City of Piedmont
COUNCIL AGENDA REPORT

DATE: July 5, 2016

TO: Mayor and Council

FROM: Paul Benoit, City Administrator

SUBJECT: Informational update on Climate Action Plan implementation, a 2014 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 2014 Greenhouse Gas Emissions (GHG) inventory (Exhibit B, page 26) and a discussion of activity since the last update, provided to City Council on May 5, 2014.

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 17).

PREVIOUS GREENHOUSE GAS EMISSIONS INVENTORIES:

- **2005:** With funds provided by StopWaste.org, Piedmont completed a 2005 Greenhouse Gas Emissions inventory in 2006. It is available on the City's website. 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 adopted 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 equivalents (CO2e).

- **2010:** With funds provided by PG&E's Green Community Program, the Alameda County Waste Management Authority (StopWaste) 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. As noted in the inventory, which is available on the City's website, Piedmont's GHG emissions in 2010 were 44,800 metric

tons CO2e, a 7% reduction from 2005 levels. However, 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 shown in that "snapshot." The transportation and residential sectors are responsible for the vast majority of Piedmonts GHG emissions, respectively accounting for 41% and 52% of the community's emissions in 2010. The three other CO2e-producing sectors in Piedmont – non-residential energy, water, and waste – contributed 7% of the community's 2010 emissions. This is a decrease from 9% of 2005's emissions, largely due to 698 fewer tons of waste generated in 2010.

2014 GREENHOUSE GAS INVENTORY:

Piedmont completed the 2014 GHG Emissions inventory in the summer of 2016 through the efforts of the City's CivicSpark Fellow and it is attached as Exhibit B (page 26). In 2014, Piedmont produced approximately 39,456 metric tons of CO2e, a reduction of 18.4% below 2005 levels. This significant reduction can largely be attributed to a reduction in natural gas usage throughout the City, particularly in the residential sector, with a decrease of 5,100 metric tons of CO2e occurring between 2010 and 2014 from this energy source alone.

The City's Climate Action Plan and Environmental Task Force have both identified a series of strategies to achieve the 2020 GHG reduction target, and City staff has been actively implementing these strategies. The 18.4% decrease in GHG emissions is due in part to the implementation of these strategies and ongoing conservation and efficiency efforts by Piedmont residents and businesses. However, it appears that a significant portion of the GHG reductions identified in the 2014 inventory were the result of fewer heating degree days (reduced gas consumption) due to exceptionally warm seasonal temperatures that year. The community emissions section of this report includes municipal emissions. However, municipal (City government) emissions are also studied separately in the inventory.

Community Update

In 2014, City staff once again utilized ICLEI's U.S. Community Protocol for Accounting and Local Government Operating Protocols to calculate Piedmont's community emissions. In 2014 activities in the community resulted in the emission of approximately 39,456 metric tons of CO2e, indicating that Piedmont has tentatively reached its emissions reduction goal for the year 2020. This emissions level is an approximate reduction of 18.4% below 2005 GHG levels. As shown in Figure 1, a reduction in residential energy use has been the largest contributor this emissions reduction, with over 85% of the reduction coming from the residential gas use sector. As of 2014, residential energy consisted of 45% of the community emissions while transportation and non-residential energy usage represent 49% and 4% respectively.

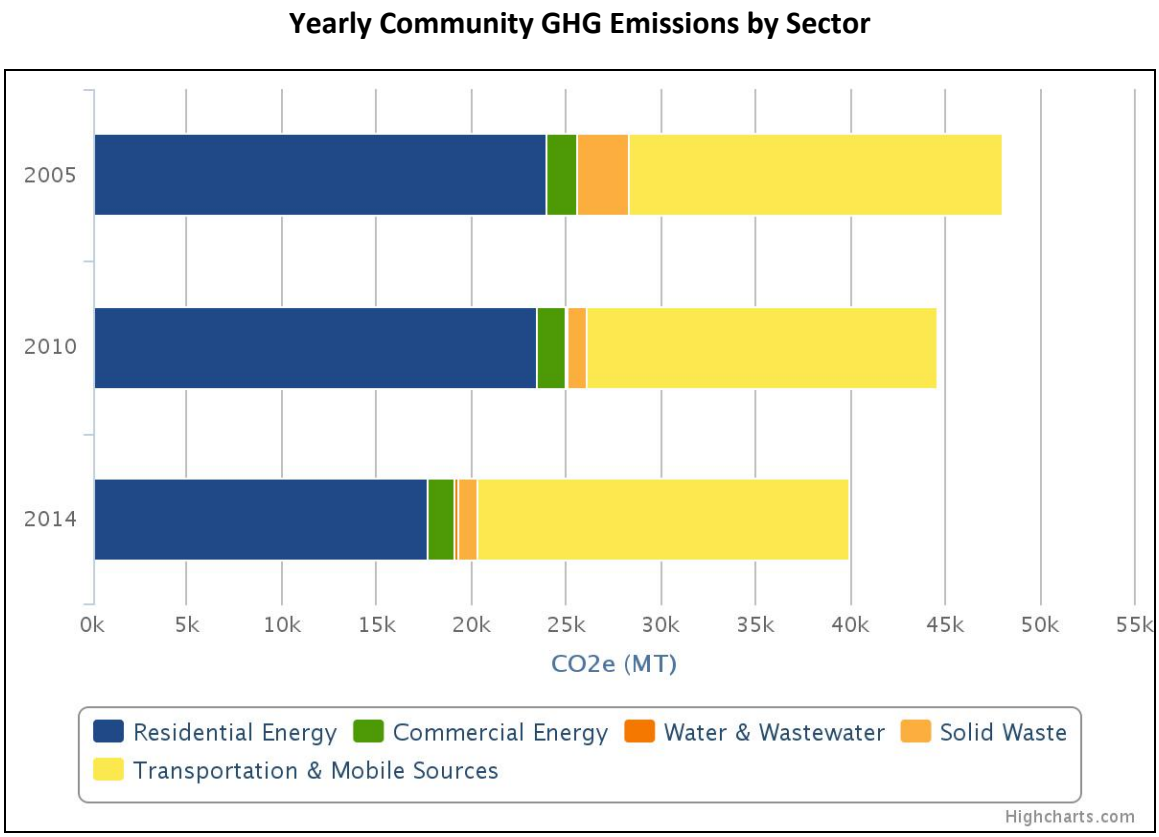

Figure 1.Yearly Community GHG emissions by Sector

It is important to note that Piedmont's GHG emissions reductions are also a reflection of a strong influence from outside variables. Compared to 2010, Piedmont used approximately 965,000 fewer therms of natural gas in 2014, leading to a decrease of approximately 5,100 metric tons of CO2e. Much of this can likely be attributed to a decrease in the need for home heating due to an average temperature increase of 3.7° Fahrenheit statewide between the 2010 and 2014 inventories.

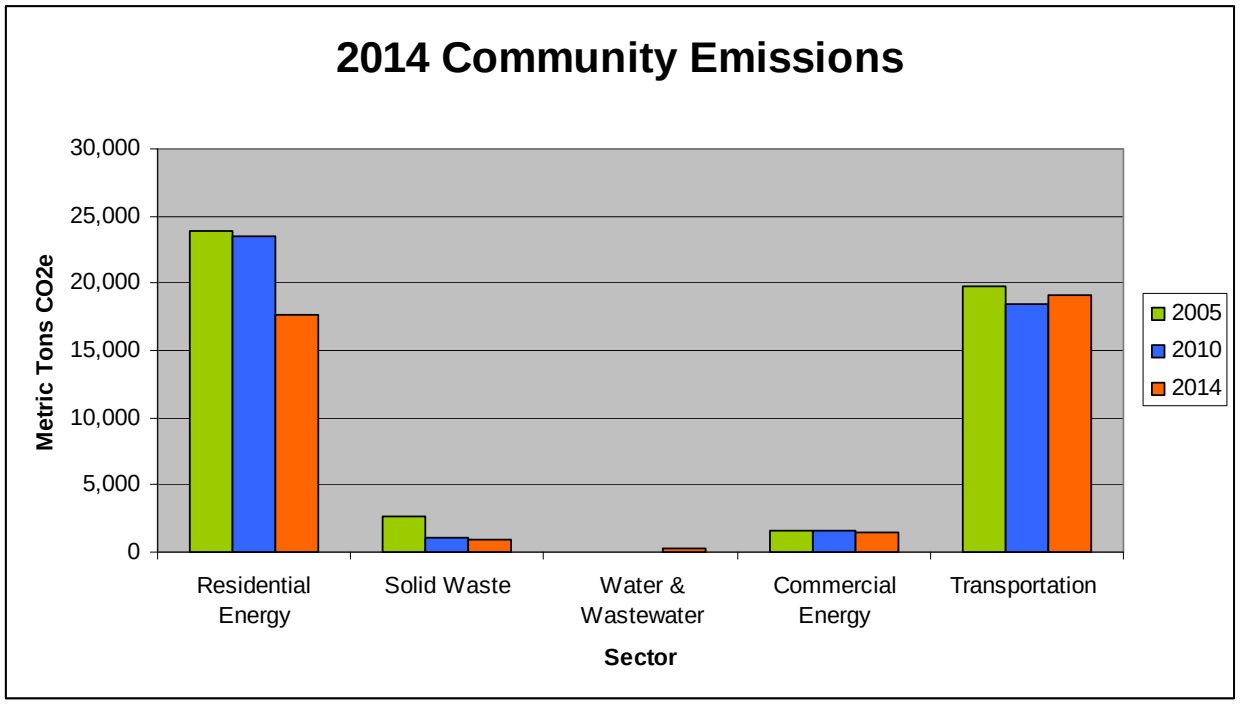

Figure 2. Community Emissions by Sector 2014

Between 2010 and 2014 Piedmont experienced an increase in greenhouse gas emissions in the transportation sector. Some of this increase can be attributed to new modeling developed by the Metropolitan Transportation Commission (MTC) as well as the ability to use increasingly specific Emissions Coefficients (EMFAC) for different vehicle types within industry.

Emissions generated by the transportation sector are largely driven by vehicle miles traveled (VMT) and the fuel efficiency of vehicles, neither of which the City has much ability to control (the exception is the municipal fleet and vehicles used by City contractors, which account for a small portion of VMT in Piedmont). Although MTC's model estimates Piedmont emissions using specific factors such as population and employment combined with general fuel efficiency and emissions factor for the Bay Area, this model is not able to directly account for factors in which Piedmont may be doing more than the surrounding County.

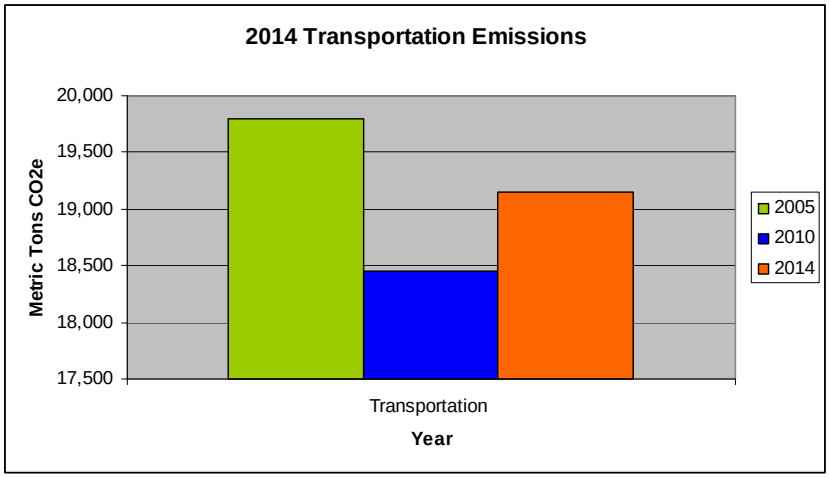

Figure 3. Community Transportation Emissions by Year

While the VMT model produced by MTC provides a proxy for transportation data within Piedmont, it is highly noticeable as one spends time within the City that there appears to be a large uptick in electric vehicles (EV). Staff gathered information on the number of California Clean Vehicle Rebate Program (CVRP) rebates redeemed in order to approximate the number of EVs within Piedmont. CVRP data from June 2011 through April 2016 showed 262 rebates redeemed for Piedmont, representing approximately 3.1% of Piedmont's population of potential drivers (those age 15 and over) and

6.7% of total Piedmont households. Piedmont's redemption rate of 3.1% is more than triple the County-wide rebate redemption rate of 0.97% of the potential population of drivers. Of the 12,326 rebates redeemed in Alameda County, Piedmont accounted for approximately 2.1%, despite only representing 0.7% of the County's population. Staff will continue to investigate more accurate information sources for EV adoption rates, as the CVRP data does not include vehicles purchased before June 2011 and instances where the EV purchaser chose not to redeem their rebate. Additionally, effective March 29, 2016 EV rebates through CVRP are income limited to single-filers with an annual salary of $250,000 or less, $340,000 for head-of-household, and $500,000 for joint-filers. Therefore, the percentage of Piedmont residents who own EVs is likely to be higher than the 3.1% figure.

