CITY OF CUPERTINO
CLIMATE ACTION PLAN

APPENDIX C – Implementation Tracking Framework

This appendix represents a collection of the CAP measure implementation tables presented throughout Chapters 3 and 4. It can serve as a handy reference document to track implementation of each measure, easily identify departmental and staff responsibilities for various actions, and update implementation timing dependent upon fiscal and other community priorities. It also suggests methods or processes for collecting data that will be important to verifying the reduction estimates presented in the CAP.

Unfortunately, for many of the CAP's quantified measures, there is no readily published dataset with pertinent information, or certain data is not yet consistently collected to allow tracking measure implementation. In these instances, this appendix suggests a data collection framework to serve as a starting point. However, the City may discover better methods to access and sort the necessary data or find that it is not possible to collect all raw data, and that proxies will need to be developed to estimate implementation levels. Tracking mechanisms are provided for the CAP's quantified reduction measures. The remaining measures, identified as "Supporting Measures" in the CAP, simply re-present the measure statement, actions and implementation steps, responsible departments / staff, and implementation phasing.

When tracking measure implementation, City staff may discover that there is strong overlap in the data collected for certain measures. For example, energy reductions associated with participation in an advanced energy analytics program (Measure C-E-1) may also be reported within the existing building retrofit financing measure (Measure C-E-2). While efforts can be made to separate energy savings into appropriate measure categories, the variety and type of likely data sources will inevitably lead to double counting of reduction potential among the CAP's measures. Therefore, this appendix should be used to generally track the implementation success of individual measures, to the extent feasible, but regular emissions inventory updates should still be used to track the macro-level emissions trends within the community.

This appendix can serve as an initial framework to help the City establish its CAP implementation tracking procedures, and should be freely modified and amended to best fit existing City procedures for ease of use.

MEASURE C-E-1   Energy Use Data and Analysis

Increase resident and building owner/tenant/operator knowledge about how, when, and where building energy is used.

Actions and Implementation Steps	Department/Staff Responsible	Phasing
A. Work with PG&E to facilitate aggressive implementation of PG&E's Home and Business Area Network (HAN) program within Cupertino	Sustainability Division, Staff person	Near-term, FY "Year"
B. Partner with PG&E, other Santa Clara County local governments, third-party service providers, and local businesses to establish leading regional advanced metering and analytics implementation program for commercial and residential buildings	Sustainability Division, Staff person	Medium-term, FY "Year"
C. Collaborate with other Santa Clara County local governments to develop outreach program that communicates benefits of using advanced analytics to improve energy efficiency and reduce energy bills	Sustainability Division, Staff person	Medium-term, FY "Year"

Progress Indicator	Year
2,200,000 kWhr/yr saved – assumes 10% of nonresidential square footage in 2010 baseline year (i.e., 1.27 million sqft) participates in advanced analytics program; 775,000 kWhr/yr saved – assumes 10% of single family units (i.e., 1,500 homes) and 5% of multi-family units (i.e., 300) participate in advanced analytics program	2020
4,400,000 kWhr/yr saved – assumes 20% of nonresidential square footage in 2010 baseline year (i.e., 2.5 million sqft) participates in advanced analytics program; 2,000,000 kWhr/yr saved – assumes 25% of single family units (i.e., 3,750 homes) and 10% of multi-family units (i.e., 600) participate in advanced analytics program	2035

Tracking Mechanisms

Goal: Identify energy savings from participation in energy use data analytics programs.

Work with PG&E to identify energy savings resulting from participation in PG&E energy analytics services (e.g., HAN program)

Identify methods to collect participation data from third-party analytics providers. Establish voluntary reporting program for businesses / residents to report energy savings from analytics data use, possibly through landing page on City's website that collects various pieces of program information:

- What type of improvements were made as a result of analytics program participation?

- Was the program provided through PG&E or another third-party provider?

- What were estimated energy savings in kWh/year and therms/year?

- What were primary barriers/challenges to participation in analytics program?

MEASURE C-E-2   Retrofit Financing

Promote existing and support development of new private financing options for home and commercial building retrofits and renewable energy development.

