bike racks at casual carpool pick-up areas
- 31. TL 3.4-A Ensure that essential infrastructure improvements are made to enable safe routes to school.

DISCUSSION:

Funding

On the whole, the measures and actions that have been completed or have seen progress have been those that have received grant funds. This is particularly the case for measures requiring infrastructure upgrades, such as streetlight replacements and lighting retrofits. Sources for grant funds and the funded programs include:

Source: StopWaste.Org
 Programs: Outreach materials program. (\$89,952).

Civic Bay-Friendly Landscaping ordinance. (funded staff time).
 Civic Green Building ordinance. (funded staff time).
 Recycling receptacle program for the City’s Parks and Public spaces. (\$26,304).
 PUSD recycling receptacles and composters. (\$8,059).

Source: Energy Efficiency and Conservation Block Grants (EECBG), which are funds distributed by the California Energy Commission (CEC) and funded by the American Recovery and Reinvestment Act of 2009 (ARRA):

Program: Replacement of 84 streetlights to LED fixtures. (\$58,369).

Source: SEP 2 grant funds distributed by the California Energy Commission (CEC) and funded by the American Recovery and Reinvestment Act of 2009 (ARRA):

Program: The Energy Upgrade California in Alameda County program. (\$10.75 million indirect funding).

Source: EPA’s Climate Showcase Grant Program (Small Cities Climate Action Partnership).

Programs: Energy efficient HVAC replacement City Hall (\$25,000 – partial funding of project).

Residential and commercial energy efficiency incentives (\$25,000).

Outreach for incentive programs (\$3,000).

Municipal energy assessments and management tools (\$10,000).

Source: Bay Area Regional Energy Network (BayREN), which is funded by the California PUC.

Programs: Single-family and multi-family residential energy upgrades, local building codes and standards for energy efficiency, and financing for these programs (\$26,567,750 indirect funding to the 9 Bay Area counties).

Source: PG&E’s Innovator Pilot Program.

Programs: Energy management and analysis tools (\$173,000 – indirect funding to 7 partner cities).

Energy Management Software fees (\$6,000).

Staffing

When adopting the actions recommended by the Environmental Task Force in January 2010, the Council recognized that the creation of a “Sustainability Coordinator” position would be essential to the timely implementation of the specified actions and measures and voiced its support for the position in concept. However, the Council also stressed that there was no City funding available for such a position and asked staff to explore the possibility of obtaining grant funding to hire part-time or short-term person to oversee program implementation.

StopWaste.Org provides approximately \$32,000 in annual Measure D funds that may be used for administrative costs directly related to waste diversion measures only. Currently these monies fund in part the time spent by Planning staff in managing the City’s waste diversion programs resulting in a reduction to expenses from the City’s General Fund. In addition, the EPA Climate Showcase Grant funds (ScCAP) provided \$6,000 for staff time to develop and implement the grant programs. Besides these sources, staff has found no other available source of grant funds that would consistently fund a part- or full-time position or a one-time grant that would fund a short-term position.

Current Planning staff have managed the Climate Action Plan development, coordinated the Environmental Task Force, managed the City's waste diversion and recycling programs, and other outside agency compliance activities. Additionally, the past 5 years have resulted in moderate increases in planning application volumes (2013 applications were 21% greater than 2009 levels) with no increase in staff. Planning staff is also managing the grants for, and the development and adoption of the City's Pedestrian and Bicycle Master Plan.

Implementation

Nearly all the implementation of measures to meet the City's climate goal and all the grant funds received for this purpose, have occurred after 2010. Estimates indicate that the programs listed above will reduce annual emissions by approximately 161 metric tons CO₂e, which is 3% of 2005 levels. Should PG&E's emissions factor remain the same or improve, and absent any other currently available data, the City might expect this to lead to 44,539 metric tons CO₂e in 2015, when the City should compile another GHG inventory. This would result in 3,761 fewer tons, or a 7.8% reduction from 2005 levels, leaving the need to reduce emissions by an additional 3,484 metric tons CO₂e by 2020 in order to meet the City's goal. Although other emissions reductions might contribute to further reductions by 2015, such as increased fuel efficiency, an upsurge in single family residential energy efficiency, or an increase in solar energy systems, there is no evidence that these will occur, let alone take the City to the "goal line." And a continued drought is very likely to limit PG&E's ability to generate electricity with an emissions factor that benefits Piedmont's climate action goals.

How Might Piedmont Meet its Goal?

Meeting the City's climate action goal for 2020 means eliminating 7,245 metric tons CO₂e from the 48,300 tons measured in 2005. Taking a conservative approach and ignoring the 700 metric tons CO₂e that PG&E's emissions factor played in reducing Piedmont's emissions from 2005 to 2010, the remaining efforts eliminated 2,900 metric tons CO₂e of the 2005 total, resulting in a 6% reduction of 2005 levels by 2010. Excluding the PG&E emissions factor variable and adding the estimated 161 metric tons CO₂e from efforts since 2010 means that the City has reduced annual emissions by 3,061 tons and would need to eliminate a further 4,181 tons from annual emissions by 2020. Coasting on existing accomplishments and programs are unlikely to get us to that goal. This prompts the question, "How and where might the City concentrate its efforts to best reach its climate action goal?" The following paragraphs outline some possibilities.

GHG-generating Sectors and their potential for locally controlled emissions reductions

The vast majority of Piedmont's GHG emissions come from two sectors: transportation and residential energy. In 2010, the transportation sector accounted for 42% of emissions and residential energy accounted for 52% of emissions. Potential additional reductions from the remaining three sectors (**nonresidential energy** – 3%; **water** – 1%; and **waste** – 2%) would likely be minimal relative to the total emissions needed to be eliminated. However, the City might consider the following measures:

- Replace the remaining 760 streetlights with high efficiency light fixtures. Based on the cost and savings of the 84 streetlights replaced in 2011, this may result in annual savings of approximately \$27,000, 213,560 kWh, and 118.6 metric tons CO₂e at a cost of approximately \$622,000 (not accounting for any economy of scale);
- Encourage PUSD schools to participate in the Leadership in Energy Efficiency Program (LEEP) offered by Alameda County for resulting energy and cost savings; and
- Consider adopting water efficient landscape regulations that apply to private properties.

As previously noted, the emissions generated by the **transportation sector** are largely driven by vehicle miles driven (VMT) and the fuel efficiency of vehicles, neither of which does the City have much ability to control (the exception is the municipal fleet and vehicles used by City contractors, which account for a tiny portion of VMT). Programs that encourage telecommuting, low emissions vehicles, and biking and walking should be implemented for a multitude of health improvement reasons, not just GHG emission reductions. Although the Metropolitan Transportation Commission (MTC) attempts to “model” VMT specifically to Piedmont relative to population and employment numbers and generates a fuel efficiency and emissions factor for the Bay Area, there is an indirect relationship between the individual and community efforts to reduce vehicle emissions and the modeling that is “Piedmont specific.” As a result, the City should continue its efforts to reduce emissions from vehicles but may want to concentrate its GHG emissions reduction efforts to sectors over which it has more control, and meanwhile enjoy the reductions that result from Bay Area specific data and federal and state regulations.

The remaining sector is residential energy, which may prove to be fertile ground for further reductions through increased participation in existing programs, and with the implementation of new ones. The following are a few possibilities.

Energy Upgrade California

This program has been in effect since 2011 and 23 Piedmont homeowners (0.6% of total) have participated as of January 2014. The program offers a whole home assessment and offers a basic Flex Package of upgrades and an Advance Home Upgrade package. Participation enables the property owner to receive a \$300 rebate for the assessment and up to \$4,500 in rebates for the upgrade packages. Based on the estimated average reduction of 1.9 metric tons CO₂e per Piedmont participant, the City could reach its 2020 goal if 1,600 property owners participate in the program. This is an ambitious number, but the program is effective in improving the comfort and health levels of the home, and providing savings on energy costs in addition to reducing GHG emissions. Efforts to continue the program and increase participation should be considered.

→ This program would fulfill CAP Measures BE 2.2 and BE 2.3.

Residential Energy Conservation Ordinance (RECO)

The purpose of a RECO is to increase the energy and water efficiency in residences. Compliance with RECO measures saves money, increases the comfort and reduces the amount of greenhouse emissions in every home. A RECO typically requires property owners to implement specific measures to reduce energy and water use where a property does not meet a minimum standard. The list of required upgrades is typically the basics: attic insulation, duct sealing/insulation, insulation of the water heater and hot water pipes, and water conservation measures such as low-flow fixtures. Thresholds that may trigger a RECO are sale of the property (i.e., point of sale), or when the property undergoes significant renovation, e.g., a building permit valuation of \$75,000 or more, or 1,000 square feet of area being renovated. Piedmont issued 64 permits for building construction with a value of \$75,000 or greater in 2013. Energy savings and emissions reductions would be similar to those resulting from the basic Flex Package of Energy Upgrade California.

→ This program would fulfill CAP Measure BE 2.1.

Reach Code

California state law establishes a process that allows local adoption of building energy standards that are more stringent than statewide standards, sometimes called “reach codes.” Local governments adopting more stringent standards are required to apply to the California Energy Commission (CEC) for approval. The standards are set forth in the City’s building code and typically the energy efficiency requirements of Title 24 are increased by a specified percentage,

say 15%, which is consistent with CALGreen Tier 1 and is generally consistent with the popular green building rating systems used throughout the state. The regulations would apply to property owners seeking a building permit for constructing new heated space. Over 25 California cities have implemented reach codes, including Hayward, Union City, Oakland, and San Francisco.

→ This program would fulfill CAP Measure BE 4.1.

CaliforniaFIRST

When it is launched as expected early this summer, this PACE program will be available to Piedmont property owners, enabling them to finance energy saving upgrades and renewable energy systems by placing the cost on their property tax bills and paying it off over a number of years. The debt stays with the property rather than the person. Thus, an owner planning to remodel and upgrade a home, but not live in it for a long time – such as a “flipper” – could finance the energy upgrades through the program and pass on any remaining debt, as well as the benefits of the remodeled home, to the next purchaser. This could be an effective program, particularly in combination with a RECO. City staff will coordinate with CaliforniaFIRST to fully promote the program as it becomes available.

→ This program would fulfill CAP Measure BE 5.1-A.

Community Choice Aggregate

Community Choice Aggregation (CCA) enables California cities and counties – or groups of cities and counties – to supply electricity to the customers within their borders. Unlike a municipal utility, such as Alameda Municipal Power, the Los Angeles Department of Water and Power or the Sacramento Municipal Utility District, a CCA does not own the transmission and delivery systems (i.e., the poles and wires). Instead, a CCA is responsible for providing the energy commodity (i.e., the electrons themselves) to its constituents—which may or may not entail ownership of electric-generating resources. Electricity customers in the jurisdiction are automatically enrolled in the CCA when it is initiated and are given several opportunities to opt out and return to PG&E as a customer should they choose to do so. The goals that may prompt a jurisdiction to form or join a CCA include greater control over retail electric rates, the ability to direct revenue and resources to public benefit (i.e. energy efficiency) programs, and the ability to increase the amount of non-polluting, renewable energy they use. Two CCAs have been formed in the Bay Area in recent years: Marin Clean Energy (MCE) and Sonoma Clean Power. Alameda County is spearheading an effort to form an East Bay Community Choice Energy. In its 2020 Action Plan, the Marin County of San Anselmo, which has demographics and geography similar to Piedmont and a climate action goal identical to Piedmont’s, estimates that its partnership in MCE will result in a reduction of some 6,053 metric tons CO₂e in annual GHG emissions by 2020, which accounts for 42% of the mix of emissions reductions leading to the city’s target. If Piedmont were to take part in a CCA and offer electricity customers a low carbon energy mix, the City should expect a significant reduction in community emissions that could lead to achieving our 2020 goal.

→ This program would fulfill CAP Measure BE 6.2.

Should the City Council be interested in any of the above programs, or any not listed here, staff can return at a future hearing to present more detailed information for consideration. The timing of the work will need to be evaluated in the context of other department projects with mandatory timelines (e.g., the Housing Element) or timelines under grant funding agreements (e.g., the Pedestrian and Bicycle Master Plan).

CONCLUSION:

As indicated in the 2010 Inventory and this report, some progress has been made in implementing CAP measures and reducing GHG emissions in Piedmont. Using currently available data including estimated reductions since 2010, today's emissions are approximately 7.8% lower than 2005 levels. However, a significant portion of these emission reductions are a result of greater hydroelectric generation during a rainy year. Although, the Piedmont community has made measurable progress towards reaching its emissions reduction goal and regional energy efficiency programs continue to be available, the City must take further action to ensure that the community's GHG emissions are reduced 15% from 2005 levels by 2020. Although there is little, if any, grant funding directly available to the City forecasted in the foreseeable future, staff will continue to pursue available grant and funding opportunities as they arise. Fortunately, there are opportunities – from regulations to financing programs to “cleaner” energy mixes – of which the City and community can take advantage. The opportunities may require City resources and place obligations on property owners, but with careful analysis, the City should be able to select GHG reduction programs and projects that minimize costs and regulations while maximizing reductions.

By Kevin Jackson, Assistant Planner

ATTACHMENTS:

Exhibit A, page 15 Update on Environmental Task Force Actions
Exhibit B, page 23 City of Piedmont 2010 Greenhouse Gas Emissions Inventory

Implementation of Adopted Environmental Task Force Actions An Update

BACKGROUND:

On January 4, 2010 Council adopted 31 actions recommended by the Environmental Task Force (ETF) to increase waste diversion and energy efficiency in Piedmont. The actions address municipal operations, legislation, purchasing, capital infrastructure, transportation and outreach. Twelve of these actions replicate an action included in the CAP. When adopting the ETF-recommended actions in January 2010, the Council recognized that the creation of a “Sustainability Coordinator” position would be necessary for the implementation of most of the actions.

DISCUSSION:

Prior to and since adoption, current staff has completed or begun work on nineteen of the actions with current staff (See tables on pages 18-20). They are:

2. Complete a Municipal Energy and Water Audit.
 - a. *With EPA Climate Showcase Cities grant funds, the City (and its 3 grant partner cities) received a report prepared by Optyon, Inc. on potential installations of solar energy systems on municipal facilities. With the information included in this report the partner cities pursued a joint RFP for specified installations and investigating methods of financing said installations. Council directed staff to pursue an installation of a solar system atop a new vehicle wash cover but the project is on hold due to an unexpected increase in cost.*
 - b. *Within the provisions and funding of the EPA Climate Showcase Cities grant funds, Piedmont and its partner cities assessed various energy management software products that will enable the cities to better manage municipal energy consumption and target potential savings. The assessment determined that EnergyCAP Express was the most beneficial and cost effective software. With grant funds received by PG&E, the City has been using the on-line energy tool for the past two years.*
 - c. *The City has partnered with non-profit consultant SEI, Inc. (lead) and the Cities of Albany, El Cerrito, San Pablo, Orinda, Moraga and Benicia in an application for a PG&E Innovator Pilot grant (\$209k requested) to enable the cities to jointly develop energy management systems, programs and staffing. The selected energy management system was EnergyCAP Express as noted above.*

6. Implement a CFL bulb recycling program.
Implemented and ongoing through Fire Department.

8. Implement a Bay-friendly Landscaping Ordinance.
A Civic Bay-Friendly Landscaping Ordinance was adopted and implemented in 2009. In June 2012 Council chose not to adopt a Bay-Friendly Landscaping Ordinance that would apply to a limited number of residential projects.

9. Consider reduced permit fees (or waivers) for renewable energy projects.
Using EPA Climate Showcase Cities grant funds, the City offered up to \$590 to homeowners participating in the Energy Upgrade California in Alameda County program. With participation by residential property owners much less than expected, staff opened up this pool of grant money to the City's small businesses that wished to participate in the PG&E-sponsored Smart Lights program. Seven businesses and two municipal buildings participated.
10. Participate in the Countywide voluntary Renewable Energy Assessment District.
Although the City was initially involved in an assessment district – specifically CaliforniaFIRST, this PACE-type program was effectively terminated by a ruling issued by the Federal Housing Finance Agency in July 2010. The State of California may be taking action that will aid in the implementation of this program..
16. Phase in an environmentally preferable purchasing policy for the City, setting a threshold for acceptable cost impacts.
On November 7, 2011 the City Council adopted an Environmentally Preferable Purchasing Policy. City staff has coordinated a Green Team made up of purchasers from each department to implement and improve purchasing.
17. Acquire and install recycling receptacle “stations” in public spaces.
Implemented and ongoing.
18. Consider retrofits in City Hall and other City buildings to reduce energy use.
 - a. *With EPA Climate Showcase Cities grant funds and City CIP funds, the replacement and upgrade of the City Hall/Fire Department HVAC system was completed in November 2011.*
 - b. *With EPA Climate Showcase Cities grant funds, the City (and its 3 grant partner cities) received a report prepared by Optony, Inc. on potential installations of solar energy systems on municipal facilities. Council determined that installations at City Hall, Veterans Building and Recreation Building were not feasible but directed staff to pursue an installation at the Corporation Yard. That project is delayed by unexpected cost increases.*
 - c. *Within the provisions and funding of the EPA Climate Showcase Cities grant funds, Piedmont and its partner cities assessed various energy management software products to better manage municipal energy consumption and target potential savings. As noted above, EnergyCAP Express was selected.*
 - d. *The City partnered with non-profit consultant SEI, Inc. (lead) and the Cities of Albany, El Cerrito, San Pablo, Orinda, Moraga and Benicia and received a PG&E Innovator Pilot grant (\$209k requested) that enabled the cities to jointly develop energy management systems and programs. As noted above, EnergyCAP Express was selected and Piedmont has used funds received from this grant to fund the use of EnergyCAP Express for the past two years.*

19. Promote installation of solar panels on renovated or new City facilities.
With EPA Climate Showcase Cities grant funds, the City (and its 3 grant partner cities) received a report prepared by Optyon, Inc. on potential installations of solar energy systems on municipal facilities. Council determined that installations at City Hall, Veterans Building and Recreation Building were not feasible but directed staff to pursue an installation at the Corporation Yard. That project is delayed by unexpected cost increases.
20. Utilize energy-efficient lighting when City streetlights are replaced or when new streetlights are installed.
With Energy Efficiency and Conservation Block Grant funds the City replaced 85 street lights with high-efficiency LED fixtures. The project was completed in August 2011.
23. Consider replacing paper towel dispensers with electric hand dryers in restrooms at public buildings.
With funds provided by StopWaste.Org, an electric hand dryer was installed in the Police Station..
24. Apply for grants to cover recycling and energy conservation capital costs.
The City has received \$58,000 in EECSBG funds for the LED streetlight replacement project and \$25,000 in EPA Climate Showcase Cities grant funds for the City Hall/Fire Department HVAC upgrade project.
27. Initiate a “Safe Routes to School” program to encourage walking and bicycling to school.
Pending adoption of Piedmont’s Pedestrian and Bicycle Master Plan, which is in development.
29. Use traditional media, such as television and newspapers, to increase awareness of environmental issues, particularly waste prevention and reduction.
Ongoing.
30. Coordinate closely with the Piedmont Unified School District.
The City has used grant funds from StopWaste.Org and the California Department of Conservation to help PUSD purchase high-volume composters for the middle school and recycling stations for the high school and sports facilities.
31. Continue focused education and outreach on waste reduction, especially food scrap recycling.
Implemented and ongoing.
32. Extend the City’s outreach efforts to private schools and businesses, including contractors and gardeners.
SmartLights program and waste reduction outreach materials have been made available to the City’s business located in structures.