Water use is another contributor to GHG emissions during its treatment as well as upstream and downstream transportation. These emissions include energy use to distribute and collect water and methane gas produced from wastewater (sewage) systems. In 2014, the Piedmont community consumed an estimated 455 million gallons (MG) of water. This is only slightly higher than 2010 (451 MG), however 2014 emissions are lower than in previous inventories due to new anaerobic digesters installed by East Bay Municipal District (EBMUD) at their wastewater treatment plants. These digesters convert organic waste into methane to allow EBMUD to create all of the power required for their wastewater treatment operations. Water conservation represents a sector where Piedmont continues to have potential to make serious reductions in GHG emissions.

In 2014, Piedmont created a total of 2,293 tons of refuse, down from 2,990 in 2010. This represents a significant decrease of 697 tons or 23% from the 2010 levels. Piedmont has also achieved an average monthly diversion rate of 73.4%, well exceeding the current goal of 65% negotiated with Republic Services.

Municipal Update

Municipal activities in 2014 resulted in approximately 1,076 metric tons of CO2e. This is a 24% increase over the previous inventory of 866 metric tons CO2e in 2010. This increase is almost exclusively driven by the addition of energy consumption at the aquatic facilities at 777 Magnolia Avenue and the Piedmont Center for the Arts building at 801 Magnolia Avenue into the municipal building portfolio in 2010 and 2011, respectively. It should be noted that most other non-building municipal sectors experienced a significant decrease in emissions.

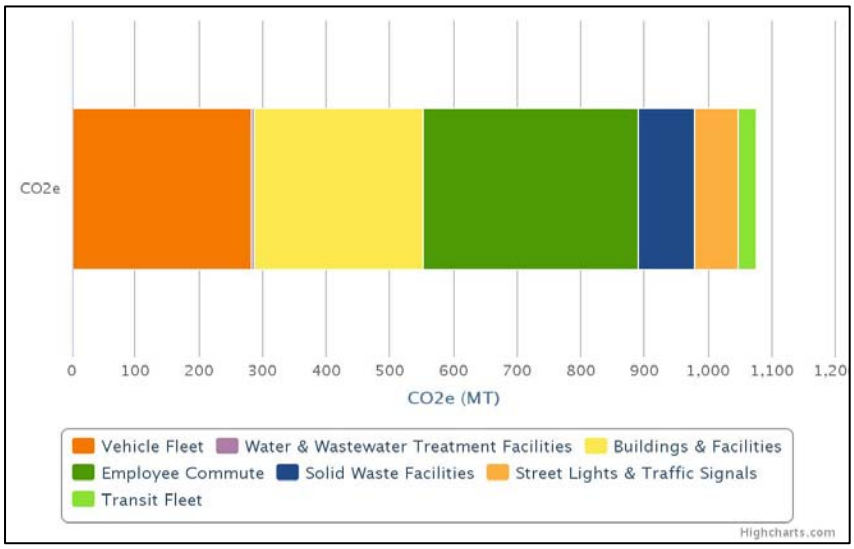

Figure 4. Municipal Emissions by Sector 2014

The municipal built environment (building and streetlight sectors) experienced a 44% growth in GHG emissions between 2010 and 2014, from 236 to 341 metric tons CO2e. Municipal gas usage experienced a sharp spike in usage between 2010 and 2014 due to the new building stock portfolio, including the heating of the pool at 777 Magnolia Avenue. When controlling for these new variables, the remaining facilities actually experienced an overall decrease of 19.6% in GHG emissions between 2010 and 2014.

Municipal Building Emissions (metric Tons CO2e)

	2005	2010	2014
City Hall/Fire	66.05	61.32	52.20
Community Center	22.50	19.99	16.35
Corporation Yard	11.91	13.76	12.85
Educational	7.03	4.01	7.06
Recreation	41.79	34.56	12.36
Streetlights	73.87	69.03	68.07
Water	5.73	3.25	4.18
Police/Veterans Hall	34.65	30.94	17.18
Center for the Arts	-	-	4.82
Aquatics Center	-	-	146.32
Grand Total	***263.53***	***236.86***	***341.39***

A comparison of the municipal built-environment emissions over time can be found in the chart to the right.

The City of Piedmont's vehicle fleet was another significant contributor to 2014 emissions, with over 311 metric tons of CO2e produced. Within the government fleet, the Police Department accounted for 40% of the GHG emissions with the Public Works Department and Fire Department producing 28% and 21% respectively. These breakdowns are important as it allows the City to focus efforts on replacing specific fleet vehicles as they age to maximize greenhouse gas reduction effects. The City should also continue to increase energy efficiency in existing City infrastructure and focus efforts on increasing alternate modes of transportation, including supporting the already high adoption rate of electric vehicles among Piedmont residents.

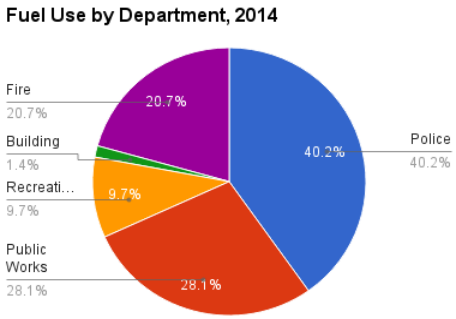

Figure 5. Municipal Vehicle Fleet Emissions

Moving forward it is important for residents and businesses to continue the success in waste diversion and reduced natural gas usage while also focusing on building energy efficiency, water use, and transportation, as these are areas with great potential for future GHG reductions. Although the 2020 GHG reduction goal was met for 2014, it must be met annually through 2020 in order to be considered complete. As such, great emphasis must be placed on the continued decrease in energy consumption within Piedmont, without which the emissions of Piedmont will be dependent upon the weather and other uncontrollable external variables.

CAP PROGRESS UPDATE:

Piedmont's Climate Acton Plan was adopted in 2010. The section immediately below discusses the implementation of measures included in the CAP. GHG inventories are "snapshots" of specific years that can be used to measure progress and trends in emissions reductions. Inventories do not identify the specific programs and initiatives that contribute to changes in emissions but instead provide information that allows for assumptions and estimates. In an effort to better track the progress and effectiveness of actions and goals laid out in the CAP and the

ETF measures, staff intends to increase the frequency of GHG inventories from once every 5 years to annually, beginning with the 2014 inventory provided as part of this report. In a somewhat reverse chronological order, the following are programs and initiatives that Piedmont has developed or participated in as an effort to achieve the City's CAP goals:

Compact of Mayors
On January 4, 2016 City Council authorized Piedmont to join the Compact of Mayors (Compact), a global coalition of mayors and city officials with the mission to reduce local greenhouse gas emissions, enhance resilience to climate change, and track their progress publicly. Joining the Compact not only established a public commitment by the City to support leadership in climate action planning, but charged the City with meeting several milestones within 3 years. As part of the Compact's requirements, the City must provide an updated GHG inventory (2014 inventory attached), identify and plan for climate hazards, update the City's Climate Action Plan, and set new GHG reduction targets. Additionally, the Compact provides resources to guide Piedmont through the process successfully.

CivicSpark
In 2014, AmeriCorps launched the CivicSpark fellow program within the state of California in order to specifically help California communities respond to climate change. For the 2015/16 CivicSpark program, East Bay Energy Watch (EBEW) offered East Bay cities partial funding for hosting a fellow. This grant allowed Piedmont to participate in the program and the City's first CivicSpark fellow, Matt Anderson, began working with the Department of Public Works in November 2015. In that time, Matt has worked on a variety of climate-related projects, including the 2014 GHG inventory, preliminary solar assessments for municipal buildings, LED streetlight replacements, and several events raising awareness of the City's environmental efforts in the community. After the culmination of the 2015/16 term in September 2016, City staff is exploring the feasibility of hosting another CivicSpark fellow in 2016/2017, again with the help of EBEW funding.

Grand Avenue Road Diet
As outlined in Piedmont's Pedestrian and Bicycle Master Plan, one of the top priority projects identified was implementation of a "road diet" on Grand Avenue between the City limits at the Wildwood Avenue/Grand Avenue intersection to Greenbank Avenue. The road diet consisted of maintaining the physical width of the street, but restriping from two lanes in each direction to one car lane and one bike lane in each direction, with a turn lane in the middle. The parking lanes remain in their current configuration. The road diet improves conditions for both pedestrians and cyclists on Grand Avenue and common school routes, and by making intersections simpler to navigate. Generally, road diets have the added benefit of significantly reducing traffic accidents. Encouraging biking and walking and providing safer means to do so also helps contribute to the City's climate action goals of reducing reliance on automobile transportation. The Grand Avenue road diet was unveiled on May 12, 2016 on Bike to Work Day. The Grand Avenue Road Diet helps fulfill CAP Measure TL 1.1-B.

Streetlight Replacements
In July 2011 the City replaced 84 streetlight fixtures with new high-efficiency LED fixtures that also provided increased visibility. Estimated annual savings from that project include $3,039.89**,** 23,596 kilowatt-hours (kWh), and 28,895 lbs. CO2e (14.45 metric tons or 0.03% of 2010 community emissions). In June 2015 the City participated in PG&E's turnkey LED streetlight replacement program to convert the 447 remaining cobra head streetlights to LEDs. Estimated annual savings from the project include 144,924 kilowatt-hours (kWh) and $24,851 with a 6.5

year simple payback period. These 2015 replacements are equivalent to an annual reduction of 75,940 lbs of CO2e (34.45 metric tons or .07% of 2010 community emissions). This program helps fulfill CAP Measure BE 6.1.

The final phase in the conversion to an entirely LED streetlight portfolio is the replacement of the remaining 271 post top streetlight lights located along pathways, parks, and some streets largely in the northeast section of Piedmont. Expected savings from this more complex project are approximately 30.7 metric tons of CO2e annually and would be a major step toward further reducing municipal GHG emissions.

Assessment of the Solar Potential of Municipal Facilities

In 2011, the City of Piedmont, acting in conjunction with the cities of Albany and El Cerrito received a grant to analyze the solar potential on municipal buildings. After identifying four potential sites, the Corporation Yard was deemed as the only feasible location to place a rooftop photovoltaic (PV) array, and a project to mount panels atop a new vehicle wash cover was approved by City Council in 2012. After the project went out to bid and a contractor was chosen, a more detailed analysis of the site was conducted and costs associated with the vehicle wash cover caused project to exceed the approved $40,000 budget, putting the project on hold. In 2015, given updated technologies and net energy metering tariffs implemented by PG&E, an updated assessment of solar potential for municipal facilities was conducted by the City's CivicSpark Fellow. After analyzing multiple locations and configurations of solar arrays, the Corporation Yard was once again deemed as most feasible location for either a rooftop array or a ground mounted array, the latter having the potential to offset a majority of municipal electricity demand. Given the relatively large and technically complex nature of a hillside ground-mounted array, on May 16, 2016 the City Council directed staff to assess the cost of hiring an independent third party consultant to verify the feasibility of the site and consider any potential California Environmental Quality Act (CEQA) or tariff issues moving forward. Costs for this analysis is estimated to be $8,000 to $12,000 and potential savings from the project are estimated to be 334 metric tons of CO2e annually, or 0.7% of community emissions. This program helps fulfill CAP Measure BE 1.1-B.