Actions and Implementation Steps	Department/Staff Responsible	Phasing
Property Assessed Clean Energy		
A. Continue to participate in California FIRST to make PACE financing available to commercial, industrial, multi-family residential (5+ units), and non-profit-owned buildings	Sustainability Division, Staff person	On-going, FY "Year"
B. Continue to participate in effort with other Santa Clara County local governments to establish countywide PACE financing district available for residential property owners (could also provide another source of commercial financing to compliment California FIRST program)	Sustainability Division, Staff person	Near-term, FY "Year"
C. Work with PACE financing providers to educate local Realtor and contractor community about PACE offerings, process, and benefits to increase participation	Sustainability Division, Staff person	Medium-term, FY "Year"
D. Finalize GreenBiz Financing Guide and create residential-focused guide and companion website to direct interested parties to utility, public agency, and local lending institution resources to advance energy efficiency and water conservation measures	Sustainability Division, Staff person	On-going, FY "Year"
Energy Service Company Promotion		
E. Develop business energy performance contracting market aggregation program that identifies interested commercial and industrial properties and aggregates them into markets of sufficient scale to attract energy service companies (ESCOs) or energy service agreement (ESA) providers	Sustainability Division, Staff person	Medium-term, FY "Year"
F. Work with local commercial banks to reduce mortgage lender limitations on external financing that limit use of ESCO and ESA contracts	Sustainability Division, Staff person	Long-term, FY "Year"
Progress Indicator	**Year**	
750 single-family houses install a comprehensive retrofit package; 450 single-family houses install a basic retrofit package; 300 multi-family units receive a comprehensive retrofit package; 175 multi-family units receive a basic retrofit package; 875,000 square feet of nonresidential space installs a comprehensive retrofit package	2020	
1,500 single-family houses install a comprehensive retrofit package; 1,500 single-family houses install a basic retrofit package; 600 multi-family units receive a comprehensive retrofit package; 600 multi-family units receive a basic retrofit package; 1,900,000 square feet of nonresidential space installs a comprehensive retrofit package	2035	

MEASURE C-E-2	Retrofit Financing

Promote existing and support development of new private financing options for home and commercial building retrofits and renewable energy development.

Tracking Mechanisms

Goal: Calculate energy savings resulting from existing building retrofits.

Establish data-sharing partnership with local PACE financing districts to collect participation data that shows:

- kWh and therms saved per year (data should be collected annually and disaggregated to show changes by year – e.g., 2015, 2016)

- Number and type of participants (e.g., 15 single-family homes, 20 apartment units, 10,000 sqft of non-residential) to help track what percentage of total city building stock has participated, and what additional percentage could participate in the future

- Types of retrofits made, and energy savings by retrofit category, if possible. For example, indoor lighting retrofits saved 1,000,000 kWh/yr in 2015, while attic insulation installations saved 200,000 kWh/yr in 2015. This data will help indicate popular retrofits that can be advertised through Measure C-E-3, or identify retrofit categories that do not yet "pencil-out" financially for building owners

Special care should be given to separate any reported emissions reductions or energy savings associated with PACE-financed solar PV or other renewable energy systems. This data should be collected, when available, to identify the total impact of PACE financing districts on advancing solar PV installations community-wide However, PG&E's PV interconnection data, or data collected from the City's Building Department, will provide a more comprehensive set of information on PV installations. These broader data sets should also include the PV installs occurring through PACE financing programs, so adding the sets together would likely result in double-counting.

MEASURE C-E-3   Home and Commercial Building Retrofit Outreach

Develop aggressive outreach program to drive voluntary participation in energy- and water-efficiency retrofits.

Actions and Implementation Steps	Department/Staff Responsible	Phasing
A. Partner with Housing Division to design a low- to moderate-income targeted energy and water conservation pilot program	Sustainability Division, Staff person	Near-term, FY "Year"
B. Partner with local realtor community to develop and implement a building owner outreach campaign that targets new building owners to provide information on available building energy efficiency audit and retrofit programs, as well as locally-available financing options (including PACE financing	Sustainability Division, Staff person	Near-term, FY "Year"
C. Identify ways to streamline permitting process for large non-residential retrofit programs; consider developing checklists, guides and/or a City liaison role in Building Department to assist projects through the permitting process	Sustainability Division, Staff person	Medium-term, FY "Year"
D. During CAP implementation monitoring and updates, determine if voluntary, incentive-based approach to existing building retrofits is achieving desired results regarding energy conservation; if implementation metrics in Measure C-E-2 are not being met, first identify additional outreach strategies or incentives that could increase voluntary participation based on focus group discussions with local contractors, Realtors, business owners, and community leaders; if additional outreach/incentives still fail to produce necessary results, engage community members again regarding potential building regulations that could increase energy savings; benefits from adding new building regulations should first be analyzed with regards to current state building regulations, opportunities to increase reductions from other CAP measures, and cost/benefit analysis or potential new regulations	Sustainability Division, Staff person	Medium-term, FY "Year"

MEASURE C-E-4   Energy Assurance & Resiliency Plan

Develop a long-term community-wide energy conservation plan that considers future opportunities to influence building energy efficiency through additional or enhanced building regulations.