34. Recognize resident efforts through an environmental honor roll and awards programs.
The Planning Commission's annual Design Awards have included recognition of Green Building and Bay-Friendly Landscaping projects.

35. Consider (or cosponsor) contests, tours, and lecture series which encourage greener living.
Since 2010, the City has been participating in Ready, Set, Recycle, a contest developed by StopWaste.Org to encourage residential customers to recycle more and promote awareness of items that are recyclable..

CONCLUSION:

The City's franchised waste hauler, Richmond Sanitary Service, reports it diverted 72.7% of the waste it handled in 2013 from the landfill, compared to 66.3 in 2008. In addition, the 2010 Greenhouse Gas Emissions Inventory and other recent data indicated the Piedmont community reduced its annual electricity consumption by over 6% and increased its annual natural gas consumption by 3.4% as compared between 2005 and 2010. Comparing the same years, Piedmont's municipal government reduced its electricity usage by 15% and increased its natural gas usage by 11%, resulting in a 15% drop from 2005 emissions levels. The City is making great strides in meeting the goal of reducing waste going to the landfill, but may look to increase its efforts to improve energy efficiency.

Environmental Task Force - Council Adopted Actions

(31 of 35 recommended actions were adopted by Council. The following tables show the adopted recommendations and retains the original action numbers.)

Municipal Operations							
Action		Priority/ Timing	Fiscal Impact	CAP Action	Responsibility	Implementation Progress	Notes
1	Pursue funding for a part-time (shared) sustainability coordinator who could help facilitate and monitor outreach and educational programs.	Very High/ Immediate	\$8k-\$12k/yr			None	
2	Complete a Municipal Energy and Water Audit.	Very High/ Immediate	None	BE 1.1-A WW 2.1	Staff	Partial	EPA grant funds have enabled some building assessment and energy management tools.
3	Focus on the Basics to Reduce Municipal Utility Bills.	High/ Ongoing	Positive		Staff	None	
5	Implement a Piedmont compost sale/give away program.	Low/ Long-term	< \$100		Sustainability Coordinator	None	
6	Implement a CFL bulb recycling program.	High/ Immediate	None		Fire Dept.	Complete	Coordinated with Alameda Co. Household Hazardous Waste Program
7	Enforce the ban on private leaf blowers/ Reduce the use of gas powered leaf blowers for parks maintenance.	High/ Ongoing	Further study		Staff	None	
8	Implement a Bay-friendly Landscaping Ordinance	High/ Ongoing	Positive		Staff	Complete	Affects municipal projects only

Legislative Actions							
Action		Priority/ Timing	Fiscal Impact	CAP Action	Responsibility	Implementation Progress	Notes
9	Consider reduced permit fees (or waivers) for renewable energy projects.	High/ Short-Term	\$6k/yr		Staff/SQ	Partial	EPA grant funds City rebate of up to \$590 for Energy Upgrade California participants
10	Participate in the Countywide voluntary Renewable Energy Assessment District.	Very High/ Immediate	Minor to Moderate	BE 5.1	Staff	On hold	FHFA ruling has effectively terminated such a program.
11	Adopt a Special Event Recycling Ordinance.	High/ Immediate	Minor		Staff/SQ	None	
14	Consider increasing the City's 2020 greenhouse gas reduction target.	Very High/ Immediate	Unknown	N/A	Sustainability Coordinator	None	

Environmentally Preferable Purchasing							
Action	Priority/ Timing	Fiscal Impact	CAP Action	Responsibility	Implementation Progress	Notes	
16	Phase in an environmentally preferable purchasing policy for the City, setting a threshold for acceptable cost impacts.	Very High/ Immediate	TBD	WW 1.2	Sustainability Coordinator	Complete	Adopted November 2011. City staff committee implements.

Infrastructure and Capital							
Action	Priority/ Timing	Fiscal Impact	CAP Action	Responsibility	Implementation Progress	Notes	
17	Acquire and install recycling receptacle “stations” in public spaces.	High/ underway	\$25k-\$30k		Public Works	Complete	Installed and being evaluated.
18	Consider retrofits in City Hall and other City buildings to reduce energy use.	Very High/ Short-term	Minor to moderate	BE 1.1	Staff	Partial	Lighting in City Hall complete. HVAC replacement in City Hall complete. Lighting upgrades in all buildings partially complete.
19	Promote installation of solar panels on renovated or new City facilities.	High/ Ongoing	TBD	BE 1.1	Staff/SQ	On hold	EPA grant funds enabled municipal building assessments. Corp Yard installation on hold due to cost increase.
20	Utilize energy-efficient lighting when City streetlights are replaced or when new streetlights are installed.	Moderate/ Ongoing	Positive after 3+ years	BE 6.1	Staff	Partial	EECBG funded 85 fixture replacements in August 2011.
21	Replace the incandescent bulbs in the Oakland Avenue Bridge necklace with cold cathode bulbs.	Moderate/ Short-term	Positive		Staff	Currently infeasible	Staff determined that cost and product unavailability makes the project currently infeasible
22	Study the feasibility of alternative water sources to reduce the use of potable water for City park and median irrigation.	Low/ Long-term	High? (TBD)	WW 2.2 WW 2.4	Sustainability Coordinator	Infeasible	Public Works has determined that local aquifers are not feasible or dependable.
23	Consider replacing paper towel dispensers with electric hand dryers in restrooms at public buildings.	Low/ Long-term	\$300-\$500/ Fixture (paper cost savings)		Sustainability Coordinator	Partial	StopWaste.Org grant funded installation of hand dryer in Police Station.
24	Apply for grants to cover recycling and energy conservation capital costs.	Very High/ Immediate & Ongoing	Staff time not quantified		Sustainability Coordinator	\$83,369	\$58,369 EECBG funds for LED streetlights & \$25k EPA grant funds

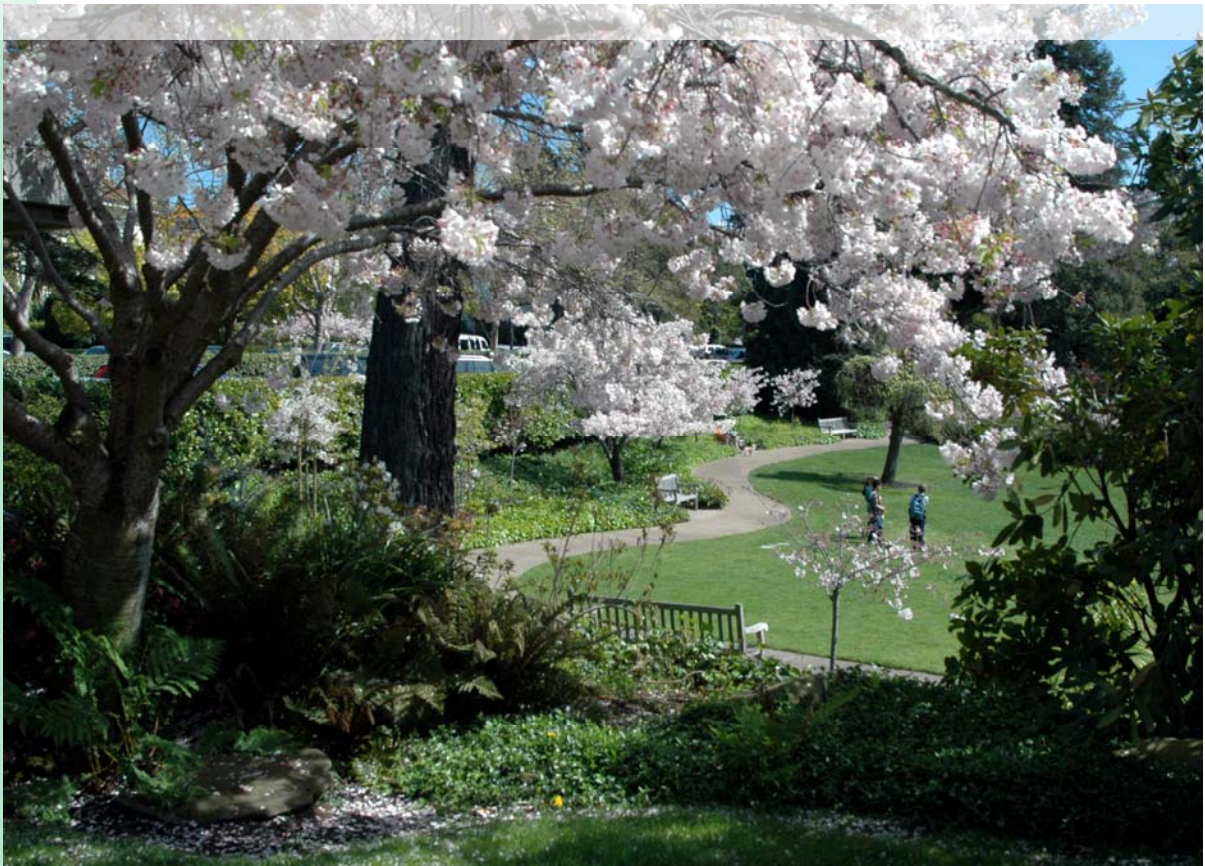
Transportation							
Action	Priority/Timing	Fiscal Impact	CAP Action	Responsibility	Implementation Progress	Notes	
25	Replace gasoline powered cars with hybrids or electric vehicles as the City fleet is replaced.	Moderate/Ongoing	\$4k/vehicle saved in 3-8 yr	TL 3.1	Staff	None	
26	Promote the #11 bus as Piedmont's BART Shuttle and aggressively encourage its use by residents.	Very High/Immediate	Volunteer driven with staff support		Staff/SQ	None	
27	Initiate a "Safe Routes to School" program to encourage walking and bicycling to school.	High/Short-term	Grant funded	TL 3.4	Sustainability Coordinator	Under consideration	Should be included as part of the Pedestrian & Bicycle Master Plan

Communications and Outreach							
Action	Priority/Timing	Fiscal Impact	CAP Action	Responsibility	Implementation Progress	Notes	
28	Upgrade Piedmont's website, including a dedicated "green page"	Very High/Immediate	\$1k-\$5k/year		Sustainability Coordinator	None	
29	Use traditional media, such as television and newspapers, to increase awareness of environmental issues, particularly waste prevention and reduction.	High/Immediate (Ongoing)	Variable	TL 3.5	Sustainability Coordinator	Minimal	No concerted City effort but <i>Piedmont Post</i> does report on waste reduction and energy efficiency efforts
30	Coordinate closely with the Piedmont Unified School District.	High/Immediate (Ongoing)	Positive	TL 3.4	Sustainability Coordinator	Minimal	City has funded (with StopWaste grants) school recycling receptacles and composters
31	Continue focused education and outreach on waste reduction, especially food scrap recycling.	High/Immediate (Ongoing)	Minor		Sustainability Coordinator	Ongoing	Bill inserts are included in each quarterly garbage billing. Recycling information available on City website and in print.
32	Extend the City's outreach efforts to private schools and businesses, including contractors and gardeners.	High/Short-term (Ongoing)	Minor	BE 3.3	Sustainability Coordinator	Partial	SmartLights and Recycling Outreach
33	Work with PG&E and EBMUD to distribute energy and water conservation information through their website, City fairs and festivals, and other City outlets.	Very-high/Ongoing	Minor		Sustainability Coordinator	None	
34	Recognize resident efforts through an environmental honor roll and awards programs.	Moderate/Short-term	Minor		Sustainability Coordinator	Partial	Planning Commission awards projects for Green Building and Bay-Friendly Landscaping
35	Consider (or cosponsor) contests, tours, and lecture series which encourage greener living.	Low/Long-term	Moderate		Sustainability Coordinator	Partial	City participates in Ready, Set, Recycle, a contest to promote waste diversion.

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CITY OF PIEDMONT
2010 GREENHOUSE GAS EMISSIONS INVENTORY UPDATE



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This report was supported by Pacific Gas and Electric Company in collaboration with StopWaste and ICLEI-Local Governments for Sustainability USA.

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Pacific Gas and Electric Company provides comprehensive climate planning assistance to local governments, from providing energy usage data and assistance with greenhouse gas inventories, to training and guidance on climate action plans. This program is funded by California utility customers and administered by PG&E under the auspices of the California Public Utilities Commission.

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Executive Summary

The City of Piedmont has adopted a goal to reduce greenhouse gas emissions to 15% below 2005 levels by 2020. In 2006, the City conducted a 2005 baseline inventory of greenhouse gas emissions from the community and local government operations. Since then, updated methodology, more granular data, and clarified guidance from regional and state entities have become available. This report presents an updated baseline inventory for 2005, as well as an emissions inventory for 2010, that align with the current industry best practices. The 2010 inventory shows a decrease of about 7% compared to 2005 emissions. This report discusses the likely causes for this trend.

The City adopted a Climate Action Plan that identified strategies to achieve the emissions reduction target, and City staff has been actively implementing these strategies. The 7% decrease is likely due to these strategies and changes in activity by the community, but also reflects a strong influence from outside variables. One key outside variable that contributed to the decrease is PG&E’s energy mix, which can fluctuate from year to year. In order to meet its goal, Piedmont must reduce its emissions by an additional 8%. The City should monitor overall emissions as well as locally controllable GHG emitting activities, and maintain Climate Action Plan implementation efforts in order to meet the 2020 target.

GHG Emissions 2005 & 2010

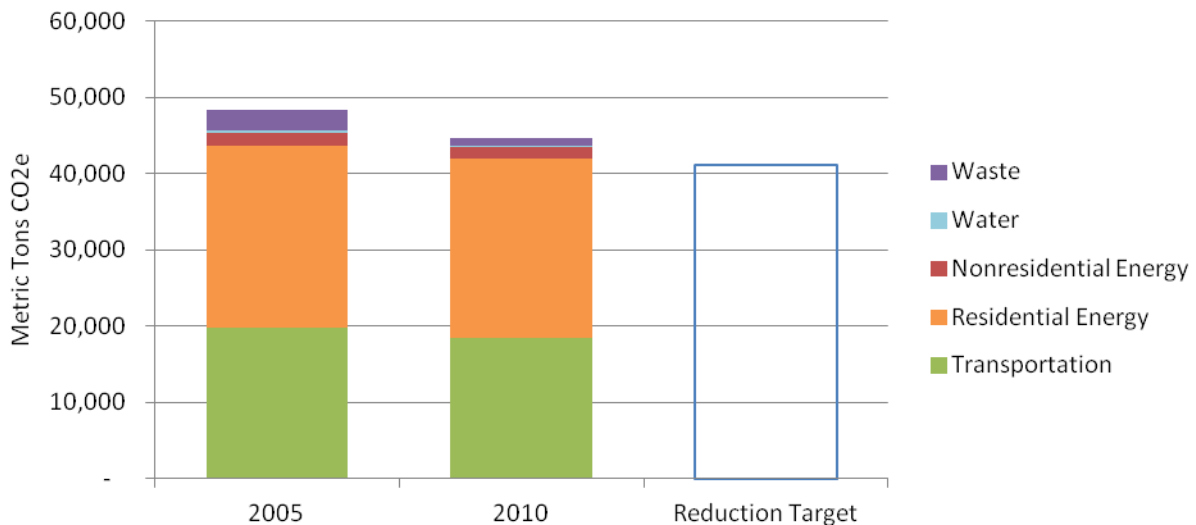


Figure 1. GHG Emissions by sector in 2005 and 2010 compared to reduction target

Background

The City of Piedmont is committed to the wellbeing of its community. That commitment requires the City to make an active effort to mitigate climate change, which is expected to detrimentally impact many parts of the global community and systems of which Piedmont is a part, and on which Piedmont relies.

Baseline & Target

In 2006 the City joined with neighboring jurisdictions to participate in the Alameda County Climate Protection Project and ICLEI's Cities for Climate Protection Campaign. The City conducted a baseline emissions inventory for the year 2005 and adopted a target to reduce the emissions of greenhouse gases (GHGs) that cause climate change by 15% below 2005 levels by 2020.

Climate Action Plan

On March 15, 2010 the City adopted an ambitious and extensive Climate Action Plan (CAP) that defined strategies to reach the target. The strategies address building energy efficiency, renewable energy, vehicle trips, vehicle fuel efficiency, water conservation, recycling, and green infrastructure. City staff has been working to implement the strategies in the CAP, and an update on progress to date is included in this report.