Educational Events

Since the May 2014 update, the City has participated in several events hosted by the local environmental advocacy group, Piedmont Connect, that focused on raising awareness of climate action planning, empowered residents to reduce their energy and water consumption, and provided educational materials on how to achieve such reductions. An April 22, 2015 event focused on how Piedmont households can save more water, improve green waste recycling, and make the most of new home solar and electric car options. Education stations provided hands-on exploration of how to use less water in your home and garden, recycle more of your household waste, and save energy. On October 4, 2015, Piedmont Connect hosted "Conservation Quick Start," involving a series of speakers on home energy audits, household greywater systems, native vegetation, rainwater collection, residential solar, and more. Most recently, on March 28, 2016 Piedmont Connect, working with CivicSpark Fellow Matt Anderson, hosted a well-attended event at the Community Hall entitled "Paris to Piedmont" which brought together members from across the community to discuss climate change issues. Speakers included the head of the Office of Sustainability in Oakland, several Piedmont resident climate experts, as well as the Mayor of Piedmont.

In addition to in-person community events, the City also posts opportunities for energy efficiency, energy financing, and other climate-related information on the City's Climate Action

Program web page. There are also brochures available on home energy and water efficiency, sheet mulching, and more available to the public at City Hall. These events and educational information help fulfill CAP Measures BE2.2-C, BE 3.2-C, and BE 3.3-A.

PACE Financing

Property Assessed Clean Energy (PACE) financing provides a means to finance the upfront cost of energy efficiency, water conservation, and renewable energy improvements which are repaid via a special voluntary property tax assessment. Typical improvements financed through PACE include the installation of energy efficient appliances and lighting, solar photovoltaic systems, insulation, water-efficient plumbing fixtures, and water-wise garden conversions. PACE differs from traditional lending by basing loan criteria on the equity in the building rather than the creditworthiness of the building owner. Currently, five PACE providers have the ability to finance residential projects within the City of Piedmont. CaliforniaFIRST was approved by the City Council in December 2009 (though the program did not officially launch until summer 2014), Open PACE, which includes AllianceNRG and PACE Funding Group, in April 2015, and both Figtree and California HERO in May 2016. Also in May 2016, City Council acknowledged their support of the Association of Bay Area Government's (ABAG) Regional Collaborative Service Agreement that ensured conformance to PACE best management practices for all PACE providers active within ABAG communities. Such best practices include identifying services eligible for financing, setting minimum performance standards, branding and marketing requirements, and providing trainings for financers and homeowners. Authorizing additional PACE providers to work within Piedmont and acknowledging ABAG's agreement has created a competitive PACE marketplace with a variety of options for home and business owners to finance improvement projects based on finance terms, conditions of approval, and eligible measures offered by the different programs. Authorizing multiple providers also ensures that financing will remain available if one or more providers cease to operate in Piedmont. Supporting a viable PACE marketplace serves to implement the City's CAP, which includes policies to develop comprehensive energy efficiency programs for the residential sectors. To date, 19 Piedmont residents have filed applications for PACE financing, 7 of which have received funding. These programs helps fulfill CAP Measures BE 2.2-A and BE 3.2-A.

East Bay SunShares

In May 2015, the City of Walnut Creek invited East Bay cities to participate in "East Bay SunShares," a residential solar photovoltaic bulk purchase program. The overall goal of the East Bay SunShares program was to encourage the installation of rooftop solar energy systems by homeowners of single-family residences through the creation of reduced overall acquisition and installation costs produced by economies of scale. Bulk purchase solar programs typically reduce the cost for homeowners that want to install solar energy systems on their rooftops. On September 8, 2015 City Council approved joining the 2015 East Bay SunShares program. During the three month campaign, 27 Piedmont residents registered with and received solar assessments through SunShares, resulting in 7 contracts for solar installations totaling over 23 kilowatts (kW). Following the success of the 2015 program, Piedmont will once again participate in the 2016 East Bay SunShares program, this year administered by the City of Fremont. The 2016 East Bay SunShares is expected to add a new benefit: a bulk electric vehicle (EV) purchasing program that provides additional rebates and incentives to facilitate the purchasing of EVs. The enrollment period for the 2016 SunShares program is anticipated to last from August 1 through October 28, 2016. This program helps fulfill CAP Measure BE 5.1-B.

San Francisco Bay Area Regional Energy Network (BayREN)
Piedmont has continued to participate in the San Francisco Bay Area Regional Energy Network (BayREN). Funded by CPUC, BayREN supports programs directed to single- and multi-family residential 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 properties through marketing efforts, incentives, alternative upgrade packages, increased homeowner decision making support, and options for greater saturation. Since the program's inception in 2011, a total of 37 single-family Piedmont homeowners and 1 multi-family property owner have participated, approximately 0.96% of Piedmont's housing stock.
- The leveraging of 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.
- Statewide and local financing programs to ensure that upgrades are financially accessible to more homeowners, such as continuing the rebates of up to $5,000 (lowered from $6,500 on May 1, 2016) available to Energy Upgrade California participants.

These programs help fulfill CAP Measures BE 2.2-B, BE 2.2-C, BE 2.3-A, and BE 5.1-B.

Climate Action Program Web Site
The City's website has a Climate Action Program page (http://www.ci.piedmont.ca.us/climate.shtml) that is updated with current climate action planning measures, such as proposed ordinances and implementation updates, sources for energy efficiency programs and financing, and general sustainability and GHG emissions information. The website is regularly updated with new information and resources for Piedmont residents and business owners. Providing this information helps fulfill CAP Measures BE2.2-C, BE 3.2-C, and BE 3.3-A.

Solar Energy System Permit Fee Incentive
Initially implemented on July 1, 2008, 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 residential rooftop solar energy systems. There are also several state and federal financial incentives that currently make solar energy systems affordable. The result is that Piedmont currently has 295 solar installations, representing approximately 7.7% of Piedmont households, with an installed capacity of 1,290 kilowatts (kW). This program helps fulfill CAP Measure BE 5.

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). The ScCAP grant funded the following projects:

- HVAC replacement for Piedmont City Hall/Fire Department;

- Swim center pool covers;
- Energy upgrade incentives, such as rebates for Energy Upgrade California and SmartLights;
- The creation of a municipal Environmentally Preferable Purchasing Policy;
- Energy management software for tracking municipal energy costs and use;
- Energy efficiency assessments of City facilities; and
- Set up of 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.

In total, estimated annual savings from ScCAP-funded projects include approximately $16,271.89, 12,958 kilowatt-hours (kWh), 13,526 therms, and 117.33 metric tons CO2e (0.2% of 2014 community emissions). These programs help fulfill CAP actions within Measure BE 1.

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. These programs help fulfill CAP actions within Measure BE 1.

CLIMATE ACTION PLAN (CAP) IMPLEMENTATION:

Many of the programs listed earlier in this report have contributed to CAP progress. Actions discussed below could help further the actions partially completed or begin to tackle unaddressed CAP items. The tables in Exhibit C (beginning on page 40) provide a list with the implementation statuses of the 32 measures (divided into 61 action items) that make up Piedmont's Climate Action Plan, along with notes on how the progress has been achieved or why a certain action is currently on hold or infeasible. These are the measures that the City can implement in order to 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, 46 of the 61 action items are in an initial, partial or ongoing stage of implementation. Of the 46 enacted items, Piedmont has made progress on 21 out of 24 BE actions, 10 of 13 WE actions, and 17 of 24 TL actions. While this shows that Piedmont's CAP implementation is fairly representative of all three measured areas, it also reveals that TL is the measure in greatest need of additional progress. The Bike and Pedestrian Master Plan (BPMP), adopted in November, 2014, overlaps with the majority of the CAP transportation measures. As the City implements more of the actions laid out in the BPMP, it will also help reduce GHG emissions and contribute to CAP progress.

DISCUSSION:

Funding
On the whole, the measures and actions that have been completed or have seen progress have been those that were supported by grant funding. 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 can be found in Exhibit D (page 55). Although staff is continually looking for grant funds that would help further the City's climate action achievements, such funding has become increasingly scarcer since 2011, when federal monies were made available for the short term as part of economic recovery legislation.

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 provides approximately $32,000 in annual Measure D funds that may be used for administrative costs directly related to solid waste diversion measures only. Currently these monies fund, in part, the time spent by Planning staff in managing the City's waste diversion programs. In addition, the EPA Climate Showcase Grant funds (ScCAP) provided $6,000 for staff time to develop and implement the grant programs in 2011 and 2012.

In 2014, AmeriCorps launched the CivicSpark fellow program within the state of California in order to specifically help California Communities respond to climate change. The CivicSpark fellow is jointly funded by AmeriCorps and the city in which they are placed. For the 2015/16 CivicSpark program, Piedmont was able to take advantage of $18,400 in EBEW funding in order to host a fellow beginning in November 2015. The City's shared cost was $5,000. City staff is planning to host another CivicSpark fellow in 2016/2017, again with the help of EBEW funding. While the AmeriCorp CivicSpark program has allowed Piedmont to have a dedicated staff member working on climate projects, the City, depending on budget circumstances, may still wish to consider a permanent position in order to reduce turnover and the subsequent loss of internal knowledge, as well as the ability to manage ongoing longer-term projects that may extend or not align with the 10-month November through September CivicSpark timeline.

Actions
The vast majority of Piedmont's GHG emissions come from two sectors: transportation and residential building energy. In 2014, the transportation sector accounted for 48.6% of emissions and residential building energy accounted for 44.7% of emissions. Potential additional reductions from the remaining three sectors (**nonresidential building energy** – 3.6%; **water** – .8%; and **waste** – 2.5%) would likely be minimal relative to the total emissions needed to be eliminated. While the City has tentatively met its 2020 Climate Action goal, a future increase in energy use, differing PG&E energy mix, or other factors could cause the City to fall short of its goal for year 2020. It is important to keep in mind that the inventories are "snapshots" of GHG emissions. Therefore, it is imperative that Piedmont keep working towards its goals as decisions made now regarding home upgrades, vehicle purchases, energy systems, and occupant behavior will affect Piedmont and its residents and businesses well into the future. To assure achievement of its 2020

target, the City must continue to push to reduce its municipal carbon footprint and urge property owners to do the same. The following outlines some possibilities.

- **Procurement of an Electric Vehicle for Public Works**: The City of Piedmont Planning and Building Departments perform duties in the community daily, including inspecting of proposed and completed building sites and the transportation of various Planning Commission members. Currently staff utilizes personal vehicles for these jobs and is reimbursed as outlined in labor contracts. Based upon reimbursement data from 2014, the Building Department made 2,733 trips in 2014 with an average trip length of 1.03 miles for a total of 2,815 miles traveled on City business. In addition to these miles reimbursed, other departmental staff are reimbursed on a flat monthly basis for the use of personal vehicles for governmental purposes. As a part of the SunShares program that is available to Piedmont residents, increased discounts on an electric vehicle will be available in addition to the State and Federal credits and discounts already in existence. Staff recommends this as an optimal time to do a cost-benefit analysis and consider the purchase of an electric vehicle for both environmental and fiscal reasons. While purchasing an EV for staff use would not replace vehicles owned by the City with low- or zero-emission vehicles, as outlined in CAP Measure TL-3.1, it would overall reduce transportation emissions from vehicles used for City purposes and therefore be included in the City's emissions inventory.

- **Conversion of Remaining Post Top Streetlights:** The final step in the conversion to an entirely LED streetlight portfolio is the conversion of the post top streetlight lights located along pathways, parks, and along streets in areas that have underground utilities. There remain 271 unconverted street lights that have been mapped, but due to the varying age, style, and condition they are in, an inventory of their status must be performed before further work can be carried out. Expected savings from this project are approximately 30.7 metric tons of CO2e annually and would be a major step toward further reducing municipal GHG emissions. This inventory and follow-up recommendations could be carried out by a future CivicSpark fellow at minimal cost to the City. This program would fulfill CAP Measure BE 6.1.

- **Community Choice Aggregation:** Since the previous update provided in May 2014, Alameda County has pursued the creation of a Community Choice Aggregation (CCA), establishing a steering committee representing all eligible cities, including Piedmont, and working to complete a technical and feasibility study and a draft joint powers authority agreement. A 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 Energy Authority. In its 2020 Action Plan, 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. After several months of meetings and discussions, the Alameda County CCA Steering Committee anticipates the completion of a technical and feasibility study and draft agreement this summer, with cities joining the Joint Powers Authority in fall. If the Alameda County CCA is formed, it would be the largest within the state of California, serving approximately 1.5 million residents. This program would fulfill CAP Measure BE 6.2.