	Actions and Implementation Steps	Department/Staff Responsible	Phasing
A.	Develop overarching energy plan for community that considers energy sources and their reliability with regards to estimated climate change impacts	Sustainability Division, Staff person	Long-term, FY "Year"
B.	Based on most current Statewide legislation (e.g., CalGreen code) and successful case studies in other cities, research additional opportunities for feasible building retrofit regulations that generate long-term energy savings in existing building stock	Sustainability Division, Staff person	Long-term, FY "Year"
C.	Consider emissions reduction potential from additional regulations in context of other available emissions reduction strategies and give preference to voluntary, incentive-based programs that allow City to achieve its emissions reduction targets	Sustainability Division, Staff person	Long-term, FY "Year"
D.	Work closely with local realtor community to identify barriers to implementation and develop strategies to reduce potential burden on building sellers and real estate transaction process	Sustainability Division, Staff person	Long-term, FY "Year"

MEASURE C-E-5   Community-Wide Solar Photovoltaic Development

Encourage voluntary community-wide solar photovoltaic development through regulatory barrier reduction and public outreach campaigns.

Actions and Implementation Steps	Department/Staff Responsible	Phasing
Solar Service-Provider PPA Promotion		
A. Conduct outreach program to educate residents and businesses about potential benefits of solar service providers' power purchase agreements (PPA)	Sustainability Division, Staff person	Medium-term, FY "Year"
B. Host workshop with area solar service providers to identify opportunities to streamline installation of solar PV systems	Sustainability Division, Staff person	Medium-term, FY "Year"
C. Pending result of PPA workshop, remove identified barriers to wide-scale solar installation throughout city	Sustainability Division, Staff person	Long-term, FY "Year"
D. Provide general information on City website describing various solar PV financing / installation options (e.g., PPA, community shared solar, outright purchase)	Sustainability Division, Staff person	Medium-term, FY "Year"
Community Shared Solar Promotion		
E. Conduct outreach program to educate residents and businesses about opportunities for community shared solar PV systems; invite neighborhood groups/organizations to help identify potential interest	Sustainability Division, Staff person	Medium-term, FY "Year"
F. Work with PG&E to share information about PG&E's Community Solar program	Sustainability Division, Staff person	Near-term, FY "Year"
G. Work closely with identified candidate to develop successful pilot program (e.g., assist group in navigating permitting requirements) that can be replicated by others; share success stories on City's Sustainability website; work to remove regulatory barriers identified during pilot project	Sustainability Division, Staff person	Medium-term, FY "Year"
Solar Empowerment Zones		
H. Conduct analysis to identify areas within City most suited for large-scale photovoltaic system development (e.g., excellent solar access; large, flat rooftop or parking lot expanses; minimal number of property owners); identify potential barriers (e.g., regulatory, ownership, structural / technical) to photovoltaic system development in these areas	Sustainability Division, Staff person	Long-term, FY "Year"
I. Identify these areas as "priority solar development areas" and work to reduce existing barriers to system development	Planning Department, Staff person	Long-term, FY "Year"
J. Conduct focused outreach to land owners and tenants regarding photovoltaic system development opportunities; partner with PACE program, PG&E, or other renewable energy funders as appropriate on outreach campaign	Sustainability Division, Staff person	Long-term, FY "Year"

MEASURE C-E-5	Community-Wide Solar Photovoltaic Development

Encourage voluntary community-wide solar photovoltaic development through regulatory barrier reduction and public outreach campaigns.

Actions and Implementation Steps	Department/Staff Responsible	Phasing
Building Regulations		
K. Consider including solar pre-wiring / pre-plumbing requirements in future revisions to City's Green Building Ordinance	Building Division, Staff person	Long-term, FY "Year"
L. Instruct building and plan check officials to provide information to customers on the benefits of pre-wiring / pre-plumbing for solar applications at the time of new construction or substantial retrofits, including lower up-front costs as compared to retrofitting buildings in the future	Building Division, Staff person	Near-term, FY "Year"
Progress Indicator	**Year**	
1.5 MW of new solar PV capacity installed community-wide (residential and nonresidential combined – excluding Apple Campus 2 project listed below); Apple Campus 2 solar PV systems installed to generate 15 million kWh/yr; 5.5 MW of existing solar PV installed from 2010-2014	2020	
5.0 MW of new solar PV capacity installed community-wide (residential and nonresidential combined – excluding Apple Campus 2 project listed below); Apple Campus 2 solar PV systems installed to generate 15 million kWh/yr; 5.5 MW of existing solar PV installed from 2010-2014	2035	

Tracking Mechanisms

Goal: Track total community-wide installed PV capacity and electricity generation potential.