Tracking Progress

To measure progress toward achieving the target, GHG inventory updates should be conducted regularly, at least every five years. Over the years, data availability, accuracy of calculations, and clarity of guidance from regulatory bodies improve. As a consequence, GHG inventory methodology evolves, and local governments benefit from updating their inventories from the baseline and subsequent years. City staff and the Energy Council have updated the 2005 baseline and conducted an inventory for 2010 using currently available methodologies. Appendix A explains the changes to the methodology and the rationale for each change. Future revisions to these inventories may be warranted if there are further improvements to the calculation methodology. The Energy Council is exploring ways to streamline the inventory process for future years to allow for more regular and less burdensome monitoring of progress.

Updated 2005 Baseline Inventory

The updated 2005 inventory follows current best practices established by the International Council of Local Environmental Initiatives (ICLEI) and Bay Area Air Quality Management District. The inventory tracks the emissions from the main GHG generating activities of the Piedmont community. See Appendix A for a detailed explanation of the methodology.

The updated inventory shows that activities in the Piedmont community in 2005 resulted in about 48,300 metric tons of carbon dioxide equivalent (metric tons CO₂e) of greenhouse gases. This is a correction of approximately 5,300 fewer metric tons of CO₂e compared to the original 2005 inventory (53,600 metric tons CO₂e), and aligns more closely with the Climate Action Plan baseline emissions inventory of 47,754. These emissions result from community activities in transportation, building energy usage, water usage, and waste generation. Figure 2 shows the distribution of emissions by sector. As a primarily residential community, Piedmont's largest source of emissions is residential energy consumption. The second largest source is transportation. Non-residential energy use, water consumption, and waste sent to landfills together contribute less than 10% to the overall inventory.

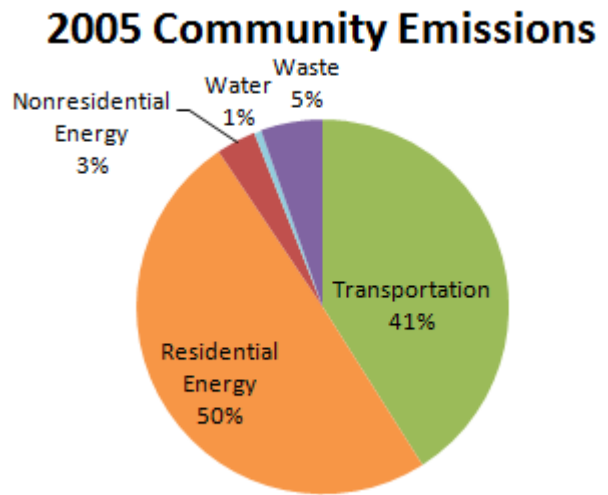


Figure 2. 2005 Community Emissions by Sector

Updated Projections

Each time the baseline inventory is updated to align with evolving methodologies, the 2020 GHG emissions target and projection values *in metric tons* should also be updated. The GHG reduction target as a *percentage* of baseline will not change, and the 2020 projection as *percentage* of baseline will only change if the growth projection methodology is updated. Because many of the CAP GHG reduction calculations were based on percentages of the community's emissions, the CAP's measures and their ability to meet the reduction target remain valid.

Piedmont's **15% reduction goal below the updated baseline is 41,000 metric tons CO₂e**. Applying the growth projections in the Climate Action Plan (CAP) to the updated baseline results in a **2020 business-as-usual projection of 47,100 metric tons CO₂e**. As in the CAP projections, the projected emissions level is 2.4% below the 2005 baseline. The CAP explains that a decrease is anticipated due to higher fuel efficiency vehicles and reduced waste generation. Figure 3 shows an updated 2020 reduction target and business-as-usual projection. Appendix A explains how the projections were calculated.

2020 Projection, Target, and 2010 Progress

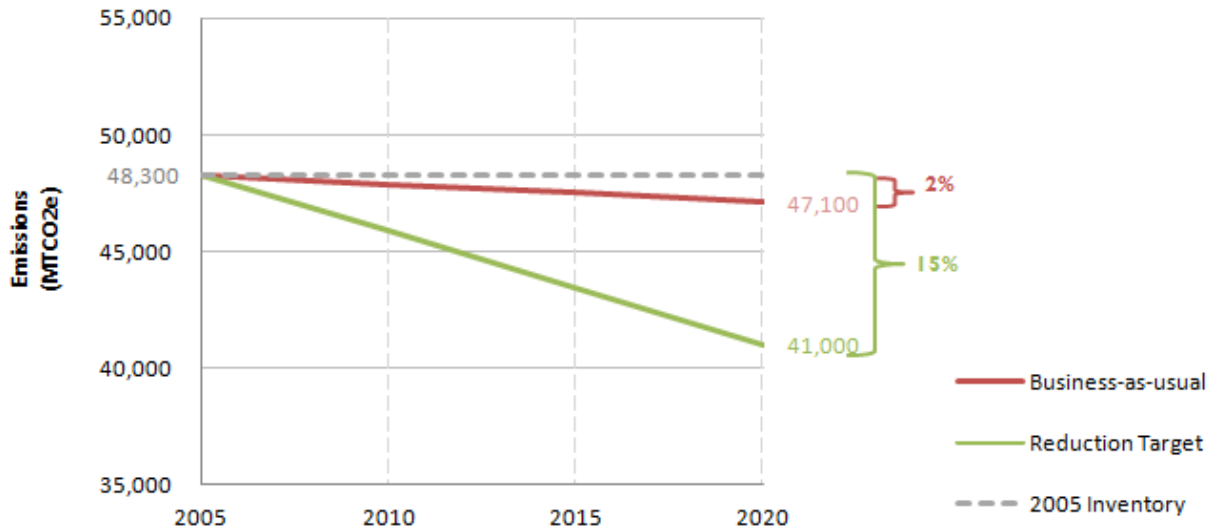


Figure 3. 2020 Business-as-usual Projection and Reduction Target

2010 Inventory

Piedmont community emissions in 2010 were calculated using consistent inventory methodology. The 2010 inventory shows that activities in the Piedmont community resulted in approximately 44,800 metric tons CO_{2e}. Figure 4 shows that the distribution by sector is similar to 2005. As the emissions values of each sector change, the distribution of emissions by sector may shift, even if the emissions value of a given sector remains the same. The distribution is informative for planning climate action measures, as it shows which sectors generate the greatest emissions and may be considered for targeted programs and policies. Total emissions in 2010 are 7% lower than in 2005. Figure 5 shows the emission changes between 2005 and 2010 for each sector.

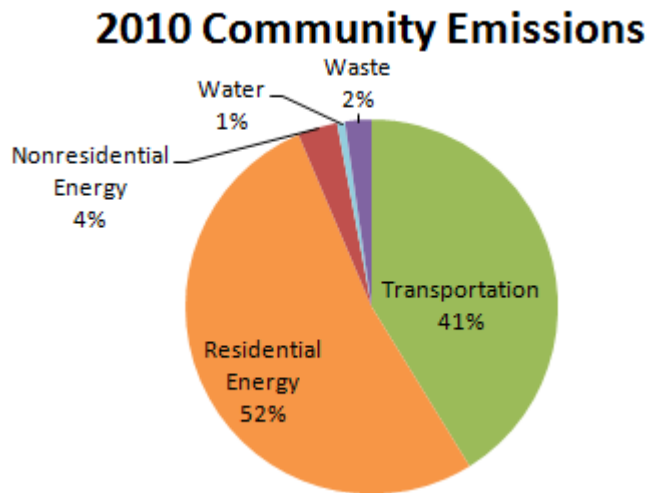


Figure 4. 2010 Community Emissions by Sector

2005 vs. 2010 Emissions by Sector

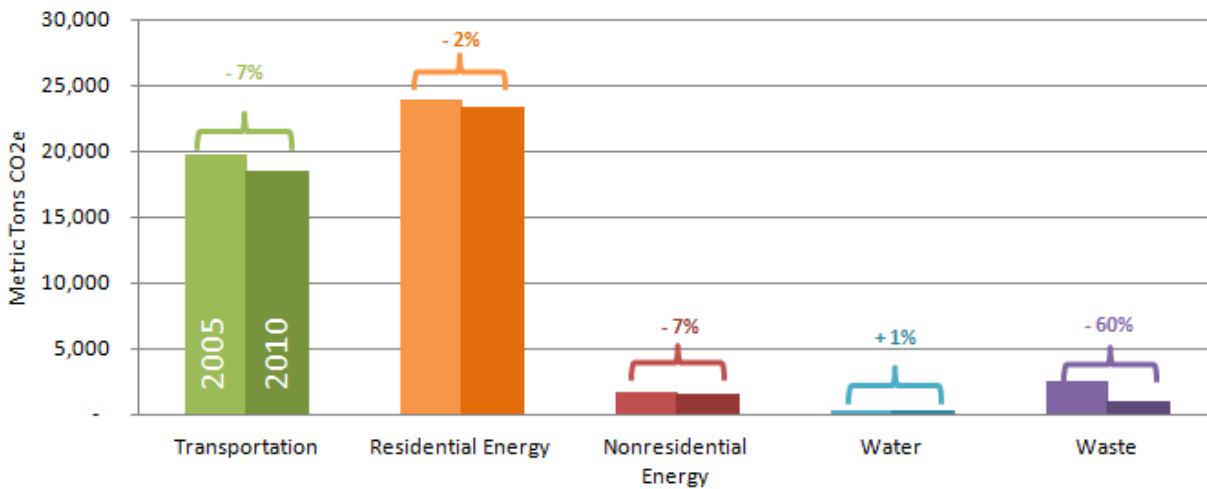


Figure 5. Community Emissions in 2005 Compared to 2010 by Sector

2010 Emissions Compared to 2020 Projection and Target

Assuming linear progress between the 2005 baseline and 2020 target, **2010 emissions levels** were expected to be 47,900 metric tons CO2e under “business-as-usual” scenario and 45,900 if moving toward meeting the reduction target. The 2010 inventory with total emissions of 44,800 shows that emission trends are actually lower than needed to be on a linear trajectory toward the 2020 target. Figure 6 shows where the estimated 2010 emissions falls on a graph showing the business-as-usual projection and reduction target.

2020 Projection, Target, and 2010 Progress

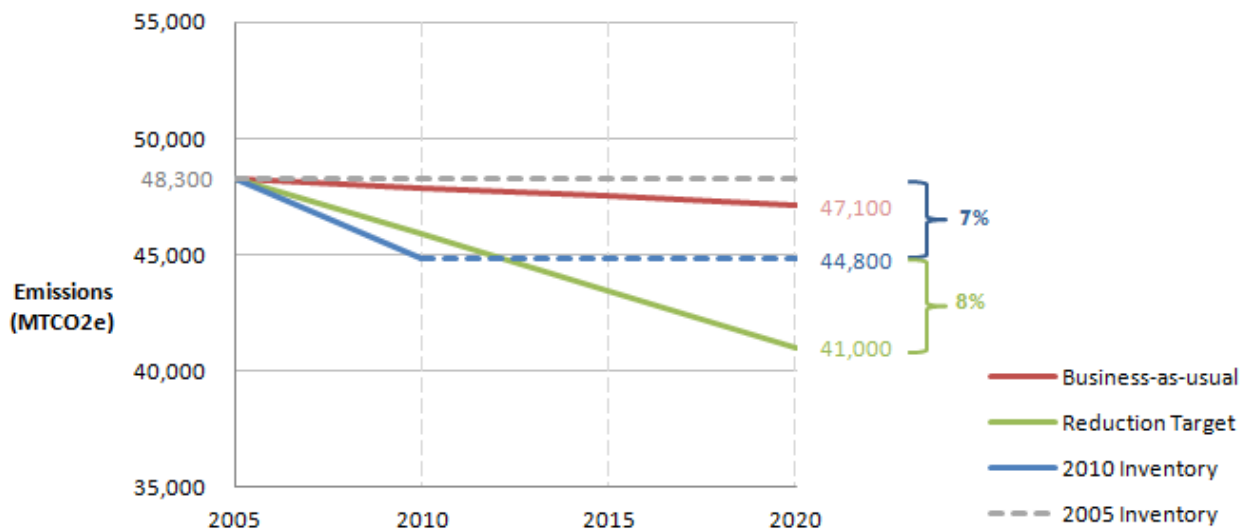


Figure 6. 2010 Emissions Compared to Linear Trajectories from 2005 Baseline to 2020 Business-as-usual Projection and Reduction Target

Initial observations show that Piedmont may be well on its way to reaching its target. While this may be the case, examining the causes of the decrease show that some causes may not necessarily be sustained through 2020 and support continued effort to reduce GHG causing activities. For the purposes of informing policies and programs, this report identifies the causes for the changes between 2005 and 2010.

Changes in Emissions by Sector

The emissions estimate for each sector is a function of several variables, some of which are within the City and community's control or sphere of influence, and others that are far beyond local control. Trends seen between 2005 and 2010 may be a result of such external factors as economic conditions and weather patterns. Variables are susceptible to changes other than intentional program or policy interventions. The details and analysis below reveal drivers that are within and outside of local influence.

PG&E Electricity Emissions Factor

One key variable that accounts for a significant portion of the reduction to date is the reduction in PG&E's electricity emissions factor. PG&E's energy mix included a higher percentage of non-emitting sources (primarily large hydroelectric sources due to greater rainfall and water availability) in 2010 compared to 2005. This change alone accounts for about 700 of the total 3,500 metric tons CO_{2e} reduction. However, when viewed over time, the emissions factor of PG&E electricity fluctuated and the 2010 emissions factors were particularly low relative to surrounding years. Figure 7 shows the emissions factor fluctuation between 2005 and 2010.

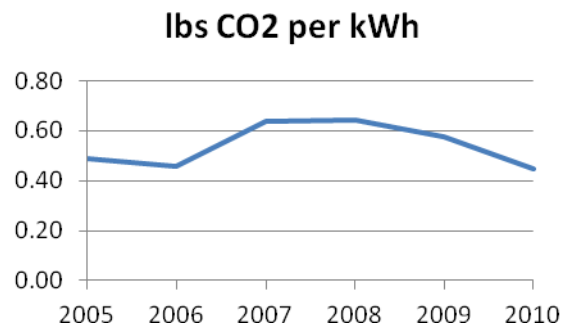


Figure 7. PG&E Electricity Emissions Factor

Acknowledging that these factors may revert back to or exceed 2005 levels, Piedmont should continue to implement GHG reduction measures to ensure that the community activity savings compensate for any future increases in these external variables.

Transportation

The emissions attributed to the transportation sector are those caused by the consumption of gasoline, diesel, and other fuels by vehicle trips that start or end in Piedmont. See Appendix A for a detailed explanation on the estimation methodology for vehicle trip volume and lengths. Passenger vehicle trips account for the vast majority of transportation emissions (91% in 2005 and 90% in 2010). Total

transportation emissions decreased by 7%. Figure 8 shows that passenger vehicle emissions decreased by 8% while truck emissions increased by 11%.

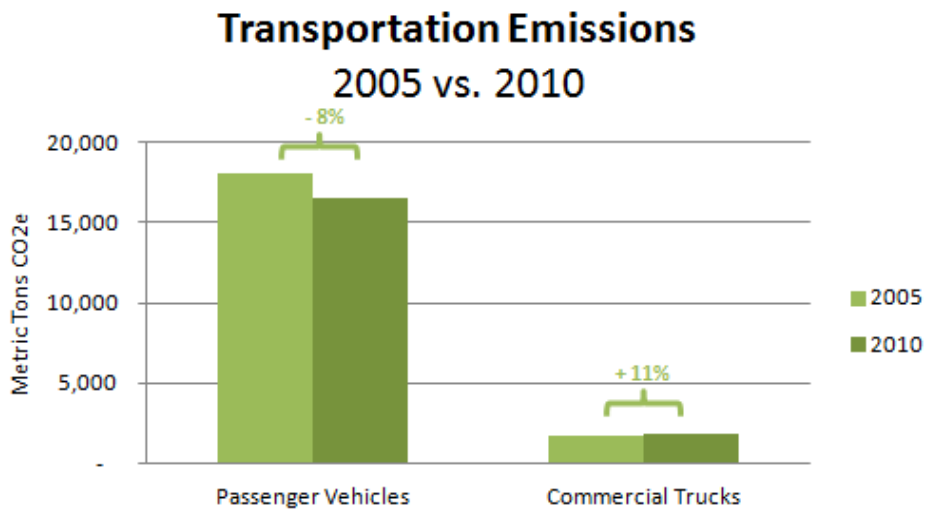


Figure 8. Transportation Emissions in 2005 Compared to 2010 by Vehicle Type

The 8% reduction in passenger vehicle emissions was mostly driven by a **7.8% reduction in vehicle miles driven**, and to a much smaller extent a 0.4% increase in fuel efficiency. Figure 9 shows that the reduction in vehicle miles driven resulted from the activity of visitors and to a lesser degree residents. Non-residents who commute into Piedmont increased their contribution of vehicle miles slightly.