- **Bike and Pedestrian Master Plan Implementation:** The Bike and Pedestrian Master Plan (BPMP) was adopted November 3, 2014. The PBMP is meant to provide a comprehensive framework for assessing and responding to the community's needs related to walking and biking. The main objectives were to determine Piedmonters' critical needs and concerns and identify a realistic, affordable and effective set of improvements for the next ten years that would make walking and biking in Piedmont safer, easier and more popular. Due to funding limitations, implementation of the PBMP measures has been limited, with the major accomplishment being the completion of the Grand Avenue Road Diet. Several BPMP measures, including enhancing street crossings, a road diet on Highland Avenue, designated bike networks, and improvements to walkways and stairways are efforts that could reduce reliance on automobile transportation and increase biking and walking, thereby reducing GHG emissions from the transportation sector. Implementing such programs would fulfill CAP Measures TL-1.1, 1.2, 1.3 and 1.4.

- **Energy Upgrade California:** This program has been in effect since 2011 and to-date 35 single-family homeowners and 1 multi-family residential homeowner have participated, representing less than 1% of Piedmont's housing stock. 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 up to $5,000 in rebates for the upgrade packages. and participants achieve, on average, an annual reduction of 1.9 metric tons of CO2e. Efforts to continue the program and increase participation should be considered. This program fulfills CAP Measures BE 2.2 and BE 2.3.

- **Building Energy Savings Ordinance (BESO):** The purpose of a BESO is to increase property owner awareness of energy savings potential, increase the value of the home through a green-rating system, and reduce GHG emissions through voluntary adoption of efficiency upgrades by property owners. A more stringent version of this ordinance, called a Residential Energy Conservation Ordinance (RECO) is recommended in the 2005 CAP as having the largest potential to meet the GHG reduction goals. After research, public input, and Council direction, staff has developed a draft ordinance that will be taken to Council for its consideration in the months ahead. Similar measures have been already been adopted in cities including Austin and Berkeley. Based on their results, approximately 12% of homes would adopt energy efficiency measures within the first year and estimated GHG savings from the draft BESO would be approximately 139 metric tons of CO2e by 2020. 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.

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.

Future Climate Action Plan Development

Piedmont's current Climate Action Plan, adopted in 2010, lays out actions, policies, and targets that bring the City up to the year 2020. As that end date fast approaches, and Piedmont tracks its progress towards its 2020 target, City staff is already thinking about the future of Climate Action Planning in Piedmont. The Compact of Mayors requires complying cities to update their CAP before 2018, which provides an incentive for Piedmont to develop a new CAP before 2020. Future CAP development will likely take place in 2017, hopefully largely aided by a future CivicSpark fellow under direction of Planning staff. The new CAP will include updated actions and policies, as well as a new GHG emission reduction target. Statewide, California's 2030 goal is to reduce GHG emissions to 40% below 1990 levels. While Piedmont did not align with the state's goal of reducing to 1990 levels by 2020, they may wish to consider developing a 2030 goal that is similar to the State's.

CONCLUSION:

According to the 2014 inventory attached to this report, the City of Piedmont has tentatively reached the adopted goal of 15% reductions in 2005 GHG levels by 2020. It is important to remember that reducing GHG emissions is an ongoing process and emissions are affected by many independent variables outside of homeowner or City control. More than 85% of the GHG reductions between 2010 and 2014 can be attributed to reduced residential gas usage which corresponds closely with a decreased need for heating due to warmer outside temperatures. Whether or not the City continues to meet or exceed its reduction goals between now and 2020, it is important to remember that by the end of 2018 Piedmont will have set a new target for GHG reductions beyond the year 2020.

For current and future measures, availability of funds continues to be a concern for implementing programs and developing incentives that can help the City achieve its CAP targets. However, staff will continue to pursue available grant and funding opportunities as they arise. In addition, participation in the CivicSpark Fellow program has contributed greatly to Piedmont's ability to make progress towards its climate action goals. Fortunately, there are still many opportunities – from the BESO to SunShares to the CCA – of which the City and community can take advantage. The opportunities may require City resources and the placement of 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: Emily Alvarez, Assistant Planner
Matt Anderson, CivicSpark Fellow

ATTACHMENTS:

Implementation of Adopted Environmental Task Force Actions: A 2016 Update

BACKGROUND:

On January 4, 2010 Council adopted 31 actions r ecommended by the Environmental Task Force (ETF) to increase waste divers ion and energy effi ciency in Piedmont. The actions, 28 of which have been initially, partiall y, or com pletely implemented, address m unicipal operations, legislation, purchasing, capital inf rastructure, transportation and outr each. Twelve of these actions replicate an action included in the CA P. When adopting the ETF-recommended actions in January 2010, the Council recogni zed that the creation of a "S ustainability Coordinator" position would be necessary for the implementation of most of the actions.

DISCUSSION:

Prior to and since adoption, staff has com pleted or begun work on 28 of the actions (See tables on pages 18-20). They are:

1. Pursue funding for a part-tim e (shared) sustainability coordinator who could help facilitate and monitor outreach and educational programs.

   The City has not been able to hire a sustainability coordinator. However, with financial help from East Bay Energy Watch (EBEW), Piedmont was able to host an AmeriCorps CivicSpark fellow from November 2015 through September 2016. CivicSpark fellows are dedicated to solely working on climate-related projects and Piedmont's current fellow, Matt Anderson, has worked on a variety of projects from streetlight retrofits to municipal solar installations. Piedmont intends to participate in CivicSpark and host another fellow in the upcoming 2016/2017 term.

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 Optony, 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.

5. Implement a Piedmont compost sale/give away program.
   The City has negotiated an annual compost give-away day as well as home composting workshops as a part of the City's contract with the waste hauler Republic Services. This compost give-away is free and available to all Piedmont customers.

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

8. Implement a Bay-friendly Landscaping Ordinance.
   In 2009, a Civic Bay-Friendly Landscaping Ordinance was adopted and implemented. While in June 2012 Council chose not to adopt a residential Bay-Friendly Landscaping Ordinance, the state issued an updated California Model Water Efficient Landscape Ordinance, effective December 1, 2015, that is enforced by the City that does have an impact on residential landscape projects over a certain square footage.

10. Participate in the Countywide voluntary Renewable Energy Assessment District.
    To-date Piedmont has authorized five PACE providers to work within Piedmont, including CaliforniaFIRST, AllianceNRG, PACE Funding Group, Figtree, and California HERO.

11. Adopt a special event recycling ordinance.
    Piedmont's CivicSpark Fellow, working in coordination with the Recreation and Park department, has included a mandatory recycling and composting requirement for all vendors, caterers, and lessees contracting with the City. This requirement is above minimum requirements of the State and helps Piedmont move toward the goal of becoming a zero-waste city.

14. Consider increasing the City's 2020 greenhouse gas reduction target.
    While the 2020 target itself is likely not to be increased, the City is preparing to update its Climate Action Plan and greenhouse gas reduction target that will focus on 2030.

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 Optony, Inc. on potential installations of solar energy systems on municipal facilities. CivicSpark Fellow Matt Anderson has updated prices and assessments of solar potential and has recommended to Council contracting an independent consultant for in-depth analysis of a ground vs. roof mounted array at the Corporation Yard. This consultant is expected to cost approximately $8,000-$12,000.

20. Utilize energy-efficient lighting when City streetlights are replaced or when new streetlights are installed.

With Energy Efficiency and Conservation Block Grant funds and on-bill financing from PG&E, the City has replaced all 531 cobra head high pressure sodium streetlights with LEDs and is beginning an inventory of the remaining 278 post top lights for appropriate replacement fixtures.

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. Using Measure D funds, hand dryers were installed in the Community Hall restrooms.

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24. Apply for grants to cover recycling and energy conservation capital costs.

The City has received $58,000 in EECBG 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. The City

received $18,400 from EBEW to partially fund a CivicSpark fellow and will likely have access to similar funding in 2016/2017.

27. Initiate a "Safe Routes to School" program to encourage walking and bicycling to school.

A Safe Routes to School program was adopted along with Piedmont's Pedestrian and Bicycle Master Plan. Staff had submitted an application for an Active Transportation Program (ATP) Grant from Caltrans in order help implement the infrastructure improvements outlined in the Pedestrian and Bicycle Master Plan.

28. Update Piedmont's website, including a dedicated "green page".

City staff routinely updates the City's webpage and includes climate-related news, programs, and events. Currently, the Climate Action web page lists PACE Program information, milestones, information about ETF and the CAP, and more. It can be found at http://www.ci.piedmont.ca.us/climate.shtml.

29. Use traditional media, such as television and newspapers, to increase awareness of environmental issues, particularly waste prevention and reduction.

Information on recycling, composting, and hazardous waste is disseminated via quarterly waste bill inserts, an ongoing announcement section in the Piedmont Post, the City website and yearly mailer to new residents.

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. The CivicSpark Fellow has coordinated with the PUSD environmental club on several events including the Paris to Piedmont symposium and Piedmont Connect's Garden Ramble.

31. Continue focused education and outreach on waste reduction, especially food scrap recycling.

Information on recycling, composting, and hazardous waste is disseminated via quarterly waste bill inserts, an ongoing announcement section in the Piedmont Post, the City website and yearly mailer to new residents.

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.

Information on energy and water conservation information is available at the Public Works counter at City Hall, the Climate Action Program page on the City's website, and more.

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. Residents and members of Piedmont Connect recognize local sustainable gardening and landscaping through participation in their annual Garden Ramble showcase.

35. Consider (or cosponsor) contests, tours, and lecture series which encourage greener living.
Since 2010, the City has participated in numerous outreach in partnership with outside agencies, such as StopWaste, and local organizations, like Piedmont Connect including programs on water conservation, Energy Upgrade California, and the Paris Climate Talks.

Three of the 31 ETF measures have been put on hold or have not yet been implemented. They are:

7. Enforce the ban on private leaf blowers/ Reduce the use of gas powered leaf blowers for parks maintenance.
While the ban on leaf blowers has not been enforced and due to limited technological advances on electric leaf blowers and battery capacity and the difficulty enforcing the ban on private property, it is uncertain when and how it will be enforced for residences. However, staff is exploring funding possibilities for conversion to electric maintenance equipment for City crews and may have the opportunity to upgrade some equipment through a grant from the Bay Area Air Quality Management District.

22. Study the feasibility of alternative water sources to reduce the use of potable water for City park and median irrigation.
Public Works has determined that local aquifers are not feasible or dependable.

25. Replace gasoline powered cars with hybrids or electric vehicles as the City fleet is replaced.
While there is currently no plan to replace City fleet vehicles with hybrids or electric due to a lack of charging infrastructure, maintenance costs, and lack of suitable substitutes for heavy duty vehicles in hybrid or electric form, City staff is investigating the possibility of obtaining a Planning and Building department EV in order to reduce VMT from privately-owned vehicles used for City purposes. East Bay SunShares rebates may help provide an affordable option for this vehicle.

CONCLUSION:

Currently 28 of 31 Environmental Task Force resolutions have been completed or partially implemented. The final three have been deemed infeasible for the foreseeable future, however staff will continue to explore options as technology and resources continue to develop.

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			Partial	CivicSpark Fellow Matt Anderson has been dedicated to sustainability programs, City likely to continue participation in CivicSpark next year.
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	Ongoing	
5	Implement a Piedmont compost sale/give away program.	Low/ Long-term	< $100		Sustainability Coordinator	Complete	Republic Services has begun annual compost give away program.
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	Staff is exploring funding possibilities for conversion to electric maintenance equipment.
8	Implement a Bay-friendly Landscaping Ordinance	High/ Ongoing	Positive		Staff	Complete	Bay-friendly was adopted for municipal projects only, however, in December 2015 the state Water Efficient Landscape Ordinance went into affect which is applicable to many residential landscapes.

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 and solar installations are not applicable to discretionary review, however, expedited forms have not yet been created.

10	Participate in the Countywide voluntary Renewable Energy Assessment District.	Very High/ Immediate	Minor to Moderate	BE 5.1	Staff	Complete	As of May 2016, five PACE providers are approved to finance projects within Piedmont
11	Adopt a Special Event Recycling Ordinance.	High/ Immediate	Minor		Staff/SQ	Partial	Strict recycling and composting regulations have been enacted for anyone renting City facilities for events. Work remains to reduce waste at festival events.
14	Consider increasing the City's 2020 greenhouse gas reduction target.	Very High/ Immediate	Unknown	N/A	Sustainability Coordinator	Ongoing	While the 2020 goal is not under consideration, the City will update their CAP within the next few years that will establish a more rigorous goal, likely for 2030.