Establish annual data reporting process with PG&E to collect community solar PV interconnection reports that show yearly installations of PV systems; Collect reports in shared location, or transfer data to Excel database, to demonstrate total measure impact over time

Set smaller, annual measure implementation goals to help achieve larger target year goals (e.g., 300 kW PV capacity installed annually through 2020 to achieve CAP 2020 goal of 1.5 MW new community capacity)

Verify generation capacity of Apple Campus 2 PV system following installation

For reporting and verification purposes, convert total installed PV capacity (i.e., capacity installed since baseline year) to kWh electricity generation. This number will be useful when calculating statewide RPS reductions, and verifying emissions reductions resulting from this measure (i.e., kWh solar electric generation * utility electricity emissions factor = MT CO_2e/yr reductions)

MEASURE C-E-6	Community-Wide Solar Hot Water Development

Encourage communitywide solar hot water development through regulatory barrier reduction and public outreach campaigns.

Actions and Implementation Steps	Department/Staff Responsible	Phasing
A. Collaborate with PG&E and California Solar Initiative - Thermal Program to develop local outreach program to maximize installation of solar hot water systems and leverage existing funding opportunities	Sustainability Division, Staff person	Medium-term, FY "Year"
B. Work with PG&E to identify businesses and multi-family residential building owners with high hot water use, and provide targeted outreach with promotional materials for participation in CSI-Thermal Program	Sustainability Division, Staff person	Medium-term, FY "Year"
C. Host roundtable discussion with large hot water users to identify potential City barriers to installation of solar thermal systems; work with City departments to remove or reduce identified barriers, where possible	Sustainability Division, Staff person	Long-term, FY "Year"

Progress Indicator	Year
750 single-family houses install a solar thermal system capable of providing 70% of the building's hot water heating energy; 300 multi-family buildings install a solar thermal system capable of providing 65% of the building's hot water heating energy; 630,000 square feet of nonresidential space installs a solar thermal system capable of providing 30% of the building's hot water heating energy	2035

Tracking Mechanisms

Goal: Track total hot water heating capacity of installed solar hot water heaters.

Establish annual data reporting process with PG&E to collect community solar hot water heater installation data, or collect this data from City's Building Department. Necessary data to be collected includes:

- Total therms of natural gas or kWh or electricity offset by solar water heater (depending on type of retrofitted hot water heater system)

Additional informational data could be collected to enhance participation in this measure, such as:

- Primary barriers/challenges to participation in solar hot water heater program (e.g., financial, technical, bureaucratic)

- Use of utility-funded rebates or rate incentive programs

- Percentage of annual hot water heating load to be offset by solar heating system (based on full year of data or amount estimated by contractor/service provider)

It is likely that this program will gain little traction in the near-term. However, the City can begin annual monitoring as described above, and calculate emissions reductions applicable to the City's 2020 target, should participation occur prior to that target year.

MEASURE C-E-7	Community Choice Energy Option

Partner with other Santa Clara County jurisdictions to evaluate the development of a regional CCE option, including identification of the geographic scope, potential costs to participating jurisdictions and residents, and potential liabilities.

Actions and Implementation Steps	Department/Staff Responsible	Phasing
A. Work with other Santa Clara County partners to conduct feasibility study of developing multi-jurisdiction CCE program	Sustainability Division, Staff person	Near-term, FY "Year"
B. If study determines CCA to be feasible and advantageous to Cupertino residents and businesses, work with Santa Clara County partners to prepare necessary additional study reports, informational materials, and any other supporting research and/or documents to help pursue development of CCA program	Sustainability Division, Staff person	Long-term, FY "Year"

Tracking Mechanisms

Goal: Track community participation in clean-electricity purchasing programs.

While this measure does not include progress indicators in the CAP, it was identified as an important long-term strategy to help the community achieve their more aggressive future-year reduction targets. The following strategies will help to track participation and allow better reduction estimates resulting from this measure.