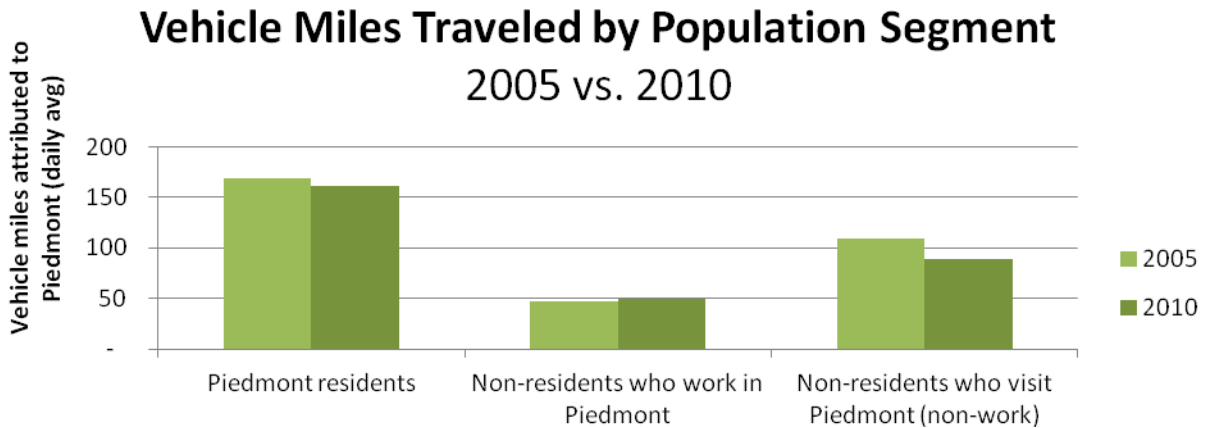


Figure 9. Vehicle Miles Traveled by Population Segment in 2005 Compared to 2010

The 11% increase in truck emissions reflects a combination of a **12.7% increase in vehicle miles and 1.6% decrease in emissions per mile**. Truck vehicle miles traveled is only available at the County level, and is attributed to the city level based on truck-related job volume. As a result, the increase in vehicle miles traveled shown in this inventory is an estimation reflecting a combination of local economic trends and county-wide truck mileage trends.

This inventory excludes transportation emissions related to off-road vehicles and rail transportation. Current methodologies do not allow a sufficiently accurate estimation for Piedmont. Future inventories may consider including these sources if calculation methodologies improve.

Residential Energy Usage

The emissions attributed to the residential energy sector are those caused by the consumption of electricity and natural gas within Piedmont homes. Natural gas consumption accounts for a greater portion of emissions (70% in 2005 and 74% in 2010) than electricity consumption. Total residential energy related emissions were 2% lower in 2010 than in 2005. Figure 10 shows that electricity related emissions decreased by 14% while natural gas emissions increased by 3%.

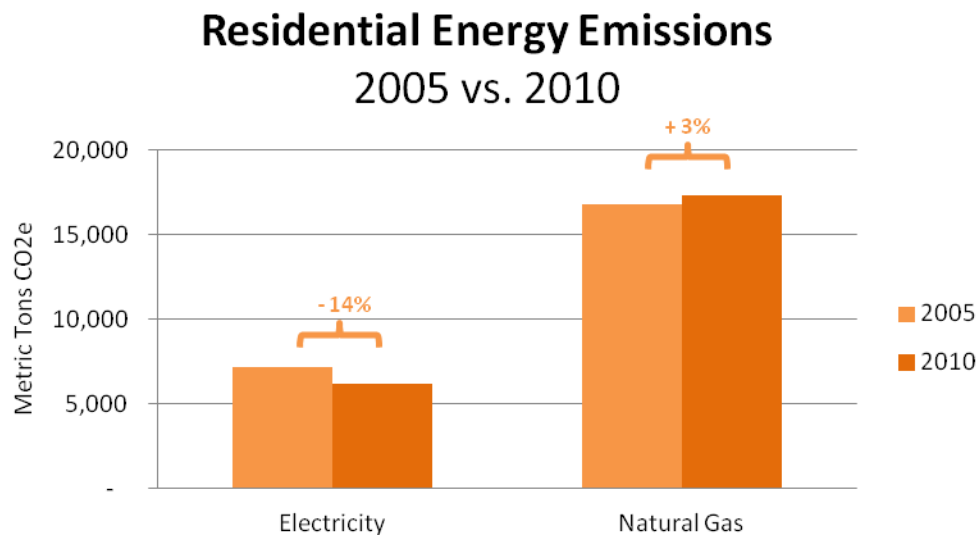


Figure 10. Residential Energy Emissions in 2005 Compared to 2010 by Fuel Type

Residents consumed 5% less electricity in 2010 than in 2005. Taking into account a 2% growth in population, this equals a 7% reduction in per capita electricity usage. However, the 14% reduction in electricity related *emissions* was significantly driven by a **9% reduction in the PG&E emissions factor**. It is important that the City understand that this is a variable that is outside of local influence and cannot rely on the same trends in future years. The City should continue to pursue residential electricity use reductions to compensate for potential emission factor increases in the future.

Residents consumed about 3% more natural gas in 2010 than in 2005. Taking into account the population growth, this equals only a 1% increase per capita. One relevant external variable to consider is the weather and temperatures in each year. *Heating degree days* are an indicator of how much heating is required to maintain a comfortable indoor temperature. In 2010, **heating degree days in the region were 47% higher** than in 2005.¹ It would be reasonable to expect a consequent increase in

¹ Data source: <http://www.weatherdatadepot.com/> using weather station NZG in Alameda, with 60° F as the balance point temperature.

natural gas usage for home heating. Therefore, the relatively small amount of increase during a colder winter may actually reflect some energy conservation by residents.

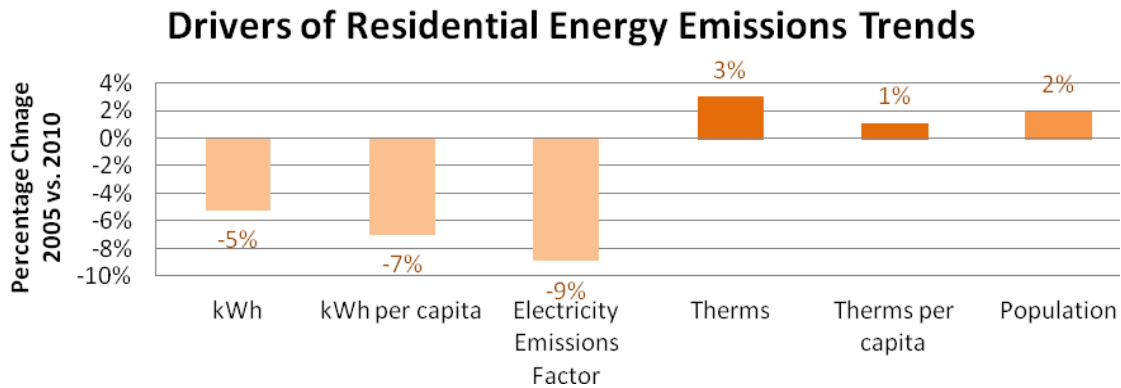


Figure 11. Drivers of Residential Energy Emissions Trends – Comparing 2005 and 2010 Factors

Non-residential Energy Usage

Similar to the residential sector, emissions sources in the non-residential (commercial and institutional) energy sector include the use of electricity and natural gas. Electricity use accounts for a greater portion of emissions (69% in 2005 and 60% in 2010) than natural gas use. Total non-residential energy related emissions were 7% lower in 2010 than in 2005. Figure 12 shows that electricity emissions decreased by 19% while natural gas emissions increased by 18%.

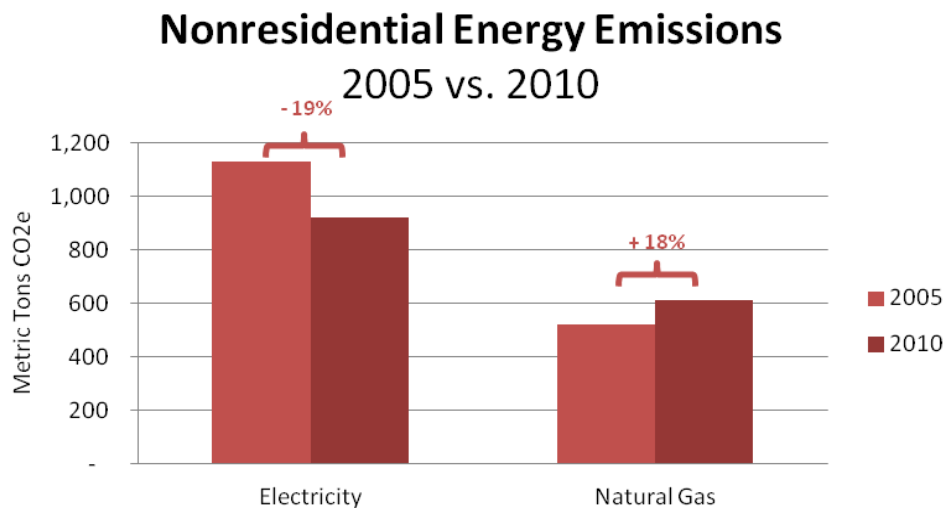


Figure 12. Non-residential Energy Emissions in 2005 Compared to 2010 by Fuel Type

The non-residential sector used 11% less electricity in 2010 than in 2005. With the 9% lower emissions factor from PG&E, this translates into a **19% decrease in electricity related emissions**. The non-residential sector used **18% more natural gas in 2010 than in 2005**, resulting in an equivalent increase in natural gas related emissions.

Factors that may influence non-residential energy usage include the amount of commercial or institutional space (square feet of facilities) and activity (as measured by number of employees or revenues). In 2010, local employment was 7% lower than in 2005, which may explain the decrease in electricity usage.² Additionally, one of the schools was out of commission in 2010, which would also suggest a reduction in energy usage. Weather (counted by degree days) can affect needs for space cooling (and electricity) or heating (and natural gas). Both heating and cooling degree day counts were higher in 2010 than in 2005.³ The increased heating degree days may explain some of the increase in natural gas usage. It may be that the natural gas usage correlates with relevant degree days more closely than electricity because schools compose a large segment of the nonresidential sector and are not in full operation during the summer cooling months. This sector warrants closer study of which facilities are included in the total energy usage. Piedmont’s small non-residential presence means that the addition or loss of one or two new facilities makes a large impact in the total energy usage figures.

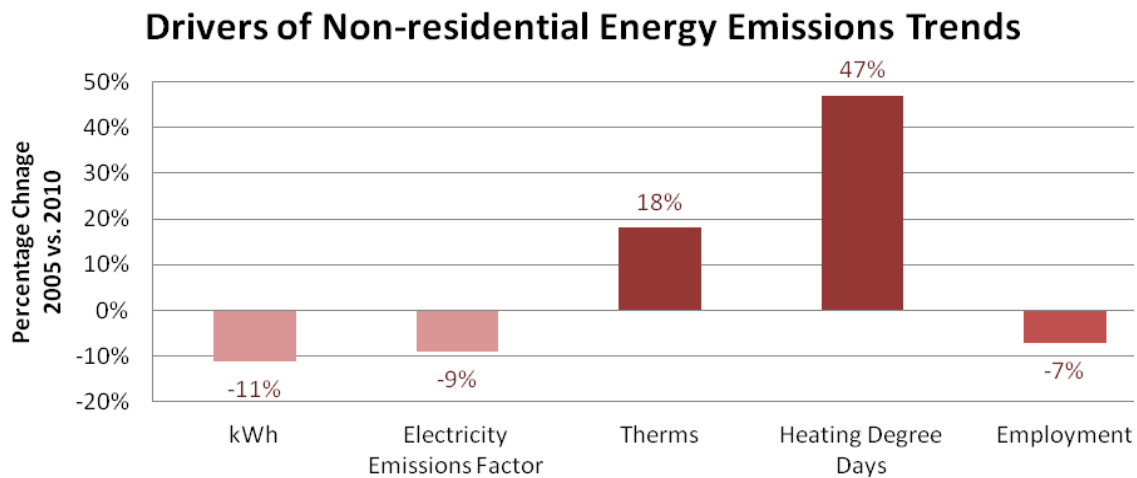


Figure 13. Drivers of Non-residential Energy Emissions Trends – Comparing 2005 and 2010 Factors

Water

Water use generates emissions during its upstream and downstream treatment and transportation, including energy use and methane gas escaping from wastewater (sewage) systems. In 2005, the Piedmont community consumed an estimated 410 million gallons of water and produced a similar amount of wastewater. In 2010, **water consumption increased by about 10% total** (to 450 million gallons) or 8% per capita (from 107 to 116 gallons per person per day). Because the majority of emissions from this sector result from the gases that emit from wastewater (sewage), and the solids in wastewater are estimated based on population, the **1% increase in overall emissions** for this sector corresponds more closely to population growth than the increased water consumption.

² Employment data obtained from Longitudinal Employer-Household Dynamics data from the U.S. Census Bureau: <http://lehd.ces.census.gov/>

³ Data source: <http://www.weatherdatadepot.com/>

Waste

The emissions attributed to the waste sector include the methane emissions that result from organic materials within the waste stream decomposing in the anaerobic conditions of a landfill over time. The emissions amount is therefore a function of the amount of organic material in the waste stream. The overall tonnage of **organic materials sent to landfill in 2010 was 63% less** than in 2005, resulting in a **60% decrease in landfill emissions**.

The rates of decrease for the tonnage of waste and GHG emissions does not match exactly because the composition of organic material types changed, which affects the amount of methane generated in landfills. Figure 14 shows the estimated distribution by organic material type and the change in tonnage of each material type between 2005 and 2010, ordered from highest emitting (paper products) to lowest emitting (wood/textile).

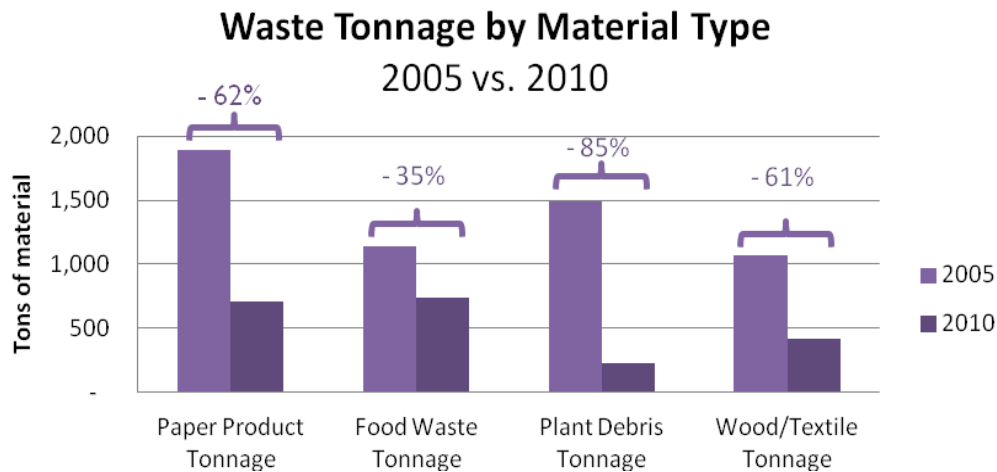


Figure 14. Waste Tonnage of Organic Material in 2005 Compared to 2010 by Materials Type

Municipal Operations Emissions

Municipal operations are a subset of the community, and their corresponding emissions are captured in the community emissions inventory. Because the City has direct control over municipal operations, this inventory separately analyzes the emissions that municipal operations contribute to the wider community inventory. Municipal operations generated an estimated 1,036 metric tons CO₂e of GHGs in 2005, and 1,067 metric tons CO₂e in 2010. This represents about 2% of the overall community’s emissions. These emissions result from energy usage for facilities and streetlights, vehicle fleet fuel consumption, waste sent to landfills, and employee commute. Figure 15 illustrates the amounts and distribution of emissions by activity in 2005 and 2010.

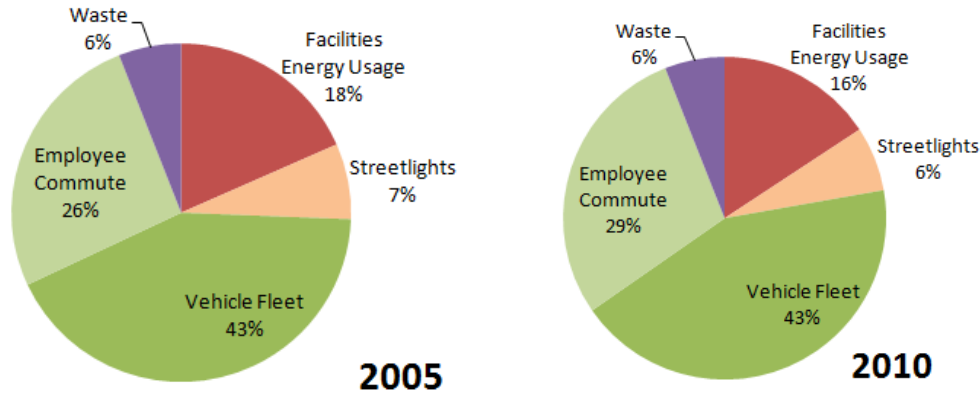


Figure 15. Municipal Emissions by Activity in 2005 and 2010

Overall emissions from municipal operations in 2010 are about 3% greater than in 2005. Figure 16 shows the difference by sector. While this may indicate an increase in GHG-emitting activities, it likely also reflects limitations of data availability for 2005, and resulting inconsistencies in methodology between the two years' inventories. No change was expected for the municipal operations emissions. Individual goals for reduction of GHG emitting activities for each sector are defined in the Climate Action Plan.

Local Government Emissions 2005 vs. 2010

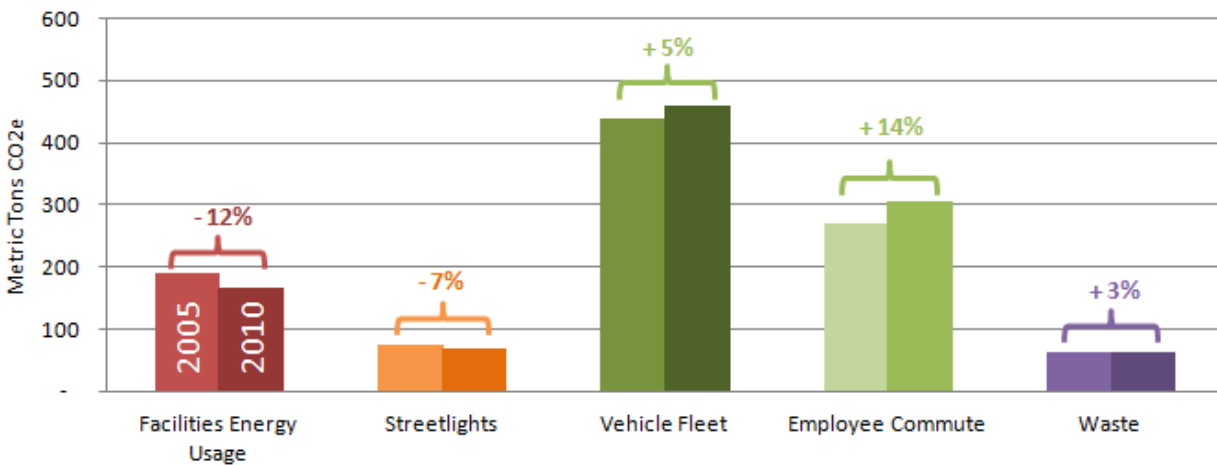


Figure 16. Local Government Emissions in 2005 Compared to 2010 by Activity

Facility Energy Usage. The City operates many facilities and services that use energy. Electricity usage caused more emissions (68% in 2005 and 60% in 2010) than natural gas usage. In 2010, overall GHG emissions resulting from facility energy usage was about 12% less than in 2005. Facilities used **11% more natural gas**, resulting in 11% more emissions. Facilities used **15% less electricity** which, when combined with the 9% lower emissions factor from PG&E, resulted in 23% fewer emissions. Figure 17 shows the relative change of these variables.