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	Ongoing	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	Ongoing	EPA grant funds enabled municipal building assessments, but project stalled due to cost increase. Staff is currently reassessing Corp Yard feasibility and further actions.
20	Utilize energy-efficient lighting when City streetlights are replaced or when new streetlights are installed.	Moderate/ Ongoing	Positive after 6+ years	BE 6.1	Staff	Ongoing	EECBG funded 84 fixture replacements in August 2011. PGE converted 447 fixtures in June 2015. Remaining 207 post tops are to be inventoried and replaced with LEDs.

21	Replace the incandescent bulbs in the Oakland Avenue Bridge necklace with cold cathode bulbs.	Moderate/ Short-term	Positive		Staff	Ongoing	Plan has been developed with residents for conversion of existing lights to LEDs, implementation contingent upon funding.
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 and Measure D funds were used to install hand dryers in the Community Hall.
24	Apply for grants to cover recycling and energy conservation capital costs.	Very High/ Immediate & Ongoing	Staff time not quantified		Sustainability Coordinator	Ongoing $101,769	$58,369 EECBG funds for LED streetlights, $25k EPA grant funds, $18,400 from EBEW for CivicSpark.

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	No plan for the replacement of City fleet, but staff is exploring how to offset private car use for City purposes with an EV.
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	Ongoing	City actively promoting use of #11 bus through City Website.
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	Partial	Included as part of the Pedestrian & Bicycle Master Plan, but has not yet been implemented.

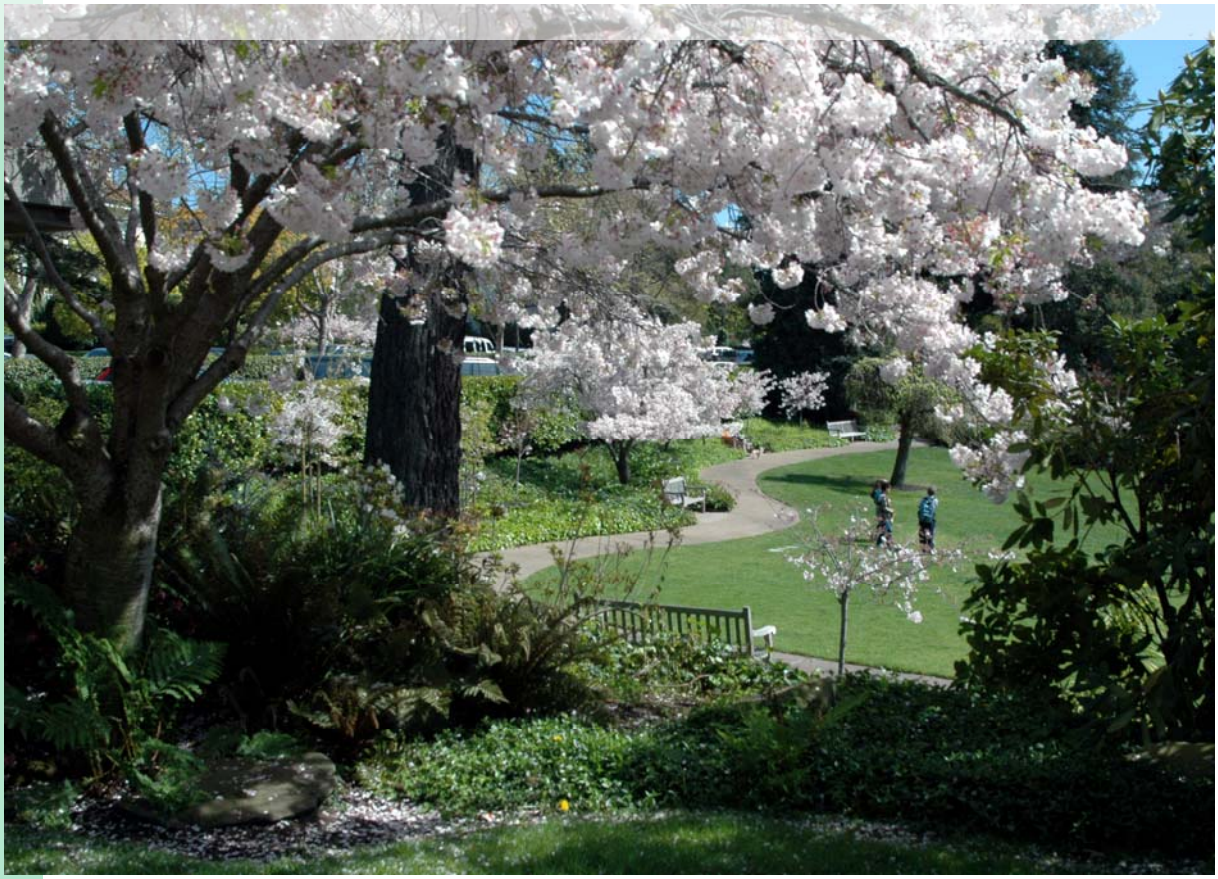
Communications and Outreach

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	Complete	The City website has pages dedicated to the climate action program, waste reduction and recycling, the clean water program, and public transit.
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	Partial	No concerted City effort but *Piedmont Post* 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	Partial	City has funded (with StopWaste grants) school recycling receptacles and composters and CivicSpark Fellow has attended several Piedmont High School environmental team and coordinated with schools on educational events.
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	Ongoing	Information on water and energy efficiency measures is posted on the website and available at City Hall.
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 and has coordinated several educational events with Piedmont Connect.

CITY OF PIEDMONT

2014 GREENHOUSE GAS EMISSIONS INVENTORY UPDATE



June 2016

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Rikki Goede, Police Chief

Executive Summary

In 2010, the City of Piedmont adopted the goal of reducing greenhouse gas (GHG) emissions 15% below 2005 levels by the year 2020. Inventories were conducted in 2005 in order to establish a baseline emissions level, and in 2010 to determine the progress made after 5 years. A 2014 inventory outlined in this report shows that the City of Piedmont has tentatively achieved the targeted 2020 GHG reduction goal, largely as a result of extensive reductions in natural gas usage in the residential sector in response to a warmer weather pattern.

The largest reductions can be attributed to the residential sector; however the non-residential and waste sectors also experienced small reductions. A detailed breakdown of these reductions can be found in Figure 1 and the discussion below.

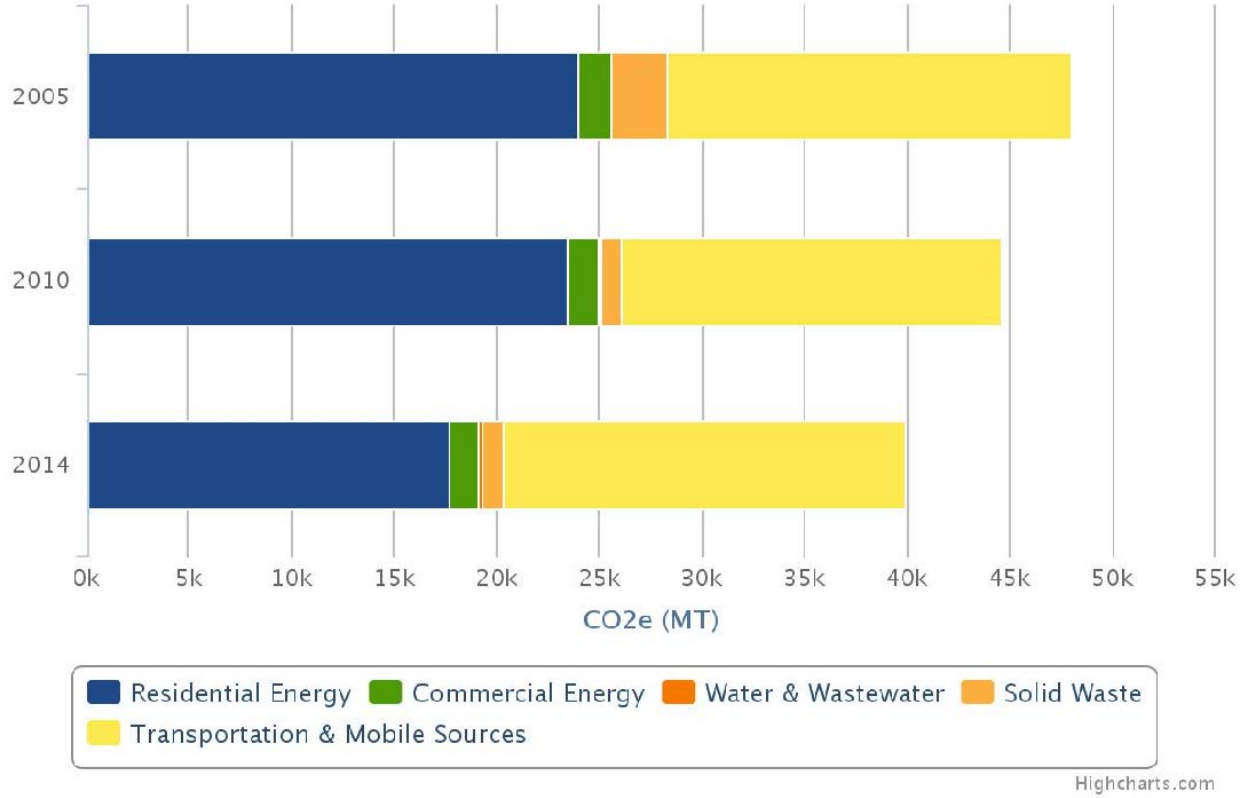

Figure 1. GHG Emissions by Sector

Background

Climate Action Plan

On March 15, 2010 the City of Piedmont adopted a Climate Action Plan (CAP) that defined a GHG emissions reduction target of decreasing annual emissions 15% below 2005 levels by 2020. The CAP also outlined a series of strategies to achieve this goal, including addressing building energy efficiency, renewable energy, vehicle miles traveled, water conservation, recycling, and green infrastructure. City

staff has been working to implement these strategies, and an update on emissions reduction progress to date is included in this report.

Environmental Task Force

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, 28 of which have been implemented, in whole or part, address municipal operations, legislation, purchasing, capital infrastructure, transportation and outreach. Twelve of these actions replicate an action included in the CAP.

Tracking Progress

To measure progress toward achieving the adopted emissions reduction goal, the City of Piedmont performed a baseline and updated GHG inventories for the years 2005 and 2010, respectively. In addition, the City has become a signatory to the Compact of Mayors to better identify the impact of individual measures and initiatives and more accurately track progress toward achieving future Climate Action Plan goals. This three-year commitment, beginning in 2016, requires more frequent GHG inventory updates, a new GHG reduction target, updated CAP that expands to also include adaptation and mitigation of climate hazards, and public reporting. The 2014 inventory satisfies the first requirement of the Compact of Mayors and provides another snapshot in time of Piedmont's emissions and a check-in point for assessing progress and planning future implementation.

Previous Inventories

A base year GHG inventory for the City of Piedmont was completed by independent consultant AECOM for the year 2005. The results of this inventory indicated activities in the community of Piedmont resulting in approximately 48,300 metric tons of CO2e. As a primarily residential community, Piedmont's largest source of emissions consisted of residential energy consumption. The second largest contributor was the transportation sector. Together, non-residential energy use, water consumption, and waste sent to landfills contributed less than 10% to the overall inventory.