Establish working relationship with any CCE program in which Cupertino participates to collect City-specific participation data (assuming privacy protections would not be compromised); If data privacy concerns prevent this type of data collection, establish a voluntary reporting mechanism, similar to the one described in Measure C-E-1 in which a voluntary participant tracker could be added to the City's sustainability webpage. The tracker could collect information to determine the number of residential households and local businesses that participate, as well as their level of participation (e.g., 50% clean electricity, 75% clean electricity, 100% clean electricity).

Similarly, work with PG&E to identify the total amount of traditional grid electricity that is offset through voluntary participation in PG&E's Green Option program within the city (assuming the CEC approves the program and local residents and businesses participate).

The total amount of clean electricity consumption from participation in a CCE or PG&E's Green Option program can be combined into one total value of kWh/yr and multiplied by the utility's electricity emissions factor for the target year (e.g., 2020) to calculate total emissions reductions from this measure. This total amount of electricity, plus the total electricity generation capacity of the community's PV systems, should be factored into future calculations of reductions associated with the state's RPS program because that program will be affecting a smaller share of community electricity (i.e., Solar PV electricity and CCE or Green Option electricity that is cleaner than the prevailing RPS rate will supersede reductions associated with the RPS. Only the remaining electricity demand that is not met by one of these alternative electricity options will be subject to the RPS, and therefore able to generate additional reductions.)

MEASURE C-T-1   Bicycle & Pedestrian Environment Enhancements

Continue to encourage multi-modal transportation, including walking and biking, through safety and comfort enhancements in the bicycle and pedestrian environment.

	Actions and Implementation Steps	Department/Staff Responsible	Phasing
A.	Update City's Bicycle and Pedestrian Transportation Plans to reflect current bicycle and pedestrian safety and access needs; prioritize new projects identified	Transportation Division, Staff person	Medium-term, FY "Year"
B.	Partner with local bicycle advocacy groups / clubs and neighborhood groups to identify dangerous bicycle or pedestrian conditions, and develop strategies to address problem areas	Transportation Division, Staff person	Medium-term, FY "Year"
C.	Identify grant-funds to pursue Plan-recommended education, design, and/or construction projects	Sustainability Division, Staff person	Medium-term, FY "Year"
D.	Partner with schools, neighborhood groups, and businesses to encourage alternative transportation commute options. Expand alternative commute measures within existing sustainability programs, including Green@Home, GreenBiz, and green@school	Sustainability Division, Staff person	Medium-term, FY "Year"
E.	Continue to evaluate City's bike & walkability through use of online and community surveying tools including WalkScore, Bicycle Friendly Community criteria, Safe Routes to School Walkability Checklist, etc.	Sustainability & Transportation Divisions, Staff person	Medium-term, FY "Year"

MEASURE C-T-2	Bikeshare Program

Explore feasibility of developing local bikeshare program.

Actions and Implementation Steps	Department/Staff Responsible	Phasing
A. Continue to operate municipal bike fleet for City employee use and encouragement of bike fleets at large employers	Sustainability Division, Staff person	On-going, FY "Year"
B. Evaluate potential demand for city-wide bikeshare program; discuss expansion opportunities with Bay Area Bike Share	Sustainability Division, Staff person	Medium-term, FY "Year"
C. If participation in Bay Area Bike Share is deemed infeasible, discuss potential for locally-operated system with that organization to identify likely barriers to successful bike share network in Cupertino (e.g., infrastructure limitations, locational disadvantages, land use concerns, low potential user/destination densities)	Sustainability Division, Staff person	Long-term, FY "Year"

MEASURE C-T-3   Transportation Demand Management

Provide informational resources to local businesses subject to SB 1339 transportation demand management program requirements and encourage additional voluntary participation in the program.