Drivers of Facilities Energy Emissions Trends

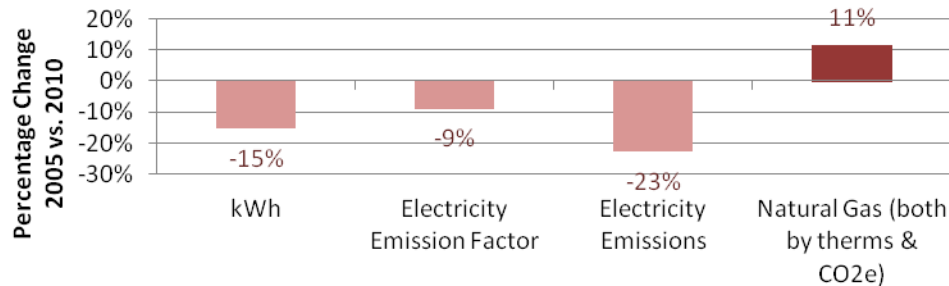


Figure 17. Drivers of Facilities Energy Emissions Trends

The main energy using facilities are City Hall/Fire Department, the Police Department/Veterans Hall, Community Center, and Corporation Yard. Parks and recreational facilities include recreational buildings (in addition the Community Center), the Center for the Arts, parks, athletic fields, playgrounds, and tennis court lighting. The educational facilities include the daycare center and the Schoolmates classrooms. Figure 18 shows that almost all facility types' energy use generated less GHG emissions in 2010 than in 2005.

Facilities Energy Emissions 2005 and 2010

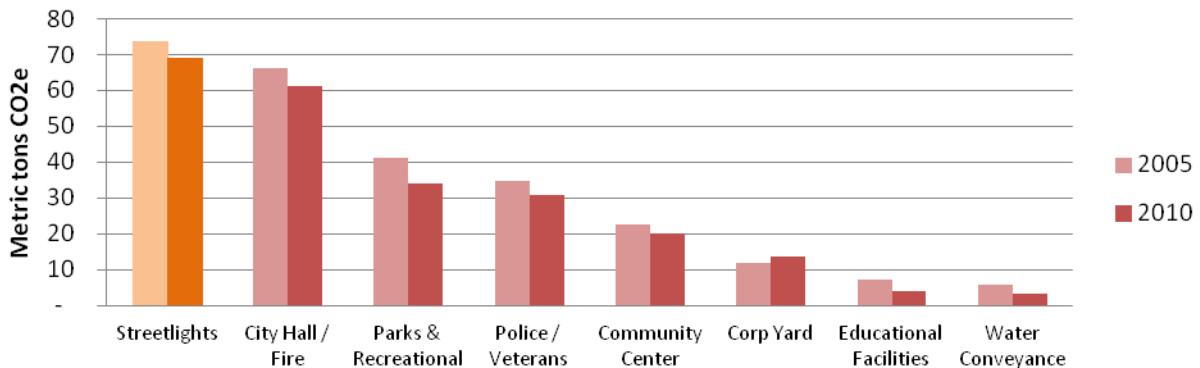


Figure 18. Energy Emissions by Facility or Facility Type

Streetlights. The largest single use of electricity by the City is streetlights. The City operates streetlights on tariffs that are calculated as a fixed kWh value per streetlight. The electricity consumed by streetlights remained relatively consistent, increasing less than 2%, possibly due to addition of streetlights. Again, the 9% decrease in PG&E's emissions factor for electricity accounts for the 7% reduction in GHG emissions. Upgrading streetlights with new high efficacy technologies is a cost effective and relatively turnkey process.

Vehicle Fleet. The vehicle fleet includes City-owned vehicles that are used by the police, public works, fire, and recreation departments, and the fleets operated by contractors that provide municipal services on behalf of the City, including Richmond Sanitary Services and landscaping and concrete contractors. The largest single contributor to the vehicle fleet emissions is Richmond Sanitary Services (over 90% of the contractor category) due to the fuel intensive nature of their vehicles and their regular use to collect and transport refuse. The City-owned fleet emitted about 25% more GHG emissions.⁴ The contractor category emitted about 11% less GHGs in 2010 than in 2005.

Vehicle Fleet Emissions 2005 and 2010

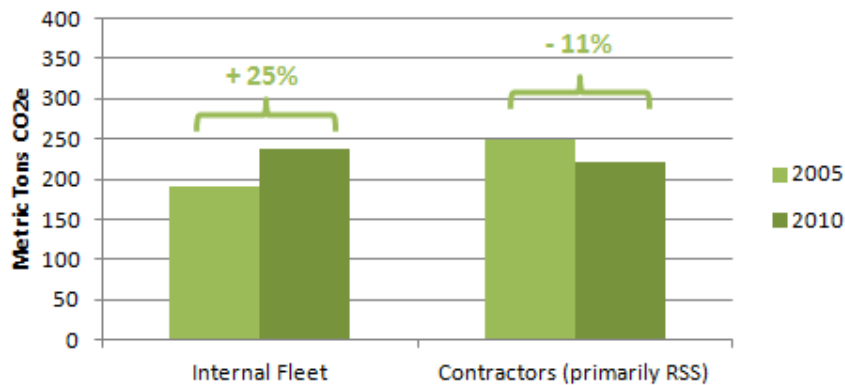


Figure 19. Vehicle Fleet Emissions in 2005 Compared to 2010

Within the internal fleet, gallons consumed are not tracked separately by department, but vehicle miles traveled have been recorded by vehicle. Figure 20 shows the distribution of the vehicle miles traveled by department.

Internal Vehicles: 2010 Miles Traveled

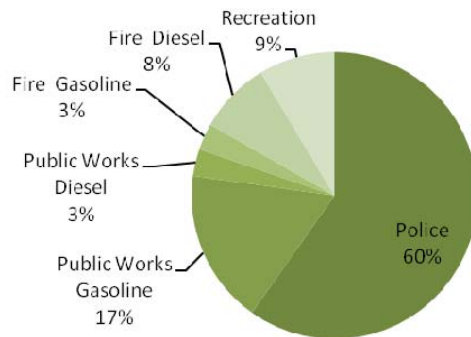


Figure 20. Distribution of 2010 Vehicle Miles Traveled by City Department

⁴ 2005 vehicle miles traveled for the vehicle fleet were estimated by finding the average annual VMT for each vehicle by dividing the existing odometer readings by the age of the vehicle. 2010 methodology is based on total gallons of fuel consumed. Therefore, while both methodologies attempt to quantify the same activity and related emissions, the difference may account for some of the difference in total emissions.

Waste. Although total waste volume from municipal accounts appears to have increased by 30%⁵, the change in composition of material types caused the overall emissions from waste to remain about the same. Because drier organic materials, particularly paper, create more landfill emissions per pound of material than wetter organic materials or those with less concentrated carbon content, the reduction in paper products has compensated for the increase in total tonnage of waste.

Employee Commute. City employees commuting to work generated about 3 metric tons CO₂e annually per employee.⁶ Most employees (94%) reported driving alone; 6% reported a mix of modes. Employees drive an average (median) distance of 10 miles each way. The employee commute is included in the inventory because the City can offer incentives for using other modes such as carpooling, walking or bicycling for shorter commutes, or purchasing a fuel efficient vehicle.

Because an employee commute survey was not conducted in 2005, the 2005 estimate in this update applies the 2010 commute patterns and extrapolates based on the number of employees, which increased by 14%. This does not allow for a comparison of GHG emitting behaviors, but allows for a comparable attribution of employee commutes to the total local government emissions.

2005 to 2010 and Beyond: Activities and Successes to Date

Total emissions estimates are a function of many variables as discussed in the previous section and in Appendix A. Therefore the total emissions numbers are not a perfect indicator of the impact of successful programs and initiatives implemented in the community. Eventually, enough volume of implemented activities will collectively result in a quantifiable reduction at the aggregate level. Until such a critical mass is achieved, the impact of individual initiatives should be captured and monitored independently. Since the baseline year and the adoption of the Climate Action Plan in 2010, City staff has been actively engaging the community in GHG reducing initiatives.

Appendix B lists the Climate Action Plan measures and identifies the progress made to date on each one. A significant amount of activity has occurred since 2010 that would not yet be reflected in the 2010 GHG inventory update. The benefits of these recent initiatives may be reflected in future GHG inventory updates.

Municipal Operations. Four City buildings have been assessed by East Bay Energy Watch programs for energy saving opportunities, and 4 City buildings have received solar evaluations. City Hall and the Fire Department have had HVAC system upgrades and partial lighting upgrades, and City Hall has installed a monitor to track its energy performance. Thermal pool covers were installed at the City Swim Center and the Recreation Building received partial lighting upgrades. 84 streetlights were upgraded with

⁵ At the time of this inventory, consistent waste volume data sources were unavailable for 2005 and 2010. The difference may be attributable to inconsistent data sources. If consistent data from Richmond Sanitary Service becomes available, this emissions estimate should be revised and corrected.

⁶ This accounts for full length of commutes. This is consistent with the Local Government Operations Protocol. However, future inventories might consider accounting for a portion of the emissions consistent with the methodology applied to the community-level transportation sector (100% of commutes that occur within Piedmont and 50% of the commutes that originate outside of Piedmont).

energy efficient LED fixtures. These actions are estimated to yield a GHG emissions reduction of 26 metric tons CO₂e and support the goal of reducing energy consumption at City's facilities 20% by 2015 (See CAP Measure BE 1.1.i).

Transportation. The City has received funding to develop a Bicycle and Pedestrian Master Plan, which will include a Safe Routes to Schools program and identify improvements that align with the Climate Action Plan targets. Some infrastructure improvements have already occurred, including a new bus stop on Highland Way and pedestrian improvements at the Grand-Arroyo intersection and on Linda Avenue. Once the plan is completed and implemented, resulting GHG reductions may be reflected in future inventory updates. City staff recently proposed changes to Zone 1 to permit the mix of commercial and residential uses, which would also increase walkability and access to services in the affected neighborhoods.

Residential Energy. City staff partnered with neighboring cities and regional initiatives to establish residential retrofit infrastructure including efficiency guidelines, exploration of financing mechanisms, partnership with contractors, and outreach materials to residents. Through the Energy Upgrade California program, retrofits have been completed at 23 Piedmont homes as of August 2013, resulting in an estimated 45 metric tons CO₂e reduction.

Commercial Energy. City staff partnered with East Bay Energy Watch to engage in an extensive outreach campaign to local businesses and institutions to help them take advantage of the SmartLights program. Nine sites participated in the program and received assistance with upgrading inefficient lighting to efficient technologies. These participants are estimated to have saved 3 metric tons CO₂e.

Conclusion

The Piedmont community has made measurable progress toward reaching the City's 2020 GHG reduction target. The overall emissions decrease of 7% reflects change in multiple variables. Some of these factors are external to the community's activities. Their fluctuation will affect inventories each year but are beyond local control. PG&E's electricity emissions factor is a prime example of an external factor that strongly shaped the change between the 2005 and 2010 inventories.

The main variable in each sector is the in GHG emitting activities that are within the responsibility of the local community. Between 2005 and 2010, some of these activities decreased while others increased. Vehicle miles traveled, residential electricity consumption, and waste sent to landfill were lower in 2010 than in 2005, whereas commercial energy usage was higher. These trends contribute to the overall emissions inventory each year. It is important for the City to track local activities in addition to the overall GHG emissions to identify successes and areas for future improvement within areas that the local community can control.

The sources and proportion of emissions remained relatively the same between 2005 and 2010. Residential energy consumption and transportation together continue to represent about 90% of total emissions. To have the greatest impact, the City should continue to pursue programs and policies that will help the community address these local emissions activities. New developments in both of these

sectors present opportunities for the community make significant progress over the next few years. Emerging incentive programs will help residents make energy saving improvements to their existing homes. New energy data analysis tools will provide residents powerful information to make decisions about improvements and their daily energy consuming habits. The City has joined the newly formed Energy Council, which seeks to gain additional funding to support energy efficiency programs. City staff has recently secured funding to develop a Pedestrian and Bicycle Master Plan to address transportation emissions. City staff has identified other opportunities that go beyond the Climate Action Plan that will leverage new funding, partnership, or technologies available to Piedmont to further its GHG reductions. These additional opportunities will complement implementation of Climate Action Plan measures.

In future years, Piedmont may benefit from regional efforts to streamline the inventory process. Ideally, information will be more readily accessible on a more regular basis so that meaningful updates may be presented closer to real time. As inventory methodology and data availability improve, future inventory updated should continue to revisit the baseline and other past inventories to make them consistent with best practices as they emerge.

Appendix A – Methodology

Community-level greenhouse gas (GHG) inventory methodology is an established yet evolving field. As data accuracy and accessibility improve, methodologies work to incorporate them with the goal of creating meaningful inventories for policy makers and the public. When methodology is updated or new data sources become available, it is important to update previous years' inventories to maintain consistency. This is necessary if different years' inventories are to be compared to each other to find trends and track progress over time.

BAAQMD GHG Plan Level Guidance

In May 2012, the Bay Area Air Quality Management District (BAAQMD) issued guidance for local governments developing community scale GHG emissions inventories. The guidance document was presented as a recommended approach rather than a formal protocol, and will be continually updated as new tools, methodologies and protocols are developed and refined. The Air District reviews plans for CEQA compliance, and therefore it is advantageous to align with their recommendations. The guidance document outlined basic parameters for sectors to include and calculation methodology.

- Sectors to include:
 - Residential – electricity and natural gas
 - Commercial/Industrial – electricity and natural gas
 - Transportation – fuel consumption
 - Waste – landfill gas
 - Water Treatment – electricity
- Emissions should be expressed in metric tons CO₂e and use emissions factors found in the California Air Resources Board's Local Government Operations Protocol.

The current updates to Piedmont's inventories align with these recommendations. Future inventory updates should check for new recommendations from BAAQMD.

Compliance with ICLEI's U.S. Community Protocol

In October 2012, ICLEI – Local Governments for Sustainability (ICLEI) published the first national standard for community-level inventories. It formalizes a body of study and practice that local governments have been advancing over the past several years, and provides detailed guidance on calculating and reporting GHG emissions at a community level. The current inventory is compliant with the ICLEI U.S. Community Protocol because it satisfies the following requirements:

- Contains an Emissions Report Summary Table (within Appendix A) that illustrates emissions included and excluded from the inventory and presents emissions in CO₂e
- Includes quantified estimates of emissions associated with the five Basic Emissions Generating Activities
 - Use of Electricity by the Community

- Use of Fuel in Residential and Commercial Stationary Combustion Equipment
- On-Road Passenger and Freight Motor Vehicle Travel
- Use of Energy in Potable Water and Wastewater Treatment and Distribution
- Generation of Solid Waste by the Community
- Include data for each emissions source or activity on a line item basis, and for each include:
 - Activity data
 - Emissions factors used (with source)
 - Emissions in CO₂e
 - Accounting method used
- Include community context data (at least total population and households in the inventory year)

The ICLEI Community Protocol recommends several valid frameworks for structuring and reporting GHG emissions. The current inventory uses the activity-based method which quantifies GHG emissions that occur as a result of activities by the community in each of the categories listed above. This method was selected because it offers the most meaningful information for local policies and programs. Alternative frameworks include a source-based method which quantifies the emissions that physically occur within the City's boundaries. This method would count emissions that occurred locally but were caused by people outside of the community, such as pass-through traffic, and would also miss significant emissions associated with activities such as electricity and water consumption where generation occurs outside of the boundaries. In past inventories, local governments often combined pieces of activity-based and source-based methodologies, resulting in potential double-counting and the need to classify emissions by Scopes which have little value from a local community initiative or policy-making perspective.

An emerging inventory methodology described in the ICLEI Community Protocol attempts to quantify additional "upstream" emissions related to the sourcing, manufacturing, and transporting of goods and services consumed by the community. This extends the rationale of including electricity generation and water treatment emissions in the activity-based methodology to apply to other goods. The current challenge is the extremely limited data available for quantifying these emissions. As data sources and the quantification methodology improve Piedmont may wish to consider including upstream emissions in future inventory updates.

Current Inventory Updates

Several methodology updates were applied to 2005 and 2010 data. The key differences from the original baseline inventory methodology are:

- The volume of passenger vehicle miles driven is derived from activity-based models that account for the mileage generated by trips originating or ending in the jurisdiction, instead of estimations of the miles driven within the jurisdictional boundaries regardless of the trip start or end points. This method more accurately reflects the travel activities resulting from Piedmont land use and community member choices, and is aligned with ICLEI's recommended activity-based framework.

- Water sector emissions were added to the inventory per the ICLEI and BAAQMD guidelines. Emissions included were those related to energy use for upstream treatment and distribution of water consumed, and downstream treatment and methane generation from wastewater generated by the community.
- Waste sector emissions were added to the inventory per the ICLEI and BAAQMD guidelines. Emissions included were landfill emissions from organic materials, calculated using standard emissions per landfilled ton of each type of organic material.
- Local government inventory includes employee commute, which was estimated based on employee survey responses.