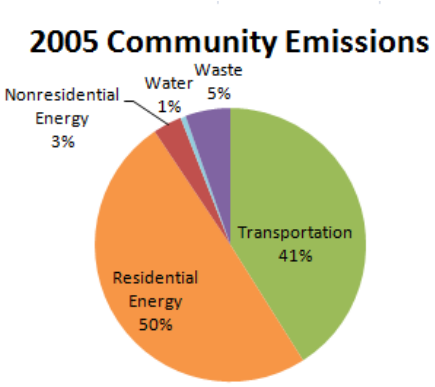

Figure 2. Community Emissions 2005

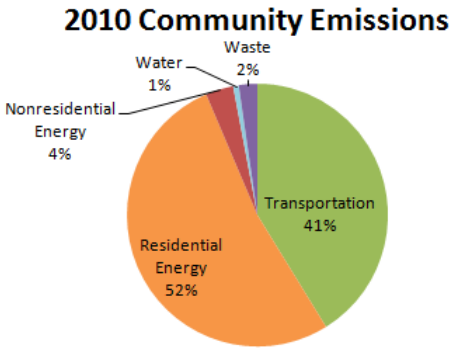

Figure 3. Community Emissions 2010

In 2010, a methodology for inventorying government and community GHG emissions, the U.S. Community Protocols for Accounting and Local Government Operating Protocols, developed by Local Governments for Sustainability (ICLEI) was adopted as the standard across the San Francisco Bay Area. Using this calculation method in 2010, community activities resulted in approximately 44,750 metric tons of CO2e. This was an approximate 7% reduction in GHG emissions from 2005

levels and was largely attributed to an increase in hydropower in Pacific Gas and Electric Company's (PG&E) energy mix during this "wet" year. As seen in Figure 3, the distribution by sector was similar to 2005 with a slight decrease in waste produced by the community as a result of the 2008 roll-out of new recycling and organic waste programs.

2014 Inventory

In 2014, City staff once again utilized ICLEI's U.S. Community Protocol for Accounting and Local Government Operating Protocols to calculate Piedmont's community emissions. In 2014, activities in the community resulted in approximately 39,456 metric tons of CO2e, of which municipal activities contributed approximately 1,076 metric tons of CO2e. More information on municipal emissions can be found beginning on page 8 of this inventory report.

Community emissions of 39,456 metric tons of CO2e, which include municipal emissions, signify a reduction of 18.3% from the baseline 2005 GHG levels, indicating that Piedmont has tentatively reached its emissions reduction goal for the year 2020. As shown in Figure 4, reductions in residential energy use and landfilled solid waste have contributed most substantially to this achievement. As of 2014, residential energy consisted of 44% of the community emissions, transportation consisted of 48% of the community emissions, and non-residential energy usage consisted of 3% of the community emissions.

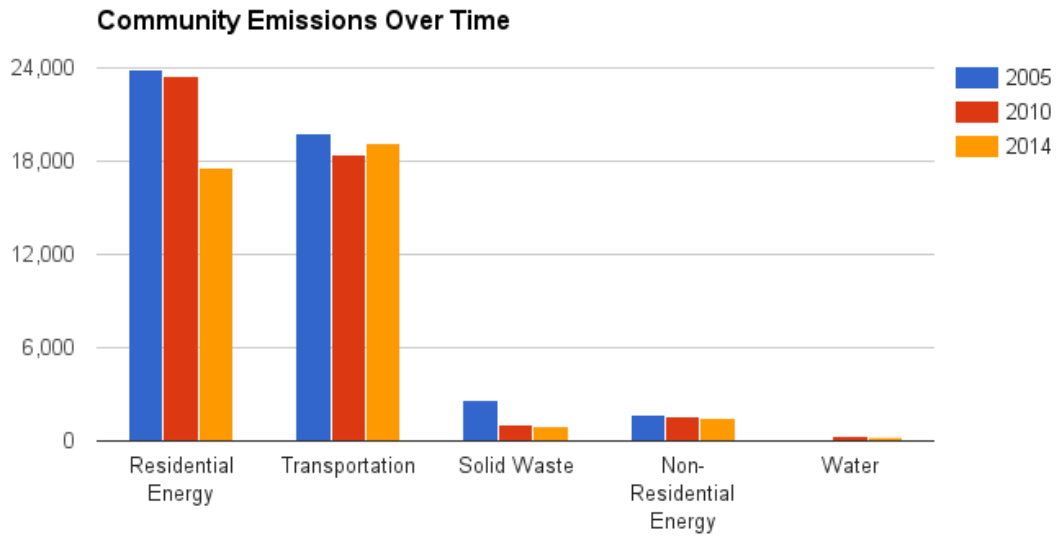

Figure 4. Community Emissions by Sector

Between 2010 and 2014 Piedmont experienced an increase in greenhouse gas emissions in its transportation sector, due largely to an increase in commercial vehicle miles traveled throughout Alameda County, as well as the ability to use increasingly specific Emissions Coefficients (EMFAC) for different vehicle types within industry for the purposes of the inventory.

A discussion of the different sectors, other variables contributing to emission changes, and a look at the future of Piedmont's GHG emissions is outlined in the sections below.

Variability in Emissions Estimates

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 beyond local control. Trends seen between 2010 and 2014 may be a result of such external factors as economic conditions, political mandates, or weather patterns, and are susceptible to changes other than intentional program or policy interventions. Several potential external factors are discussed in the following section.

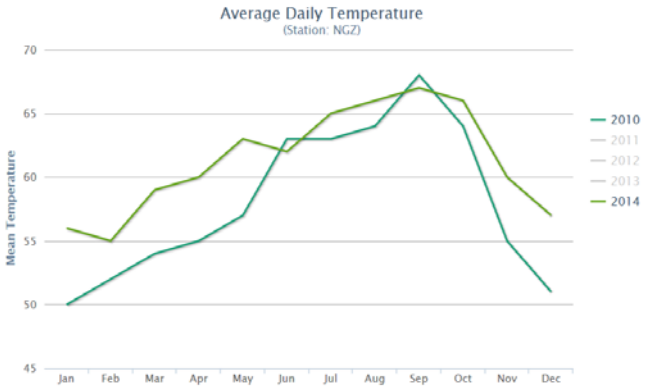

Figure 5. Average Daily Temperature 2014

PG&E Electricity Emissions Factors

One key variable that accounts for a portion of the reduction to date is the reduction in PG&E's electricity emissions factor. PG&E currently produces approximately one-third as many greenhouse gas emissions as the national average per kilowatt hour (kWh). To further decrease the impact of electricity and gas production on the environment, the State has mandated PG&E's energy portfolio contain a mix of at least 33% renewables by the end of 2020.

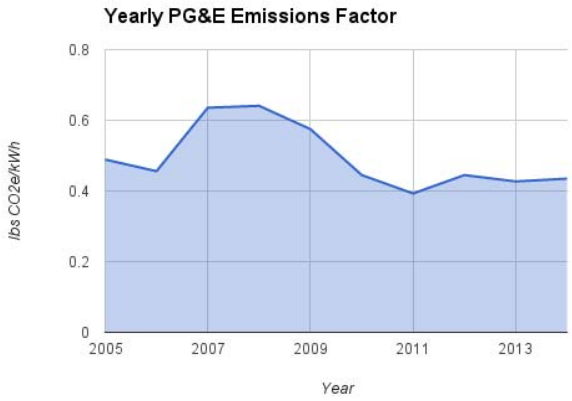

Figure 6. PG&E Yearly Emissions Factor

While this overall trend of a lower coefficient over time contributes to a general decrease in emissions, it is important to acknowledge that, historically, this has not been consistent and may not hold true for any single year. It is recommended that Piedmont continue to implement GHG reduction measures to ensure that the community continues to reduce GHG emissions rather than relying on external variables to maintain its tentative achievement of the 2020 CAP greenhouse gas reduction goal.

Weather Variations

A significant contributor to the reduction in GHGs achieved in Piedmont during 2014 has been the reduction in natural gas usage in the residential sector. Between 2010 and 2014, reduced natural gas

consumption in the residential sector alone was responsible for a reduction of 5,100 metric tons of CO2e emissions. This is likely the result of a combination of an increase in home energy efficiency as well as a reduction in the need for heating due to higher average temperatures and a decrease in heating degree days.[1] In 2014, the average state-wide temperature was 3.7° Fahrenheit (F) warmer than 2010. This also corresponded to an 82% decrease in heating degree days between 2005 and 2014 in the San Francisco Bay area.

Community Emissions

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, as well as BART usage emissions. Non-commercial vehicle trips account for the vast majority of transportation emissions (96% in 2014). Total transportation emissions were 19,143 metric tons of CO2e, or 48.6% of total community emissions.

Between 2010 and 2014 Piedmont experienced an increase in greenhouse gas emissions in the transportation sector, due largely to an increase in commercial vehicle miles traveled. In addition, the ability to use in the preparation of the 2014 inventory increasingly specific Emissions Coefficients (EMFAC) for different sectors of the transportation industry resulted in a better estimate, but one that factored emissions that had not been accounted for in previous inventories.

Within the transportation sector, vehicle types studied included gasoline passenger vehicles and light trucks, gasoline commercial vehicles and heavy trucks, gasoline buses, diesel passenger vehicles and light trucks, diesel commercial vehicles and heavy trucks, diesel buses, and BART emissions. For the purpose of this inventory, off-road vehicles were not included, as current data is insufficient to accurately model Piedmont emissions, similar to previous inventories.

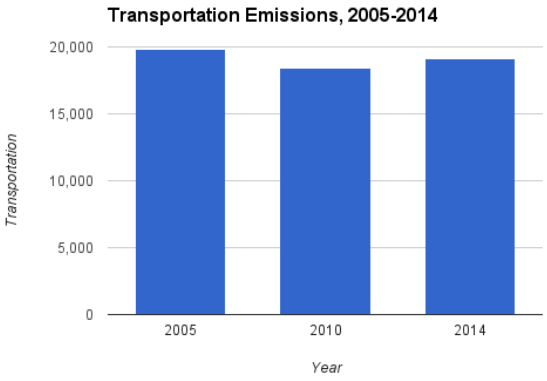

Figure 7. Transportation Emissions, 2005-2014

As previously noted, the emissions generated by the transportation sector are largely driven by the external factors of vehicle miles traveled (VMT) and on-road factors (grams of CO2/mile), neither of which the City has much ability to control. In contrast to this are the municipal fleet and the vehicles used by City contractors, which together account for a small portion of VMT. Although the Metropolitan Transportation Commission's (MTC) model estimates Piedmont emissions using specific factors such as

[1] Heating degree days are an indicator of the number of days a house requires heating at a given external temperature (65°)

population and employment combined with general fuel efficiency and emissions factor for the Bay Area, the model is not able to directly account for areas where Piedmont may be doing more than the surrounding County.

While the VMT model produced by MTC provides a proxy for transportation data within Piedmont, it is highly noticeable as one spends time within the City that there appears to be a large uptick in the use of electric vehicles (EV). Current standard ICLEI protocol does not account for city-specific EV ownership; however a proxy that can be used to track this statistic is the number of California Clean Vehicle Rebate Program (CVRP) rebates redeemed for EVs in a given timeframe.

CVRP data from June 2011 through April 2016 showed 262 rebates redeemed for Piedmont car owners, representing approximately 3.1% of Piedmont's population of potential drivers (those age 15 and over) and 6.7% of total Piedmont households. Compared to the County-wide rebate redemption rate of 0.97% of the potential population of drivers, Piedmont's 3.1% is more than triple. Staff will continue to investigate more accurate information sources for EV adoption rates, as the CVRP data does not include vehicles purchased before June 2011 and instances where the EV purchaser chose not to redeem their rebate. Additionally, effective March 29, 2016 EV rebates through CVRP are income limited to single-filers with an annual salary of $250,000 or less, $340,000 for head-of-household, and $500,000 for joint-filers. Therefore, the percentage of Piedmont residents who own EVs is likely to be higher than the 3.1% figure.

Residential Energy Usage

Residential greenhouse gas emissions resulting from energy consumption are tracked as a function of electricity, measured in kilowatt hours (kWh), and natural gas, measured in therms.

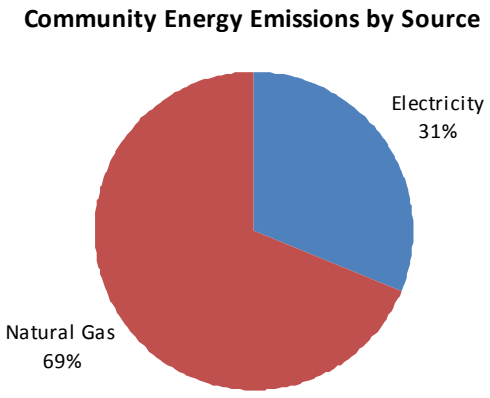

Figure 8. Residential Energy Emissions 2014

In 2014, Piedmont residents used 27.7 million kWh of electricity, an 8.8% reduction in overall electricity usage from the 2010 levels of 30.4 million kWh. This may be attributed to several factors including increased home efficiency, variations in weather patterns or a significant increase in solar panel installations, reducing the need to utilize energy from the grid.