Activities and Emissions Factors

Table A.1 provides line item details of the emissions in CO₂e, emissions factors, and activity data for each sector. In each sector emissions are a product of multiplying a volume of activity (e.g. kWh of electricity consumed) by an emissions factor (e.g. CO₂e per kWh purchased from PG&E). The emissions factors in the table are expressed in CO₂e, which includes carbon dioxide (Global Warming Potential = 1), methane (GWP = 21) and nitrous oxide (GWP = 310). The following data were used for each sector.

Transportation – Passenger Vehicles. The Metropolitan Transportation Commission (MTC) generated an activity-based model for Piedmont using the Travel One model. This model reports average daily miles traveled by six population segments that travel to or within Piedmont over a year, and for three trip types: Entirely within Piedmont, partially in, and entirely outside. The total vehicle miles included in the inventory is a sum of 100% of “entirely within” trips and 50% of “partially in”. MTC provided the emissions factors based on the Emissions Factors (EMFAC) model reflecting county-level fuel efficiencies and emission trends.

Transportation – Freight Vehicles. MTC generated a Travel One model report for county-level vehicle miles traveled by trucks. US Census employment data were for jobs in industries that generate high numbers of truck trips were used to distribute the truck VMT across jurisdictions in the county. Piedmont is estimated using U.S. Census data and North American Industry Classification System (NAICS) codes to have 170 such jobs, which represents 0.08% of the county. The truck VMT included in the inventory is 0.08% of the county-wide modeled VMT. MTC provided the emissions factors for trucks using the EMFAC model.

The EMFAC is a tool from the California Air Resources Board. It calculates emissions rates based on a baseline year (2009 for the current version of EMFAC). The baseline year emissions are a function of 1) inventory the state’s vehicle stock, 2) measured emissions of a sample of vehicles representative of types in the inventory, and 3) VMT and speed data generated by the various metropolitan planning organizations (MPOs; MTC is the organization for the Bay Area). Emissions data for other years are calculated using growth projections in the turnover rate of vehicles by year, and VMT and speed data generated for those years by the MPOs. In calculating the fuel efficiency of the vehicle stock, EMFAC can take into account the impacts of regulations (such as the Low Carbon Fuel Standard and Pavley legislation). It also makes assumptions about the rate of vehicle turnover – or the retiring of older

vehicles (which lose efficiency and have higher emissions rates as they deteriorate) and replacement by new vehicles. In the most recent version, EMFAC takes into account impacts of the recession on purchasing of new vehicles, and therefore a relative aging in the overall vehicle stock. It does not, however, take into account any voluntary trends toward higher fuel efficiency standards. As a result, the EMFAC emissions factors are likely higher than what the actual vehicle fleet may be producing.

The following emissions factors for CH₄ and N₂O were for each vehicle type, and were constant between the 2005 and 2010 inventories. The percentage assumed mix of the vehicle fleet for each year is also shown below.

Vehicle Type		N ₂ O - grams per mile	CH ₄ - grams per mile
Passenger Vehicles			
Automobiles - Gasoline	57%	0.0294	0.0278
Automobiles - Diesel	0.2%	0.0010	0.0005
Light Trucks - Gasoline	41%	0.0433	0.0315
Light Trucks - Diesel	1.3%	0.0015	0.0010
Commercial Vehicles			
Diesel	70%	0.0051	0.0048
Gasoline	30%	0.1235	0.1031

Built Environment – Residential and Non-Residential Electricity and Natural Gas. PG&E provided total kWh and therms used by each sector. PG&E provided the electricity emissions factor for carbon dioxide across their portfolio, which they submit to California Climate Action Registry (CCAR) for verification. Methane and nitrous oxide emissions factors were derived from the California grid average. The natural gas emissions factor is a constant number provided by PG&E as well as ICLEI and other reporting protocols.

Waste. Richmond Sanitary Services provided the total tonnage of landfill waste. StopWaste’s waste characterization studies for 2003 and 2008 provided percentages of the waste stream represented by each organic material type, which was applied to the total tonnage.

Waste Characterization	2003	2008
Paper Products	22.7%	23.8%
Food Waste	13.7%	24.7%
Plant Debris	17.9%	7.5%
Wood/Textile	12.8%	13.9%

Environmental Protection Agency (EPA) Waste Reduction Model (WARM) emissions factors were embedded in the Clean Air and Climate Protection (CACP) tool and applied to the tonnage for each material type.

Water. The City of Piedmont reported gallons of water consumed by the community. East Bay Municipal Water District (EBMUD) provided the energy intensity of their water treatment and distribution systems (in kWh per gallon consumed or treated), and the PG&E electricity emissions factor were applied to the resulting electricity usage volume. EBMUD provided methane emissions from their wastewater treatment facility as a total number for each of the jurisdictions it serves [TO BE CONFIRMED].

Emissions Summary Report

Table A.3 identifies which sectors are included or excluded in this inventory. This table is a requirement for ICLEI protocol compliant inventories. It identifies which sectors are included in this inventory and what ICLEI-recommended quantification methodology is used. It also identifies which sectors are excluded from the inventory and why. The full table of sectors addressed is provided by ICLEI and represents the sectors ICLEI considers appropriate for inclusion in a community-level inventory.

Glossary of Sources

ABAG – Association of Bay Area Governments

BAAQMD – Bay Area Air Quality Management District

CACP – Clean Air and Climate Protection software from ICLEI

CARB – California Air Resources Board

CCAR – California Climate Action Registry

EBMUD – East Bay Municipal Utility District

EF – Emissions Factor

EMFAC – Emissions Factors modeling software from CARB

ICLEI – Local Governments for Sustainability

LGOP – Local Government Operations Protocol

MTC – Metropolitan Transportation Commission

PG&E – Pacific Gas and Electric

RSS – Richmond Sanitary Services

Table A.1: Community Activities and Emissions Factors

Sector	Activity Data 2005	Activity Data 2010	Emissions Factor(s) 2005				Emissions Factor(s) 2010				Emissions (MTCO2e) 2005	Emissions (MTCO2e) 2010	Source
			CO2	CH4	N2O	CO2e	CO2	CH4	N2O	CO2e			
Transportation													
On-Road Passenger Vehicles	43,214,515 VMT	39,822,427 VMT	407.33 grams/mile	See detailed table under transportation			404.48 grams/mile	See detailed table under transportation			18,091	16,558	A
On-Road Freight	1,289,578 VMT	1,452,894 VMT	1,310 grams/mile				1,289 grams/mile				1,706	1,893	B
Built Environment													
Fuel – Residential	3,153,251 Therms	3,247,895 Therms	11.69 lbs/Therm	0.005 kg/mmbtu	0.0001 kg/mmbtu	11.72 lbs/Therm	11.69 lbs/Therm	0.005 kg/mmbtu	0.0001 kg/mmbtu	11.72 lbs/Therm	16,763	17,266	C
Fuel – Non-residential	97,726 Therms	115,038 Therms	11.69 lbs/Therm	0.005 kg/mmbtu	0.0001 kg/mmbtu	11.72 lbs/Therm	11.69 lbs/Therm	0.005 kg/mmbtu	0.0001 kg/mmbtu	11.72 lbs/Therm	520	612	
Electricity – Residential	31,977,216 kWh	30,334,408 kWh	0.4890 lbs/kWh	0.03 lbs/MWh	0.01 lbs/MWh	0.493 lbs/kWh	0.445 lbs/kWh	0.03 lbs/MWh	0.01 lbs/MWh	0.449 lbs/kWh	7,154	6,174	
Electricity – Non-residential	5,065,918 kWh	4,512,939 kWh	0.4890 lbs/kWh	0.03 lbs/MWh	0.01 lbs/MWh	0.493 lbs/kWh	0.445 lbs/kWh	0.03 lbs/MWh	0.01 lbs/MWh	0.449 lbs/kWh	1,133	918	
Waste													
Paper Products	1,892 Tons	712 Tons		0.037 MT/ton		0.78 MT/ton		0.037 MT/ton		0.78 MT/ton	1,468	552	D
Food Waste	1,142 Tons	739 Tons		0.021 MT/ton		0.44 MT/ton		0.021 MT/ton		0.44 MT/ton	502	325	
Plant Debris	1,492 Tons	224 Tons		0.012 MT/ton		0.25 MT/ton		0.012 MT/ton		0.25 MT/ton	371	56	
Wood/Textiles	1,067 Tons	416 Tons		0.010 MT/ton		0.22 MT/ton		0.010 MT/ton		0.22 MT/ton	234	91	
Other (non-organic)	2,742 Tons	899 Tons											
Total Tonnage	8,335	2,990									2,575	1,024	
Water													
Upstream Energy	410 mill gal	450 mill gal											E
	4,914 kWh	5,393 kWh	0.4890 lbs/kWh	0.03 lbs/MWh	0.011 lbs/MWh	0.493 lbs/kWh	0.445 lbs/kWh	0.03 lbs/MWh	0.011 lbs/MWh	0.449 lbs/kWh	1.1	1.1	
Downstream Energy	5,989 kWh	6,104 kWh	0.4890 lbs/kWh	0.03 lbs/MWh	0.011 lbs/MWh	0.493 lbs/kWh	EBMUD wastewater treatment facility emissions neutral				1.3	No emissions	F
Wastewater	416 mill gal	424 mill gal	Used 2010 emissions factor (total CO2e/gal treated)				Total emissions provided by EBMUD				305	310	

Table A.1 Community-level Data Sources:

- A. VMT specific to Piedmont provided by MTC using Travel One model. CO2 EF provided by MTC from output of a customized run of CARB's EMFAC model. For CH4 and N2O EF's see transportation section in this appendix.
- B. VMT for Alameda County provided by MTC. Piedmont VMT allocation calculated based upon percentage of county-wide transportation-related jobs present in Piedmont. CO2 EF provided by MTC from output of a customized run of CARB's EMFAC model. For CH4 and N2O EF's see transportation section in this appendix.
- C. Therms and kWh usage data from PG&E 2011 GHG report for years 2005 – 2011. CO2 EF provided by PG&E and verified by CCAR. CH4 and N2O EF's from ICLEI Community Protocol and CARB's LGOP.
- D. Total waste tonnage provided by Allied Waste. Distribution by material type calculated using ACWMA's waste characterization studies for 2003 (for 2005) and 2008 (for 2010). See detailed distribution under waste section. EF's from EPA WARM assuming 75% landfill gas capture rate.
- E. 2010 total gallons, kWh, and therms data from EBMUD. Allocation to Piedmont based upon population. 2005 gallons, kWh, and therms calculated based upon 2010 per-capita usage applied to 2005 Piedmont population.
- F. Total kWh and process emissions provided by EBMUD. Allocation to Piedmont based upon population. 2005 process emissions calculated based upon 2010 per-capita emissions applied to 2005 Piedmont population. PG&E EF used.

Table A.2: Local Government Activities and Emissions Factors

Sector	Activity Data 2005	Activity Data 2010	Emissions Factor(s) 2005	Emissions Factor(s) 2010	Emissions (MTCO _{2e}) 2005	Emissions (MTCO _{2e}) 2010	Data Sources
Facilities							
Natural Gas	11,445 Therms	12,759 Therms	11.7 lbs/Therm	11.7 lbs/Therm	61	68	Therms from PG&E CO _{2e} EF from PG&E and LGOP
Electricity	581,206 kWh	491,828 kWh	0.493 lbs/kWh	0.449 lbs/kWh	130	100	kWh from PG&E CO ₂ EF from PG&E verified by CCAR CH ₄ and N ₂ O EF from LGOP
Streetlights	333,036 kWh	339,137 kWh	0.493 lbs/kWh	0.449 lbs/kWh	74	69	
Vehicle Fleet							
Internal – Gasoline	Unavailable	17,633 gal gasoline 7,115 gal diesel (200,620 VMT)	Unavailable	19 lbs/gal gasoline 23 lbs/gal diesel	179	227	2005 emissions from 2005 inventory (which was reported in short tons); detailed data unavailable 2010 total gallons reported by City VMT reported by departments CO _{2e} EF per gallon from CACP
Public Works Off-road Diesel	Unavailable	1,044 gal	Used 2010 emissions	23 lbs/gal	11	11	2010 gallons reported by City CO _{2e} EF per gallon from CACP
Contracted – RSS	Unavailable	23,450 gal	Unavailable	20 lbs/gal	238	210	2005 RSS emissions from 2005 inventory (which was reported in short tons); other contractor vehicles were not tracked 2010 gallons reported by contractors CO _{2e} EF per gallon from CACP
Contracted – Other	Unavailable	1,311 gal	Used 2010 emissions	20 lbs/gal	12	12	
Employee Commute							
Employee Commute	88 employees 470,000 VMT	100 employees 534,390 VMT	Used 2010 emissions	1.26 lbs/VMT	269	306	2010 VMT from employee survey 2005 VMT: Applied 2010 per employee average to 2005 number of employees CO _{2e} EF from MTC using EMFAC
Waste							
Paper Products	61 tons	43 tons	0.78 MT/ton	0.78 MT/ton	48	33	Total tonnage from RSS Source of distribution by material unavailable CO _{2e} EF from ICLEI CACP using EPA WARM
Food Waste	21 tons	44 tons	0.44 MT/ton	0.44 MT/ton	9	19	
Plant Debris	16 tons	13 tons	0.25 MT/ton	0.25 MT/ton	4	3	
Wood/Textiles	6 tons	40 tons	0.22 MT/ton	0.22 MT/ton	1	9	

Table A.3: Emissions Summary Report

Community-wide GHG Emissions Inventory Scoping and Reporting Tool - October 2012								
Emissions Type		Source or Activity?	Included, Required Activities	reporting frameworks	Excluded (IE, NA, NO, or NE)	Emissions (MTCO₂e)	Accounting Method (see ICLEI protocol)	Notes
Built Environment								
Use of fuel in residential and commercial stationary combustion equipment		Source AND Activity	•	•			BE 1.1	
Industrial stationary combustion sources		Source			NO			
Electricity	Power generation in the community	Source			NO			
	Use of electricity by the community	Activity	•	•			BE 2.1	
District Heating/ Cooling	District heating/cooling facilities in the community	Source			NO			
	Use of district heating/cooling by the community	Activity			NO			
Industrial process emissions in the community		Source			NO			
Refrigerant leakage in the community		Source			NE			No data available
Transportation and Other Mobile Sources								
On-road Passenger Vehicles	On-road passenger vehicles operating within the community boundary	Source	• or		IE			Using activity-based methodology
	On-road passenger vehicle travel associated with community land uses	Activity	•	•			TR 1.A	
On-road Freight Vehicles	On-road freight and service vehicles operating within the community boundary	Source	• or		IE			Using activity-based methodology
	On-road freight and service vehicle travel associated with community land uses	Activity	•	•			TR 2.A	
On-road transit vehicles operating within the community boundary		Source						
Transit Rail	Transit rail vehicles operating within the community boundary	Source			NO			
	Use of transit rail travel by the community	Activity			NE			Insufficient data
Inter-city passenger rail vehicles operating within the community boundary		Source			NO			
Freight rail vehicles operating within the community boundary		Source			NO			
Marine	Marine vessels operating within the community boundary	Source			NO			
	Use of ferries by the community	Activity			NE			Minimal impact
Off-road surface vehicles and other mobile equipment operating within the community boundary		Source			NE			Insufficient data
Use of air travel by the community		Activity			NE			
Solid Waste								
Solid Waste	Operation of solid waste disposal facilities in the community	Source			NO			
	Generation and disposal of solid waste by the community	Activity	•	•			SW 4	

Water and Wastewater							
Potable Water - Energy Use	Operation of water delivery facilities in the community	Source			NO		
	Use of energy associated with use of potable water by the community	Activity	•	•			
Use of energy associated with generation of wastewater by the community		Activity	•	•			
Centralized Wastewater Systems - Process Emissions	Process emissions from operation of wastewater treatment facilities located in the community	Source			NO		
	Process emissions associated with generation of wastewater by the community	Activity		•			
Use of septic systems in the community		Source AND activity			NE		No knowledge of septic systems
Agriculture							
Domesticated animal production		Source			NO		
Manure decomposition and treatment		Source			NO		
Upstream Impacts of Community-Wide Activities							
Upstream impacts of fuels used in stationary applications by the community		Activity			NE		Insufficient data available at this time; potentially to be pursued in future inventory updates
Upstream and transmission and distribution (T&D) impacts of purchased electricity used by the community		Activity			NE		
Upstream impacts of fuels used for transportation in trips associated with the community		Activity			NE		
Upstream impacts of fuels used by water and wastewater facilities for water used and wastewater generated within the community boundary		Activity			NE		
Upstream impacts of select materials (concrete, food, paper, carpets, etc.) used by the whole community		Activity			NE		
Independent Consumption-Based Accounting							
Household Consumption (e.g., gas & electricity, transportation, and the purchase of all other food, goods and services by all households in the community)		Activity			NE		Insufficient data available at this time; potentially to be pursued in future inventory updates
Government Consumption (e.g., gas & electricity, transportation, and the purchase of all other food, goods and services by all governments in the community)		Activity			NE		
Life cycle emissions of community businesses (e.g., gas & electricity, transportation, and the purchase of all other food, goods and services by all businesses in the community)		Activity			NE		

Reasons for exclusion:

- NO = Not Occurring in this jurisdiction
- NE = Not Estimable based on available data, or effort not justifiable
- IE = Included Elsewhere in the inventory, perhaps under another sector
- NA = Not Applicable if activity occurs in jurisdiction but does not generate emission

Appendix B. Climate Action Plan Measure Status Update August 2013

Objective BE-1: Reduce Energy Use in City Facilities

Measure BE 1.1: Install cost-effective renewable energy systems on all city buildings and purchase remaining energy from renewable sources.					
Action	Estimated Cost: Average Annual/ Simplified to City	Responsibility	CAP Timetable Implement before:	Implementation Progress	Notes
A	\$5,714/ Low	Recreation & Public Works	December 31, 2010	Partial as of 3/2/2011	A) Four City buildings provided assessments through EBEW MIT program. Only notes upgrades that come with PG&E rebate. B) Four City buildings provided assessments through EBEW Smart Lights program. Partial upgrades to Recreation & City Hall.
B		Recreation & Public Works	July 31, 2012	Evaluated 4 City buildings for solar 4/2011	Corporation Yard solar energy installation greenlighted but stalled. Estimates savings of 9.3 metric tons CO ₂ e
C		Finance	January 1, 2020	None	
Progress Indicators			Target		
i	Percentage of City's building energy saved through energy retrofits and conservation measures.		20% by 2015 40% by 2020	61.94 tonnes CO ₂ e/year	
ii	Percentage of City's building electricity from renewable sources		100% by 2020		

Measure BE 1.2: Install building performance data (energy and water) displays in all City buildings.					
Action	Estimated Cost: Average Annual/ Simplified to City	Responsibility	CAP Timetable Implement before:	Implementation Progress	Notes
A	\$5,238/ Low	Recreation & Public Works	December 31, 2014	Partial 10/2011	Performance monitor installed with City Hall HVAC replacement.
Progress Indicators			Target		
i	See Measure BE 1.1.		See Measure BE 1.1.		

Additional notes on Measure BE 1.1

The City Hall/Fire Department HVAC upgrade was installed and completed by early October 2011 funded in part with a grant from the EPA. This was not an “apples to apples” exchange. The old system was heat only and was replaced with mini-condensers that supply both heat and cooling. In addition, rooms that were not conditioned before were included in the new conditioned area. During the ensuing 30 days the system was tested for performance and comfort. The contract requires the contractor to monitor the system for the following year, make adjustments, and supply training to appropriate City staff on system feature and operations.

Comfort levels have improved. Monitoring of energy savings from the City Hall HVAC project is on-going. Between November 1, 2011 through November 7, 2013, electrical consumption was 6,317 kWh (3,310 lbs. of CO₂e) greater than the average of the previous four years, and gas consumption was 491.5 therms (6,607 lbs. of CO₂e) less than the average of the previous four years. This represents a decrease of 3,297 lbs of CO₂e for the 24 month period. At this rate, the City would see a reduction of 1.5 metric tons of CO₂e annually. This is in line with what we might expect. Electrical consumption is expected to rise slightly due to the installation of cooling mini condenser units for air-conditioning during the warm months but also be mitigated with the removal of space heaters with the installation of the high-efficiency heating system. Therms are expected to decrease due to the higher efficiency of the new heating system.

With funds provided by the EPA grant, the City has implemented the installation of thermal pool covers for its medium and large pools at the City’s Swim Center in July 2012. A report by HMW International indicates that the covers on both pools will save an estimated 11,147 therms and \$10,590 annually. This amounts to an estimated annual savings of 132,649 lbs. or 60 tonnes of CO₂.

With grant funds provided by the EPA, lighting upgrades were made to City Hall and Recreation buildings through the EBEW Smart Lights program for annual savings of 440kWh/yr, 315 lbs (.14 tonnes)/yr, and \$78,46/yr.

In addition to upgrades to City buildings, the City replaced 84 streetlights with new high-efficiency LED fixtures with Energy Efficiency and Conservation Block Grant funds provided by the US Department of Energy for an annual estimated savings of 23,596 kWh/year, or 13,190 lbs (5.98 tonnes) CO₂ per year. See BE 6.1 below.

Objective BE-2: Consider Retrofitting Existing Residential Buildings

Measure BE 2.1: Consider developing and implementing point-of-sale residential energy and water efficiency upgrade requirements and/or incentives if necessary.						
Action		Estimated Cost: Average Annual/ Simplified to City	Responsibility	CAP Timetable Implement before:	Implementation Progress	Notes
A	As the economy improves and related programs are developed, consider adopting a Residential Energy Conservation Ordinance requiring and/or incentivizing point-of-sale energy efficiency upgrades if necessary.	\$5,714/ Low	City Council Public Works	December 31, 2015	None	
B	Work with StopWaste.Org to verify that the required efficiency upgrade package achieves at least 20% improvement in the average Piedmont home.		Public Works	December 31, 2015	Implemented	Minimum efficiency improvement of 15% with Energy Upgrade CA program. See additional notes below

Progress Indicators		Target				
i	Percentage of residential units that have implemented energy efficiency improvements since 2004.	35% of residential units by 2015 55% of residential units by 2020				
Measure BE 2.2: Identify and consider developing financial incentives and low-cost financing products and programs that encourage investment in energy efficiency and renewable energy within existing residential buildings.						
Action		Estimated Cost: Average Annual/ Simplified to City	Responsibility	CAP Timetable Implement before:	Implementation Progress	Notes
A	Evaluate various financing products that would encourage property owners to invest in energy efficiency upgrades and renewable energy systems in existing homes.	\$5,714 to \$80,625/ Low to Med	Finance Public Works	July 30, 2010	On hold.	CaliforniaFIRST financing program on hold with FHFA ruling.
B	Consult with other agencies, utilities and private lenders to evaluate and develop cost effective financing products.		Finance	December 31, 2010	In Progress.	Piedmont joined Energy Council in 2013 to pursue grants and implement programs. See additional note below.
C	Develop a robust public outreach program to educate residents about the availability of energy efficiency improvement financing and benefits to home owners and community GHG reduction efforts.		Finance Public Works	July 31, 2011	In Progress..	See note for Action A and B above.
Progress Indicators		Target				
i	See Measure BE 2.1.	See Measure BE 2.1.				

The City implemented an incentive program in conjunction with Energy Upgrade California program for residential sector in early 2011. In addition to the City incentive (\$190 for assessment only or up to \$590 for an assessment plus upgrades), PG&E offered up to \$4,000 in rebates and for a limited time ABAG offered rebates up to \$2,000. The City participated in two outreach workshops and distributed flyers to all single family property owners in the City. Participation in this program was lackluster at best. A total of eight applications for a combination of assessment and upgrades were processed. And six applications for assessments-only were processed. As of March 31, 2012, Piedmont terminated acceptance of applications for its residential financial incentive. By the end of September 2013, a total of 27 residential property owners in Piedmont have participated in the Energy Upgrade California program, whether receiving the City rebate incentive or not. Estimated total energy savings is 66,850 kWh and 7,150 therms (or 945 mmbtu). Estimated total GHG savings is 51 metric tons CO2e.

As part of the City’s participation in the Energy Council, staff is investigating and pursuing the possibility of an incentive for Residential Customers in which they fund water and energy upgrades funded over time on their water bills.

Measure BE 2.3: Educate residents about the availability of free home energy audit programs and encourage implementation of audit findings.						
Action		Estimated Cost: Average Annual/ Simplified to City	Responsibility	CAP Timetable Implement before:	Implementation Progress	Notes
A	Find and partner with home energy audit providers to develop public outreach program with focus on post-audit follow-through.	\$3,750/ Low	Public Works		Implemented.	Home energy audits and verification are offered and required as part of Energy Upgrade CA program.
Progress Indicators			Target			
i	See Measure BE 2.1.		See Measure BE 2.1.			

The paper and on-line outreach for assessments, incentives and measures included in Energy Upgrade California are comprehensive and easily available. City staff sent, via US Mail, every residential property owner in Piedmont information on the program.

Objective BE-3: Consider Retrofitting Existing Commercial Buildings

Measure BE 3.1: Consider developing and implementing point-of-sale commercial energy efficiency upgrade requirements and/or incentives if necessary.						
Action		Estimated Cost: Average Annual/ Simplified to City	Responsibility	CAP Timetable Implement before:	Implementation Progress	Notes
A	As the economy improves and related programs are developed, consider adopting a Commercial Energy Conservation Ordinance requiring and/or incentivizing point-of-sale energy efficiency upgrades if necessary.	\$5,714/ Low	City Council Public Works	July 31, 2015	None	Ordinance not currently being considered.
B	Verify that the required efficiency upgrade package achieves at least 12% improvement in average Piedmont commercial building.		Public Works	July 31, 2012	None.	See note for Action A above.
Progress Indicators			Target			
i	Percentage of commercial buildings that have implemented energy efficiency improvements since 2004.		20% of residential units by 2015 32% of residential units by 2020			

Measure BE 3.2: Identify and develop financial incentives and low-cost financing products and programs to encourage investment in energy efficiency and renewable energy within existing commercial buildings.						
Action		Estimated Cost: Average Annual/ Simplified to City	Responsibility	CAP Timetable Implement before:	Implementation Progress	Notes
A	Evaluate various financing products that would encourage property owners to invest in energy efficiency upgrades and renewable energy systems in existing commercial buildings.	\$5,714 to \$80,625/ Low to Med	Finance Public Works	July 30, 2010	In development.	See note on Action B below.
B	Consult with other agencies, utilities and private lenders to evaluate and develop cost effective financing products.		Finance, Public Works	December 31, 2010	Completed in 2012	7 Businesses in Piedmont did lighting upgrades through the Smart Lights Program of EBEW, funded with EPA grant.
C	Develop a robust public outreach program to educate residents about the availability of energy efficiency improvement financing and benefits to home owners and community GHG reduction efforts.		Finance Public Works	July 31, 2011	On hold.	PW staff contacted every business owner in Piedmont regarding Smart Lights program. Also see Measure BE 2.2.
Progress Indicators			Target			
i	See Measure BE 3.1.		See Measure BE 3.1.		27.5 tonnes CO ₂ e/year	

Note on Smart Lights Commercial Program

At the launch of the grant programs, Piedmont decided to apply all its \$25,000 of residential/commercial funding to the residential sector because it represents a very large GHG emissions reduction potential whereas the commercial sector in Piedmont is rather small. But with very little activity in the residential Energy Upgrade California program, we decided to switch the majority of this funding pool to the commercial sector through the Smart Lights program. Staff launched an outreach program where a City staff member and a representative from Smart Lights made an in-person visit to each establishment a few days after sending postcards by mail. Because of this outreach and the approval by the EPA of a change in the project guidelines to increase the financial incentive above \$2,000, the City was able to maximize the number of participants in the Smart Lights program and the resulting GHG emission reductions. Within its tiny commercial sector, Piedmont has incentivized 9 commercial establishments to participate in the program. The nine participants are estimated to result in a reduction of 84,439 kWh per year and 60,627 lbs. of CO₂.

Measure BE 3.3: Partner with PG&E to provide a business education program that encourages commercial energy efficiency improvements						
Action		Estimated Cost: Average Annual/ Simplified to City	Responsibility	CAP Timetable Implement before:	Implementation Progress	Notes
A	Provide outreach programs to community business, both retail and office, to effect energy reductions.	\$5,714/ Low	Public Works		In development.	See Measure BE 3.2. Smart Lights and other programs are available through EBEW, a PG&E funded entity.
Progress Indicators			Target			
i	See Measure BE 3.1.			See Measure BE 3.1.		

Objective BE-4: Consider Requiring Energy Performance in New Construction

Measure BE 4.1: Consider adopting additional standards for energy and water efficiency if necessary.						
Action		Estimated Cost: Average Annual/ Simplified to City	Responsibility	CAP Timetable Implement before:	Implementation Progress	Notes
A	Consider adopting an expanded Green Building Ordinance incorporating energy and water efficiency standards contained in Chapter 5 and 6 of the 2008 California Green Building Code if such standards are necessary to achieve the community's GHG reduction target.	\$5,714/ Low	City Council Public Works	December 31, 2011	Implemented	The California Green Building code went into effect January 1, 2010 and an updated version is effective January 1, 2014. It is unknown if code adoption alone will achieve target.
Progress Indicators			Target			
i	NA			NA		
Measure BE 4.2: Provide development incentives for buildings that exceed the State's current Title-24 standards for energy efficiency by 25%.						
Action		Estimated Cost: Average Annual/ Simplified to City	Responsibility	CAP Timetable Implement before:	Implementation Progress	Notes
A	Adopt incentive programs for new construction to exceed required energy efficiency.	NA/ Low	City Council Public Works	NA	None	See note for BE 4.1 above.
Progress Indicators			Target			
i	NA			NA		

Objective BE-5: Maximize the Use of Renewable Energy

Measure BE 5.1: Develop a comprehensive renewable energy financing and informational program for residential and commercial uses.						
Action		Estimated Cost: Average Annual/ Simplified to City	Responsibility	CAP Timetable Implement before:	Implementation Progress	Notes
A	Develop a renewable energy financing program in conjunction with Alameda County and participating cities.	\$3,750/ Low	Finance Public Works	December 31, 2011	On hold	See Measure BE 2.2.
B	Develop a public information program to encourage residents and businesses to install renewable energy systems.		Public Works	December 31, 2011	None.	Vendors of solar energy systems provide outreach..
Progress Indicators			Target			
i	Percentage of residential and commercial buildings that have installed photovoltaic or solar hot water heaters.		15% by 2015 20% by 2020		Permits for Solar Energy Systems: 2005-2010: 105 2011-7/2013: 76 Total 181.	Piedmont encourages solar energy systems by applying a flat fee of \$300 on building permits for such systems.
Measure BE 5.2: Join Bay Area efforts to ensure green public transit energy sourcing.						
Action		Estimated Cost: Average Annual/ Simplified to City	Responsibility	CAP Timetable Implement before:	Implementation Progress	Notes
A	Investigate and join existing efforts to effect renewable transit energy sources.	\$5,714/ Low	Not identified	Not identified	None	
Progress Indicators			Target			
i	Percentage of transit agency energy consumption from renewable sources.		Not identified			

Objective BE-6: Community Energy Management

Measure BE 6.1: Work with Alameda County to convert street lights to LED bulbs or LED-solar systems.						
Action		Estimated Cost: Average Annual/ Simplified to City	Responsibility	CAP Timetable Implement before:	Implementation Progress	Notes
A	Replace existing streetlights with LED or LED-solar fixtures.	Not identified/ Low	Public Works	Not identified	In process	EECBG funds provided 84 fixtures (of a total ±842).
Progress Indicators			Target		5.98 tonnes CO ₂ e /yr from 84 streetlight replacement	Replacing the remaining streetlights should save the City an estimated 54.39 tonnes CO ₂ e /yr
i	Percentage of City streetlights with LED or LED-solar fixtures.		Not identified		84 of approx 850 fixtures (10%)	

Measure BE 6.2: Research the feasibility of joining the Community Choice Aggregation efforts of Berkeley, Oakland, and Emeryville.						
Action		Estimated Cost: Average Annual/ Simplified to City	Responsibility	CAP Timetable Implement before:	Implementation Progress	Notes
A	Investigate Community Choice Aggregation program of Berkeley, Oakland and Emeryville and join efforts if it is in Piedmont's interests.	\$5,714/ Low	Not identified	Not identified	None	
Progress Indicators			Target			
i	Not identified		Not identified			
Measure BE 6.3: Encourage PG&E and EBMUD to provide comparative energy and water conservation metrics on utility bills.						
Action		Estimated Cost: Average Annual/ Simplified to City	Responsibility	CAP Timetable Implement before:	Implementation Progress	Notes
A	Work with PG&E and EBMUD to develop comparative energy and water conservation metrics for inclusion on utility bills.	\$5,714/ Low	Public Works	December 31, 2010	none	PG&E's My Home Energy and Energy Upgrade California's Home Energy Analyzer help property owners to identify measures that will save energy and reduce GHG's.
Progress Indicators			Target			
i	NA		NA			

Objective WW-1: Become a Zero-waste Community

Measure WW 1.1: Establish a zero-waste reduction target for 2030 and work with Alameda County, neighboring cities, and other organizations to leverage the zero-waste effort.						
Action		Estimated Cost: Average Annual/ Simplified to City	Responsibility	CAP Timetable Implement before:	Implementation Progress	Notes
A	Develop a resolution of support to encourage the State and federal governments to pass legislation that requires extended producer responsibility and improves recyclability of products and packaging.	\$5,714/ Low	City Council	December 31, 2010	None	The City could choose to consider to support the California Product Stewardship Council.
B	Adopt a resolution to achieve 90% waste reduction and diversion by 2030.		City Council	December 31, 2011	Partial	The City adopted a 75% diversion goal in 4/2008, which has been met since 7/2008.
C	Expand outreach programs to maximize participation in waste reduction and diversion programs.		Public Works	July 31, 2011	Ongoing	Brochure, inserts and other promotional items are continually distributed.

EXHIBIT B

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D	Adopt a resolution of support that encourages the State and federal governments to create a voluntary <i>Do Not Mail Registry</i> to reduce junk mail deliveries.		City Council	July 21, 2010	None	
E	Consider adopting an ordinance that requires all household and commercial food scraps and food-soiled paper to be placed in organics carts, all commercial food service providers to use recycling and organics services, and the City's waste collector to minimize collection route distances and use fuel efficient vehicles.		City Council	December 31, 2010	Partial	In July 2012, the City opted to be subject to the Alameda County Mandatory Commercial Recycling Ordinance.
Progress Indicators			Target			
i	Community waste diversion rate			75% by 2015 80% by 2020 90% by 2030	2007:68% 2008: 72% 2009: 84% 2010: 75% 2011: 69% 2012: 71%	Diversion rates determined by StopWaste.Org.
Measure WW 1.2: Establish an environmentally responsible government purchasing policy.						
Action		Estimated Cost: Average Annual/Simplified to City	Responsibility	CAP Timetable Implement before:	Implementation Progress	Notes
A	Establish an environmentally responsible purchasing policy that includes a preference to products produced with little or no GHG emissions	\$5,714/ Low	City Council All Departments	Not identified	Complete	EPP Policy adopted 11/2011. See note below..
Progress Indicators			Target			
i	Adoption of policy.			Not identified.	Adopted	

The City Council adopted an Environmental Preferable Purchasing Policy on November 7, 2011 and the PEPP Team began meeting quarterly in January 2012 to develop an implementation plan and coordinate bulk purchases and piggy-back purchases on those made by the County government. Green purchasing coordination continues internally and with regional agencies. Currently, staff is working with the purchasers in each department to evaluate purchases during the first two years of the policy implementation to determine potential ghg emissions reductions. We have purchased EnergyStar multi-function devices and printer. Savings from those are estimated to be 7,600 kWh and \$1,889 per year. Also, the Fire Department replaced its tank water heater with two energy efficient tankless heaters in 2013.