Between 2010 and 2014, Piedmont homeowners installed 148 solar energy systems and as of the end of 2015 there were a total of 295 solar connections in Piedmont. This represents approximately 7.7% of Piedmont households with an installed capacity of 1,290 kilowatts (kW).

In addition to electricity usage, the Piedmont residential sector used 2.28 million therms of natural gas in 2014, or the equivalent of 12,135 tons of CO2e. This is approximately 31% of Piedmont's total emissions.

Between 2010 and 2014, Piedmont experienced a reduction of 5,100 metric tons of carbon dioxide equivalents (CO2e), largely being driven by a reduction in natural gas usage. This represents a 30% reduction from 2010 levels. However, in 2014 natural gas was still the largest contributor to emissions in the residential sector, comprising 69% of the residential energy-related emissions.

It is important to note that preliminary data for the year 2015 suggest that natural gas usage in Piedmont is greater than it was in 2014. The fluctuation in natural gas use may be correlated with variation in temperature. This is a prime example of why Piedmont homeowners must continue to make progress towards emission reductions even though the 2014 inventory indicates the City's 2020 target has been tentatively reached. Fortunately, new programs, technologies, and incentives are providing many opportunities to continue the overall trend in reduced GHG emissions from the residential natural gas sector.

Non-residential Energy Usage

In additional to the single-family residential sector, Piedmont contains commercial, multi-family residential (defined as those with five or more units), and municipal buildings that contribute to the City's overall greenhouse gas emissions. This non-residential sector experienced a 6.9% decrease in emissions, largely driven by a 33% decrease in natural gas use. Much of this can likely be attributed to commercial energy efficiency measures implemented since the previous inventory.

Greenhouse Gas Emissions (metric tons CO2e)

Year	Residential Energy	Solid Waste	Water	Non-Residential Energy	Transportation
2005	23,917	2,639	307	1,651	19,798
2010	23,440	1,024	311	1,530	18,452
2014	17,599	995	296	1,423	19,143

Figure 9. Community Emissions by Sector over Time

Outreach efforts and energy efficiency programs offered by the City between the two inventories include a SmartLights program that incentivizes business owners to switch to LEDs and the Bay Area Multi-family Building Enhancements (BAMBE). Currently, one of the five multi-family housing units in Piedmont has participated in the BAMBE program.

Water

Water use generates emissions during treatment as well as upstream and downstream transportation. These emissions include energy used to distribute and collect water and methane gas produced from wastewater (sewage) systems. In 2014, the Piedmont community consumed an estimated 455 million gallons (MG) of potable water. This is slightly higher than 2010 (451 MG), however overall water emissions are calculated to be lower due to new a new wastewater technology installed by East Bay Municipal District (EBMUD).

In 2012, pilot anaerobic digesters installed on-site at several wastewater treatment plants allowed EBMUD to create their own power by converting organic waste to methane to fuel generators. EBMUD now creates enough electricity to power their operations and sells excess power back to the grid. They

are expecting to sell twice as much electricity as they use by 2020. In 2014 water represented 0.8% of total community emissions.

Solid Waste

The emissions attributed to the solid waste sector include methane emissions that result from the decomposition over time of organic materials within the waste stream in the anaerobic conditions of a landfill. Therefore, the emissions produced by waste are a function of the amount of organic material in the waste stream.

Richmond Sanitary Services, the City's contracted waste hauler, provided the total tonnage of landfill waste for Piedmont. StopWaste's waste characterization study of 2008 provided the percentage of the landfilled waste stream represented by each organic material type (Figure 10), which was applied to the total tonnage.

Alameda County Waste Characterization	**2008**
Paper Products	23.8%
Food Waste	24.7%
Plant Debris	7.5%
Wood/Textile	13.9%

Figure 10 StopWaste 2008 Waste Characterizations

In 2014, Piedmont created a total of 176 tons of refuse, a decrease of 33.7 tons or 16% from 2010 levels. Piedmont also achieved an average monthly diversion rate of 73.4%, well exceeding the current goal of 65% specified in the City's agreement with Richmond Sanitary Services.

Municipal Operations

Municipal activities in 2014 resulted in approximately 1,076 metric tons of CO2e. This is a 24% increase over the previous inventory of 866 metric tons CO2e in 2010. This increase was driven largely by the addition of the Aquatic Facilities at 777 Magnolia Avenue and the Center for the Arts at 801 Magnolia Avenue to the City's utility accounts in 2011 and 2010 respectively. An additional factor was an increase in employee commute emissions, although this may be due to more accurate data and a better response rate than the 2010 employee commute survey. It should be noted that most other municipal sectors experienced a significant decrease in emissions.

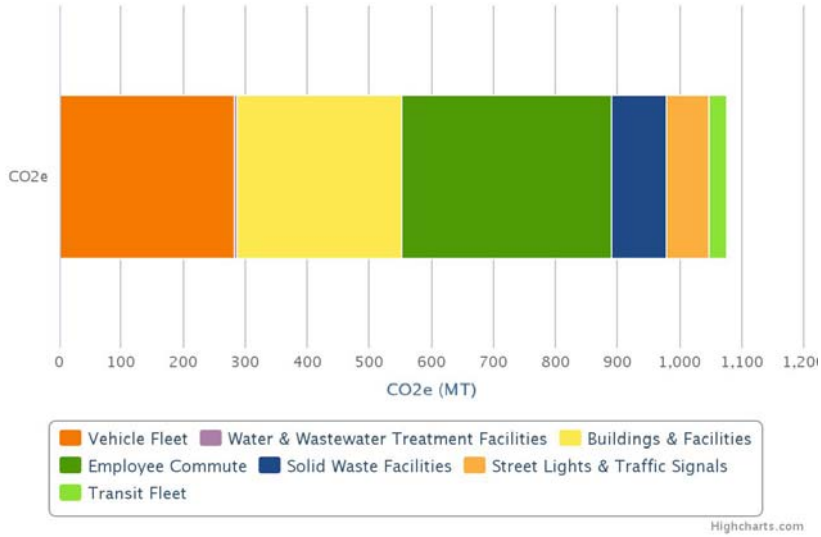

Figure 11. Municipal Emissions by Sector 2014

The municipal building sector experienced a 44% growth in GHG emissions between 2010 and 2014, from 236 to 341 metric tons CO2e. Municipal gas usage experienced a sharp increase in usage between

2010 and 2014 due largely to the energy required to heat the pools at the Aquatic Center. When controlling for these new variables, the remaining building facilities actually experienced an overall decrease of 19.6% in GHG emissions between 2010 and 2014.

Employee commute emissions also increased significantly since 2010, likely due in part to the ability to more accurately measure transportation modes and distances caused by a higher employee commute survey response rate than previous years. However, we should not ignore the high cost of local housing when reviewing employee commutes. Affordable housing is increasingly further from Piedmont. The median employee distance from work increased from 10 to 23 miles since the last inventory.

Vehicle Fleet

The City of Piedmont's vehicle fleet was another significant contributor to municipal emissions, with over 311 metric tons of CO2e produced. In 2014, the municipal vehicle fleet consumed over 32,706 gallons of fuel, which is an increase of 7,260 gallons from 2010. Within the municipal fleet, the Police Department accounted for 40% of the GHG emissions with Public Works and Fire producing 28.1% and 20.7%, respectively.

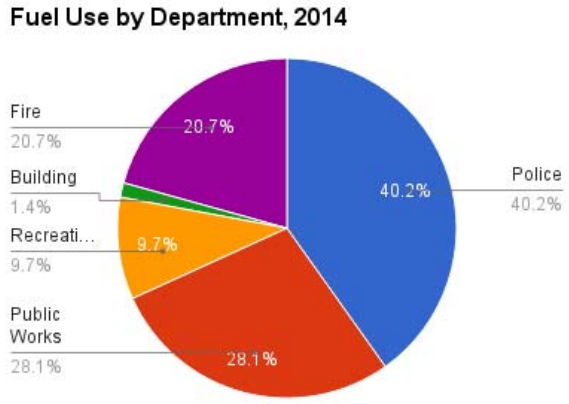

Figure 12. Municipal Vehicle Fleet Emissions 2014

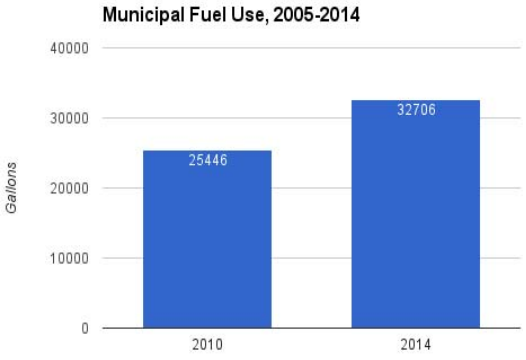

Figure 13. Piedmont Fuel Purchases 2005 - 2014

In addition to municipally-owned vehicles, some City services are contracted out to third parties including Richmond Sanitary Services (RSS), Cleary Brothers Landscape, and Jim Rapella Concrete. Combined, these contractors produced 30 metric tons of emissions through the operation of their vehicles for City services.

Building and Lighting Facilities

Piedmont municipal building and lighting facilities experienced an overall increase in GHG emissions between 2010 and 2014, from 236 metric tons of CO2e to 341 metric tons of CO2e. This increase was largely driven by the addition of the Aquatics Facilities at 777 Magnolia and a smaller amount by the addition of the Center for the Arts.

When controlling for the addition of the Pool and the Center for the Arts to the municipal building stock, GHG emissions from building operations within the City decreased overall. Facilities including City Hall/Fire Station, Community Hall, Corporation Yard, Recreation Center, Streetlights, and Police/Veterans Hall all experienced decreases in emissions between 2010 and 2014.

Building and Streetlight Emissions (metric Tons CO2e) Over Time

	2005	2010	2014
City Hall/Fire	66.05	61.32	52.20
Community Hall	22.50	19.99	16.35
Corporation Yard	11.91	13.76	12.85
Educational	7.03	4.01	7.06
Recreation	41.79	34.56	12.36
Streetlights	73.87	69.03	68.07
Water	5.73	3.25	4.18
Police/Vets	34.65	30.94	17.18
Center for the Arts	-	-	4.82
Aquatics Center	**-**	**-**	146.32
Grand Total	***263.53***	***236.86***	***341.39***

Figure 14. Municipal Built Environment Emissions 2014

Since the 2010 inventory, City staff have been working to implement CAP and energy efficiency measures in City facilities including: an upgraded heating, ventilating and air conditioning (HVAC) system in City Hall, thermal pool covers for the newly acquired aquatic facilities, lighting upgrades for City Hall and the Recreation Center through the SmartLights program, and completing the first phase of high pressure sodium streetlights conversions to LEDs.

Employee Commute

An employee commute survey was conducted at the end of 2015 to establish employee transportation patterns and emissions of the previous two years. In 2014, employee transportation to and from work was determined to be the second-largest contributor to municipal emissions, with approximately 331 metric tons of CO2e to the City's footprint.

Of the 89 full-time City employees, 67 responded to the survey for a 71% response rate, improving upon the previous response rate of 33%. Of the respondents, the vast majority (55) drive alone to work while the remaining take other transportation such as walking (5), carpooling (4), and driving alternate vehicles (3). Of the 67 surveyed, 21 expressed interest in electric cars should the City decide to put a charger in the vicinity of City Hall.

Solid Waste

The City of Piedmont is currently contracted with Richmond Sanitary Services to provide exclusive waste management for the City and community. Both RSS and the City of Piedmont are committed to lowering City waste. In addition to specifying a 65% waste diversion requirement, the City's franchise agreement with RSS requires the company to provide community recycling and composting education materials and events in order to increase waste diversion and decrease GHG emissions.

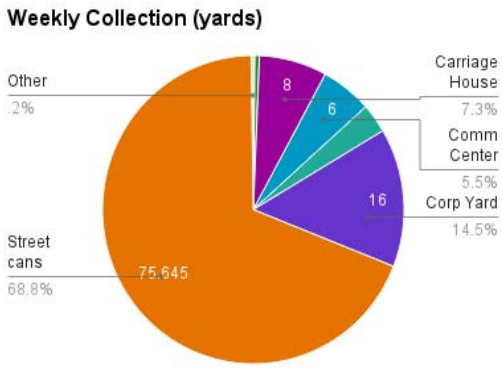

Figure 15. Municipal Weekly Waste Collections

Solid waste generation derived from municipal facilities decreased between 2010 and 2014 from 209 to 203 tons sent to the landfill. The three largest sources of waste collection in the City, by magnitude, are street trash receptacles, the Corporation Yard, and the Carriage House next to the pool.