Objective WW-2: Conserve Water Resources

Measure WW 2.1: Encourage residential and commercial users to participate in EBMUD's free water audit program.						
Action		Estimated Cost: Average Annual/ Simplified to City	Responsibility	CAP Timetable Implement before:	Implementation Progress	Notes
A	Partner with EBMUD and StopWaste.Org to provide water conservation outreach programs and encourage residential and commercial users to participate in free water efficiency audits.	\$3,750/ Low	Public Works	Not identified	Limited	City Bay-Friendly Landscape ordinance affects municipal projects only. Outreach is available to all.
Progress Indicators			Target			
i	Not identified		Not identified			
Measure WW 2.2: Encourage use of graywater and rainwater collection in existing residential and commercial uses.						
Action		Estimated Cost: Average Annual/ Simplified to City	Responsibility	CAP Timetable Implement before:	Implementation Progress	Notes
A	Adopt an ordinance that incorporates provisions of the California Water Efficient Landscaping Ordinance and further enables property owners to construct graywater systems and rainwater collection systems that conform to Title 24 Part 5 of the California Plumbing Code.	\$3,750/ Low	City Council Public Works	December 31, 2010	None	California WELO in effect until City adopts its own ordinance.
B	Create an outreach program that encourages businesses and residents to construct graywater and rainwater collection systems on their properties.		Public Works	July 31, 2011	None	
C	Provide City staff training regarding State code requirement for graywater systems in order to help interested parties develop systems.		Public Works	July 31, 2011	Partial	Building Division Staff received graywater training as part of Green Building Code Workshops.
Progress Indicators			Target			
i	Percentage of residential and commercial properties that have implemented graywater and/or rainwater collection systems since 2004.		50% by 2020		residences with: both: 2 rainwater only:2 graywater only: 1	

Measure WW 2.3: Develop a water efficient landscaping ordinance to implement the California Water Efficient Landscaping Ordinance and require or facilitate use of graywater or rainwater collection systems in new construction.						
Action		Estimated Cost: Average Annual/ Simplified to City	Responsibility	CAP Timetable Implement before:	Implementation Progress	Notes
A	Partner with EBMUD and StopWaste.Org to provide water conservation outreach programs and encourage residential and commercial users to participate in free water efficiency audits.	\$5,714/ Low	City Council Public Works	See WW 2.2 A	None	
Progress Indicators			Target			
i	See WW 2.2 A			See WW 2.2 A		
Measure WW 2.4: Facilitate the installation of weather-based evapotranspiration (ET) controller irrigation systems in both City and private landscapes.						
Action		Estimated Cost: Average Annual/ Simplified to City	Responsibility	CAP Timetable Implement before:	Implementation Progress	Notes
A	Install ET controller irrigation systems in all municipal landscapes.	\$5,714/ Low	Public Works	Not identified	None	City has not installed any ET controllers, but has switched head types from spray to nozzle.
B	Develop program to encourage the use of ET controllers in private landscapes and require or facilitate use of ET controllers for new development and landscape projects over 2,500 square feet.		City Council Public Works	Not identified.	Partial	2013 Green Building Code requires new irrigation systems to have soil moisture or weather based controllers.
Progress Indicators			Target			
i	Percentage of municipal landscapes with ET controllers.			Not identified	Partial	
ii	Percentage of private landscapes with ET controllers			Not identified	Unknown	See note under WW2.4B.

Objective TL-1: Facilitate Walking and Biking in the Community

Measure TL 1.1: Consider expanding and enhancing bicycling and pedestrian infrastructure throughout the community if financially feasible and practical.						
Action		Estimated Cost: Average Annual/ Simplified to City	Responsibility	CAP Timetable Implement before:	Implementation Progress	Notes
A	Prepare and adopt a Bicycle Master Plan that coordinates with City of Oakland bicycle planning initiatives.	Not identified/ High	Public Works	July 31, 2012	In progress	In 7/2013 the City was provided with grant funds by ACTC to develop a Bicycle and Pedestrian Master Plan.
B	Construct bicycle infrastructure improvements.		Public Works	January 1, 2020	In progress	Staff proposing code changes so that bicycle racks are not considered structure. See note for Action A above.
C	Conduct a pedestrian obstacle study.		Public Works	September 1, 2011	In progress	See note for Action A above
D	Prepare and adopt a Pedestrian Master Plan.		Public Works	December 31, 2012	In progress	See note for Action A above.
E	Construct pedestrian improvements identified in the pedestrian obstacle study and Pedestrian Master Plan.		Public Works	January 1, 2012	None	See note for Action A above.
Progress Indicators			Target			
i	Bicycle network coverage (excluding Class III bike routes).		15% bicycle network coverage by 2015 25% bicycle network coverage by 2020			
ii	Percentage of street curbs with curb cuts		100% by 2015			
iii	Pedestrian and bike mode share of commute trips.		5% combined by 2015			
Measure TL 1.2: Install bike racks in commercial and civic areas of the City where racks do not currently exist if financially feasible and practical.						
Action		Estimated Cost: Average Annual/ Simplified to City	Responsibility	CAP Timetable Implement before:	Implementation Progress	Notes
A	Conduct bicycle parking analysis in City's commercial and civic areas.	\$1,200/ Low	Public Works	December 31, 2011	In progress	In 7/2013 the City was provided with grant funds by ACTC to develop a Bicycle and Pedestrian Master Plan.
B	Install bicycle parking facilities in underserved areas (20% of total to be Class I or II bicycle parking facilities).		Public Works	July 31, 2012	None	See note for Action A above.
C	Adopt an ordinance that requires new development to provide adequate bicycle parking for tenants and customers; and requires businesses with more than 30 employees to provide end-of-trip facilities including showers, lockers, and Class I bicycle storage facilities.		City Council Public Works	July 31, 2012	None	See note for Action A above.

Progress Indicators		Target				
i	Bicycle-parking to auto-parking ratio.	0.5:1 by 2015 1:1 parking by 2020				
ii	Percentage of businesses with over 30 employees with end-of-trip facilities.	100% by 2020				
Measure TL 1.3: Consider incorporating pedestrian-friendly design features into the City's civic/commercial centers.						
Action		Estimated Cost: Average Annual/ Simplified to City	Responsibility	CAP Timetable Implement before:	Implementation Progress	Notes
A	Consider developing streetscape designs into the Highland and Grand Avenue civic and commercial areas.	Not identified/ High	Public Works	Not identified	None	See note for Measure TL 1.1, Action A above.
Progress Indicators		Target				
i	Not identified	Not identified				
Measure TL 1.4: Evaluate the potential for mixed-use development within Piedmont's existing commercial centers.						
Action		Estimated Cost: Average Annual/ Simplified to City	Responsibility	CAP Timetable Implement before:	Implementation Progress	Notes
A	Identify the potential for high-quality, pedestrian-oriented, mixed-use development within the Civic Center Master Plan.	\$20,000/ Low	Public Works	December 31, 2012	None	
B	Prepare a Specific Plan for the Grand Avenue commercial area that identifies the potential for high-quality, pedestrian-oriented, mixed-use development.		Public Works	December 31, 2015	Partial	November 18, 2013, City Council approved changes to Zone D to make mixed use of commercial and residential a permitted use.
C	Develop small business incentive programs to encourage new neighborhood-serving uses in the Civic Center and Grand Avenue commercial areas.		Public Works	December 31, 2012	None	
D	Conduct audit of land use, zoning, development standards, and other regulations that may act as barriers to neighborhood serving businesses and mixed-use development.		Public Works	December 31, 2011	None	
Progress Indicators		Target				
i	Number of new neighborhood-serving commercial amenities (e.g. restaurants, bakeries, retail stores, medical offices, etc.) in City since 2009.	3 by 2015 10 by 2020		5/2010: McMullen clothing store opens at 1235 Grand Avenue		

Objective TL-2: Make Public Transit More Accessible and User-friendly

Measure TL 2.1: Work with AC transit to conduct a public transit gap study and provide bus stops with safe and convenient bicycle and pedestrian access and essential improvements.						
Action		Estimated Cost: Average Annual/ Simplified to City	Responsibility	CAP Timetable Implement before:	Implementation Progress	Notes
A	Consult with AC transit to ensure Piedmont bus stops provide shade, weather protection, seating, lighting, and route information.	\$5,714/ Low	Public Works	December 31, 2017	Some	New bus stop constructed on Highland Way.
B	Conduct a study of bicycle and pedestrian access to transit stations.		Public Works	July 31, 2010	None	See note for Measure TL 1.1, Action A above.
Progress Indicators			Target			
i	Percentage of bus stops with shade, weather protection, seating, lighting, and route information.			80% by 2015 100% by 2017		

Objective TL-3: Reduce Vehicle Emissions and Trips

Measure TL 3.1: Improve fuel efficiency of the City vehicle fleet by purchasing low- or zero-emission vehicles when vehicles are retired from service. (Emergency vehicles are exempt from this measure.)						
Action		Estimated Cost: Average Annual/ Simplified to City	Responsibility	CAP Timetable Implement before:	Implementation Progress	Notes
A	Replace retired City vehicles (emergency vehicles excepted) with low- or zero-emission vehicles.	\$52,000/ Low	All Departments	Not identified	None	Police and Fire vehicles replaced in 2012. No low/no emission vehicles.
Progress Indicators			Target			
i	Percentage of non-emergency City vehicles that are low- or zero-emission.			Not identified	Zero	

Measure TL 3.2: Provide preferential public parking spaces for electric and plug-in electric hybrid vehicles.						
Action		Estimated Cost: Average Annual/ Simplified to City	Responsibility	CAP Timetable Implement before:	Implementation Progress	Notes
A	Provide preferential parking spaces for eligible vehicle types throughout the City's commercial districts.	Not identified/ Low	All Departments	Not identified	None	
B	Maintain a list of eligible vehicles on the City's website.		Administration	Not identified	None	
Progress Indicators			Target			
i	Percentage commercial district parking spaces dedicated to electric or electric-hybrid vehicles.			Not identified	Zero	

Measure TL 3.3: Facilitate ride-share opportunities for community residents.						
Action	Estimated Cost: Average Annual/ Simplified to City	Responsibility	CAP Timetable Implement before:	Implementation Progress	Notes	
A	\$5,714/ Low	Public Works	Not identified	None		
B		Not identified	Not identified	None		
C		Public Works	Not identified	Partial	Seating and waste cans provided.	
Progress Indicators		Target				
i	Not identified.		Not identified			
Measure TL 3.4: Work with schools to improve/expand walking, school bus use, safe routes to school programs, and trip reduction programs.						
Action	Estimated Cost: Average Annual/ Simplified to City	Responsibility	CAP Timetable Implement before:	Implementation Progress	Notes	
A	\$5,714/ Low	Public Works	Not identified	In Progress	In 7/2013 the City was provided with grant funds by ACTC to develop a SRTS program as part of its Bicycle and Pedestrian Master Plan	
B		PUSD Not identified	Not identified	None		
Progress Indicators		Target				
i	Not identified.		Not identified			
Measure TL 3.5: Provide public education regarding reducing motor vehicle-related greenhouse gas emissions.						
Action	Estimated Cost: Average Annual/ Simplified to City	Responsibility	CAP Timetable Implement before:	Implementation Progress	Notes	
A	\$3,750/ Low	Not identified	Not identified	None		
Progress Indicators		Target				
i	Not identified.		Not identified			

Appendix C. Potential Modifications/Additions to Measures in Piedmont Climate Action Plan

Measure	Description
Objective BE-1: Reduce Energy Use in City Facilities	
BE-1.3	Retrofit streetlights with high efficiency light fixtures. See BE-6.1.
BE-1.4	Retrofit municipal buildings with energy efficient features including but not limited to: insulation, windows, HVAC systems, water heaters, lighting and lighting controls, and appliances.
BE-1.5	As appropriate, participate in local, regional, state and federal grants and programs that target energy efficiency in municipal facilities.
Objective BE-2: Consider Retrofitting Existing Residential Buildings	
BE-2.4	As appropriate, participate in local, regional, state and federal grants and programs that target energy efficiency in residential structures.
Objective BE-3: Consider Retrofitting Existing Commercial Buildings	
BE-3.4	As appropriate, participate in local, regional, state and federal grants and programs that target energy efficiency in commercial structures.
Objective BE-5: Maximize the Use of Renewable Energy	
BE-5.3	Set building permit fees and processes so that they encourage the installation of solar and other renewable energy systems for commercial and residential uses.
Objective BE-6: Community Energy Management	
BE-6.4	Develop public outreach programs that strive to connect residential and commercial property owners with energy and water efficiency programs supported by PG&E, EBMUD and other utilities and providers. (Replicated under Measure WW-2.5)
BE-6.5	Consider developing or participating in programs that allow property owners to install energy efficient and/or water efficient upgrades with long-term financing on utility bills. (Replicated under Measure WW-2.6)
Objective WW-2: Conserve Water Resources	
WW-2.5	Develop public outreach programs that strive to connect residential and commercial property owners with energy and water efficiency programs supported by PG&E, EBMUD and other utilities and providers. (Replicated under Measure BE-6.4)
WW-2.6	Consider developing or participating in programs that allow property owners to install energy efficient and/or water efficient upgrades with long-term financing on utility bills. (Replicated under Measure BE-6.5)
Objective TL-1: Facilitate Walking and Biking in the Community	
TL-1.1a	Develop a pedestrian and bicycle plan for the City.
Objective TL-3: Reduce Vehicle Emissions and Trips	
TL-3.1a	Consider regulations and/or incentives that result in the use of no or low emission vehicles and equipment by city contractors.
TL-3.6	Consider developing programs to reduce City employee commutes through carpooling, low emission vehicles, transit ridership, and reduced trips.

Item #5 – Environmental Task Force and Climate Action Plan Update
Correspondence Received before 4:00PM on Monday, May 5th

To whom it may concern -

I heard that there is going to be a City Council meeting this coming Monday.

Although I can't attend because I have very young children to take care of, I wanted to voice my support for the important initiatives that we carry on in Piedmont.

Not only do we need to set a good example for our children, we have the opportunity to engage our influential community on these issues.

I hope you will vote to support these important initiatives.

Thank you
Lilian Chou

Dear Members of the City Council,

As a Piedmont resident and as a working professional in the energy and environmental field, I encourage you to take direct and immediate action to achieve our community's Climate Action Plan (CAP). I also ask you do so in a way that will be 1) cost-effective; 2) simple to administer, and 3) as expeditious as possible.

On this basis, I recommend you carefully consider **community choice aggregation (CCA)**. Please direct staff to further explore this proven CAP implementation method, and to report back to Council and the public at the June Council meeting.

It would be particularly helpful to have a representative from Marin Clean Energy (MCE)—California's first CCA—present to Council in June, so that Council Members, City Staff, and the public may have the opportunity to ask questions and learn the details of CCA.

MCE has helped Marin County achieve its greenhouse gas (GHG) reductions targets eight years ahead of schedule. Moreover, it has done so at minimal public expense, and without requiring dramatic lifestyle changes.

As today's Council Report indicates, MCE's CCA program is the single largest CAP implementation method for the Town of San Anselmo. Specifically, on page 13, the Council Report states the following:

"...San Anselmo, which has demographics and geography similar to Piedmont and a climate action goal identical to Piedmont's, estimates that its partnership in MCE will result in a reduction of some 6,053 metric tons of CO2 in annual GHG emissions by

2020, which accounts for 42% of the mix of emissions reductions leading to the city's target. If Piedmont were to take part in a CCA and offer electricity customers a low carbon energy mix, the City should expect a significant reduction in community emissions that could lead to achieving our 2020 goal." (emphasis added)

Cost effectiveness is also critical to Piedmont's CAP implementation. At this time, MCE's electricity generation rates are cheaper than those of Pacific Gas & Electric (PG&E). Although this may not always be the case, or may only be the case during certain months of the year, it validates a basic tenet of free market economics: competition is good for consumers.

The City of San Rafael, for example, recently announced it saved more than \$30,000 on its energy costs in 2013 as an MCE customer. Following PG&E's May rate increase, San Rafael expects to save approximately \$47,000 annually. School districts in MCE's service area expect similar cost savings. Indeed, at current rates, MCE customers anticipate a collective savings of \$5.9 million in 2014.

Please help Piedmont distinguish itself as a leader in swift, pragmatic, and cost-effective CAP implementation by pursuing CCA as soon as possible.

Sincerely,

Joey Lande

Dear Mayor Fujioka and Council Members,

I'm unable to attend the City Council meeting tonight, but I care very much about Piedmont's Climate Action Plan and have read tonight's report on its implementation. One of the possible further actions that the report lists is for Piedmont to join a Community Choice Aggregation (CCA).

Pursuing this choice would be one of the most efficient means to reaching our Climate Action Plan's goal to reduce Piedmont's greenhouse gas (GHG) emissions to 15% below 2005 levels by 2020.

By giving citizens an option of who supplies their energy, a CCA like MCE, would allow subscribers to substantially reduce their use of carbon based energy. The investment would support the development of sustainable energy sources statewide, obtain control over electric generation costs to provide stability to Piedmont residents, and, over time, create energy cost savings to boot.

In researching CCA I've found the following information useful:

http://www.ci.berkeley.ca.us/uploadedFiles/Planning_and_Development/Level_3_-_Energy_and_Sustainable_Development/CCAUupdateMemoforCouncilrev.pdf

Please invite MCE to present to the Council and Piedmont citizens as soon as possible.

Thank you for your consideration of this matter.

Kimberly Moses