The waste characterization for this inventory was also based on the 2008 Waste Characterization Study of Alameda County performed by StopWaste of Alameda County.

Conclusion

The Piedmont community has achieved a GHG emissions reduction of 7% in 2010 and 18.3% in 2014 below 2005 levels. Given this data, Piedmont has tentatively achieved the emission reduction goal of 15% below 2005 levels by 2020 that was laid out in the Climate Action Plan.

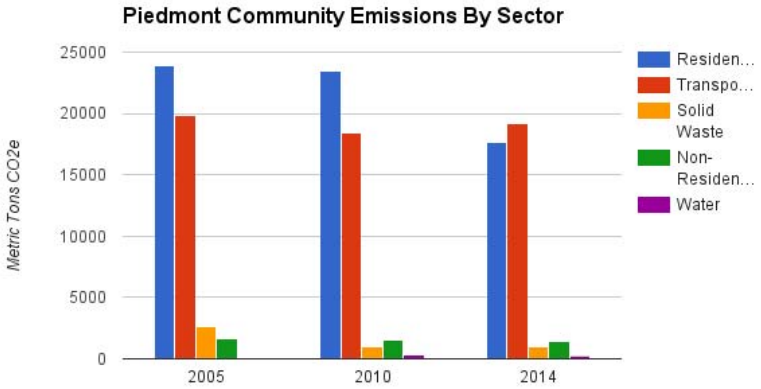

Figure 16. Community Emissions by Sector

The reductions identified in the 2010 and 2014 inventories can be attributed to a combination of efforts by private property owners and the City's municipal government as well as changes in external variables including energy emissions coefficients from PG&E, stricter fuel efficiency standards, and yearly average temperature fluctuations. In 2014, a vast majority of the reductions can be attributed to a reduction in residential natural gas use alone.

Moving forward, it is important to remember that reducing GHG emissions is an ongoing process and whether or not Piedmont continues to meet or exceed its reduction goal between now and 2020 will depend on the actions of property owners and the municipal government alike. It is also important to remember that if it wants to continue to actively address climate change, Piedmont will need to develop a new climate action plan with new goals and measures for the years beyond 2020. Fortunately, there remain many opportunities of which the City and community can take advantage to continue lowering Piedmont's carbon footprint.

Climate Action Plan – the following measures and actions are included in Piedmont's CAP.

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	Conduct energy audits of all municipal buildings.	$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	Evaluate the potential to locate cost-effective renewable energy systems on City Properties.		Recreation & Public Works	Ongoing	Partial and on-going as of 5/16/16	Updated assessments completed 5/16/16, two sites in Corporation Yard under consideration.
C	Purchase remaining energy from renewable sources or from PG&E's *Climate Smart Program*.		Finance	January 1, 2020	Partial as of 6/2016	City pursuing Community Choice Aggregate
	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_2e/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	Install electronic building performance displays in all publicly accessible buildings.	$5,238/ Low	Recreation & Public Works	December 31, 2014	Partial as of 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 h eat 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 and September 9, 2012, electrical consumption was 5,600 kWh (3,521 lbs. of CO_2e) greater than the average of the previous four years, and gas consumption was 431.25 therms (6,959 lbs. of CO_2e) less than the average of the previous four years. This represents a decrease of 3,438 lbs of CO_2e for the 10 month period. At this rate, the City expected a reduction of 1.8 metric tons of CO_2e annually. Realized savings were even greater than expected, with the City Hall emissions averaging 7.2 metric tons of CO_2e fewer as both electrical and natural gas usage decreasing.

In 2016 a new furnace system was also installed in the Community Hall.

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 CO_2.

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 in July 2011 for an annual estimated savings of 23,596 kWh/year, or 13,190 lbs (5.98 tonnes) CO_2 per year. The City completed a second phase of LED conversions in 2015, replacing the remaining 447 cobrahead streetlights with LEDs. This is an annual estimated savings of 34.45 tonnes. 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	In Progress	While not requiring mandatory upgrades, staff with direction of Council is pursuing a Building Energy Savings Ordinance requiring assessments at point-of-sale
B	Work with StopWaste 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	Implemented	5 PACE providers have authority to work within Piedmont
B	Consult with other agencies, utilities and private lenders to evaluate and develop cost effective financing products.		Finance	December 31, 2010	Implemented and On-going	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	Implemented and Ongoing	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 a limited-term 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. As a result of those efforts 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. While the City incentives are no longer in place, Energy Upgrade California is still an active program and to-date approximately 37 households (0.97%) have voluntarily participated. Information on Energy Upgrade California, PACE financing, and other climate and energy related information is available on the City's Climate Action Program web page or at the Public Works Counter in City Hall.

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. Links and information on the program are available on the City's climate action webpage.

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 development awaits effective commercial building energy evaluations.
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	Implemented and Ongoing	3 of the 5 PACE providers authorized to work within Piedmont provide commercial financing. Also, 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	Implemented in 2012	7 Businesses in Piedmont did lighting upgrades through the Smart Lights Program of EBEW, partially 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	Implemented	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_2e/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, staff decided to switch the majority of this funding 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 establi shment with follow-up 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 tin y commercial sect or, 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 CO_2.

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		Implemented	See Measure BE 3.2. Smart Lights and other programs are available through EBEW, a PG&E funded entity. Information on these programs is available through the City website.
	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 new California Green Building code went into effect 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	Partial	The current 2014 Building Code exceeds the 2010 California Building Code.
	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	Implemented	Along with PACE financing, the City participates in SunShares, a bulk solar purchasing program that provides discounts for residents.
B	Develop a public information program to encourage residents and businesses to install renewable energy systems.		Public Works	December 31, 2011	Implemented	In addition to outreach from vendors, the City provides information on its website, and provides outreach as part of SunShares.
	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 2010-2015: 195 Total 295.	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	AC Transit is exploring several clean energy bus options, including hydrogen fuel cell and hybrid vehicles, but these vehicles are not dedicated to any specific route.
	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	Partial, on-going	EECBG funds provided funds for first 84 replacements, completed in 2011.
	Progress Indicators		**Target**		40.43 tonnes CO_2e /yr from 531 streetlight replacement	PG&E provided on bill financing for second phase (447) of conversion completed in 2016.
i	Percentage of City streetlights with LED or LED-solar fixtures.		Not identified		531 of approx 804 fixtures (66%)	Last phase is post-top streetlight conversion (273) to be inventoried and converted, pending funding.

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	In Progress	Participating in Alameda County CCA steering committee and JPA development
	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	Implemented	PG&E and EBMUD provide comparative statistics in utility bills and on the web.
	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 consider supporting 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	Implemented and Ongoing	Brochure, inserts and other promotional items continually distributed.
D	Adopt a resolution of support that encourages the State and federal governments to create a voluntary *Do Not Mail Registry* 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: 71% 2010: 75% 2011: 69%	2012: 71% 2013: 73% 2014: 73% 2015: 74%

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	Implemented	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 to determine potential GHG emissions reductions. We have purchased EnergyStar multi-function devices and printers. 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. Efforts from the PEPP Team have also led to the installation of three waste (compost, recycling, and trash) in all City facility break rooms, hand dryers in the police station and Community Hall bathrooms, a green waste bin in the Community Hall, and education to vendors regarding how to properly dispose of waste materials.

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 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	Implemented	During the drought the City partnered with EBMUD to hand out water efficiency devices and information.
	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	Partial	While the City has not created its own ordinance, the 2015 California WELO update is very stringent, though still affects limited properties.

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	Partial	City staff participated in a Piedmont Connect event in October 2015 that discussed graywater and rainwater catchment systems. Information on these systems is available from the Building Department.
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	None	
	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 systems proposed: 2	

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 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	Partial	The 2015 WELO is mandatory for all new landscapes over 500sf and renovated landscapes over 2,500sf. Free at-home water efficiency audit kits are available via EBMUD.
	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	In Progress	City plans to install first ET controllers at the Linda-Kingston Triangle and is investigating their installation at all main park controllers.
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.	Implemented	The 2015 WELO requires automatic irrigation controllers utilizing either evapotranspiration or soil moisture sensor data in all applicable irrigation systems (new landscapes greater than 500 sf or renovated greater than 2,500 sf).
	Progress Indicators		**Target**			
i	Percentage of municipal landscapes with ET controllers.		Not identified			
ii	Percentage of private landscapes with ET controllers		Not identified			

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	Implemented	Piedmont's Bicycle and Pedestrian Master Plan (BPMP) was adopted November 3, 2014.
B	Construct bicycle infrastructure improvements.		Public Works	January 1, 2020	Implemented and Ongoing	Bike racks have been installed in various locations throughout the City and bike lanes have been constructed on Moraga Avenue and Grand Avenue. Other improvements are planned under the BPMP.
C	Conduct a pedestrian obstacle study.		Public Works	September 1, 2011	Implemented	See note for Action A above
D	Prepare and adopt a Pedestrian Master Plan.		Public Works	December 31, 2012	Implemented	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	In Progress	See note for Action D above. Updates to crosswalks and sidewalks are included in the BPMP.
	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	Implemented	Piedmont's Bicycle and Pedestrian Master Plan (BPMP) was adopted November 3, 2014.
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	
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	
	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	Partial	Schematic designs included in the BPMP. 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	Council adopted 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	In Progress	The Planning Commission is currently discussing updates to Chapter 17.
	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			

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	Partial	New bus stop constructed on Highland Way.
B	Conduct a study of bicycle and pedestrian access to transit stations.		Public Works	July 31, 2010	Implemented	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	Work with MTC and other relevant agencies to facilitate ride-share programs in the community.	$5,714/ Low	Public Works	Not identified	Partial	Casual carpool stops are located on Oakland Ave and Park Blvd, though not officially adopted by Council.
B	Develop a social networking website where residents with similar commutes can find each other and create effective car pools.		Not identified	Not identified	Partial	A website has been developed by free market enterprises.
C	Provide shade, weather protection, seating, lighting, and bike racks at casual carpool pick-up areas.		Public Works	Not identified	Partial	Lighting, 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	Ensure that essential infrastructure improvements are made to enable safe routes to school.	$5,714/ Low	Public Works	Not identified	Partial and Ongoing	Pedestrian improvements have been made at Beach Elementary School, including crosswalks, flashing lights, and bulb outs. Future safe routes to school programs are laid out in the BPMP.
B	With PUSD, develop trip reduction programs that encourage walking, bicycling, carpooling, and public transit use, particularly walking school bus programs.		PUSD Not identified	Not identified	Implemented	Safe routes to schools was adopted along with the BPMP.
	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	Develop outreach programs to reduce residents' transportation GHG emissions using various media and targeting walking and bicycling in the City.	$3,750/ Low	Not identified	Not identified	Implemented and Ongoing	Outreach is provided on both the City's Climate Action Program and Public Transit web pages.
	Progress Indicators		**Target**			
i	Not identified.		Not identified			

History of Funding Sources and Programs for Climate Action Plan Implementation

Sources for grant funds and the funded programs related to Climate Action Plan implementation within the City of Piedmont include:

Source: StopWaste
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 space ($26,304)
PUSD recycling receptacles and composters ($8,059)

Source: Energy Efficiency and Conservation Block Grants (EECBG), 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)

Source: East Bay Energy Watch (EBEW)
Program: AmeriCorps CivicSpark Fellow, 11-month full-time staff member dedicated to climate planning ($18,400)

Source: Measure D
Program: Various municipal improvements related to waste reduction including compostable bags, compost bin for the Community Hall, hand dryers, trash enclosures for recycling, three-way trash stations, staff time, and more ($144,023 since FY2011/2012).

Source: Pacific Gas & Electric (PG&E) On-Bill Financing Program
Program: On-bill financing program with 0% interest to repay conversion of 478 high pressure sodium (HPS) streetlights to LEDs

Source: PG&E Streetlight Rebate Program
Rebates to cover partial cost for conversion of 478 HPS streetlights to LEDs ($19,220)

Source: East Bay Energy Watch (EBEW) and PG&E
Program: Various energy efficiency municipal improvements, including time-of-day schedule controls and furnace upgrades ($1,258)