Actions and Implementation Steps	Department/Staff Responsible	Phasing
Transportation Demand Management Program		
A. Support regional efforts to implement SB 1339 commute benefit requirements for employers with more than 50 employees)	Sustainability Division, Staff person	Near-term, FY "Year"
B. Work with VTA and/or 511.org on outreach campaigns targeting employers with fewer than 50 employees to encourage voluntary participation in TDM program activities, including pre-tax deductions for alternative travel mode expenses, transit pass subsidies, and new vanpool development; share best-practices in TDM programs with local businesses to identify options that have been successful at small scale	Sustainability Division, Staff person	Medium-term, FY "Year"
Parking Cash Out		
C. Work with Cupertino Chamber of Commerce to conduct informal survey of businesses that lease employee parking spaces	Sustainability & Economic Divisions, Staff person	Long-term, FY "Year"
D. Develop program to work with businesses that lease parking spaces to describe benefits of parking cash-out programs for businesses and employees	Sustainability & Economic Divisions, Staff person	Long-term, FY "Year"
Carpool / Rideshare Program		
E. Partner with 511.org and employers to leverage new ride-matching technologies and promote rideshare among employees	Sustainability Division, Staff person	Medium-term, FY "Year"
Guaranteed Ride Home		
F. Work with other Santa Clara County partners to develop Guaranteed Ride Home program for employees who work in Santa Clara County and commute to work via alternative travel options (e.g., public transit, carpool/vanpool, biking, walking)	Sustainability Division, Staff person	Medium-term, FY "Year"
Progress Indicator	**Year**	
10% of total employees in 2020 participate in TDM program that offers rideshare promotion, telecommuting/ alternative schedules, and subsidized transit fares	2020	
20% of total employees in 2020 participate in TDM program that offers rideshare promotion, telecommuting/ alternative schedules, and subsidized transit fares	2035	

MEASURE C-T-3	Transportation Demand Management

Provide informational resources to local businesses subject to SB 1339 transportation demand management program requirements and encourage additional voluntary participation in the program.

Tracking Mechanisms

Goal: Identify VMT reductions associated with TDM programs offered throughout the community.

Transportation emissions are not based on empirical data, which makes tracking the implementation success of transportation measures challenging. The City should work with MTC to develop tracking mechanisms specifically related to implementation of SB 1339 requirements in Cupertino. Based on the assumptions developed in that methodology, the City could "spot-check" the results by working with local employers subject to the regulations (i.e., employers with 50 or more employees) to verify that they are experiencing the level of employee participation as estimated by MTC. This could be administered through voluntary commuter surveys and/or analysis of participation in the employer's TDM offerings (e.g., parking cash out, transit pass subsidies, alternative work schedules). The City can also request relevant participation information from VTA, Santa Clara County, or the local Chamber of Commerce.

At the macro-level, the City can align major CAP updates / revisions cycles with updates to the General Plan and its underlying transportation model. As noted in Chapter 7 of the CAP, direct comparisons of inventory updates from one year to the next can be problematic, especially if the underlying transportation model used to generate the transportation emissions assumptions are different. The state may provide better guidance in the future for how to manage the numerous assumptions and unknowns related to transportation sector emissions and reduction estimates. However, at this time, the City's best option is to collect empirical data related to employee participation in various TDM strategies and track long-term trends in participation. The City could also hire a transportation consultant with knowledge of local TDM and commuter benefits programs to develop a more detailed tracking mechanism, and/or perform an analysis of this measure's implementation success and barriers. Alternatively, the City could hire a transportation consultant to update the transportation sector emissions, taking into account participation in the various TDM programs available to its residents. This emissions update could be incorporated into the total community-wide inventory update, and reductions related to this measure could be removed with the assumption that the revised transportation sector emissions include their contributions (i.e., resulting in lower transportation emissions than would otherwise have occurred in lieu of this measure).

MEASURE C-T-4   Transit Route Expansion

Explore options to develop local community shuttle or community-wide car sharing to fill gaps in existing transit network.

Actions and Implementation Steps	Department/Staff Responsible	Phasing
A. Conduct feasibility study that evaluates potential for community shuttle between Cal Train, Civic Center, major employment / retail centers in Cupertino, and DeAnza Community College	Sustainability & Economic Divisions, Staff person	Long-term, FY "Year"
B. Research possible funding strategies with business improvement districts, major employers, community organizations, and other appropriate partners	Sustainability Division, Staff person	Long-term, FY "Year"
C. Support further development of private car share options for residents and daytime employee population, such as through efforts to identify adequate parking locations for shared vehicles (e.g., ZipCar) or working with local business community to increase knowledge of available options	Sustainability Division, Staff person	Long-term, FY "Year"

MEASURE C-T-5   Transit Priority

Improve transit service reliability and speed.

Actions and Implementation Steps	Department/Staff Responsible	Phasing
Transit Signal Priority		
A. Work with VTA to identify local roadways on which traffic congestion frequently leads to impacted transit reliability or timing	Transportation Division, Staff person	Medium-term, FY "Year"
B. Consider opportunities for transit-priority signal integration along these routes that would not further contribute to congestion problems	Transportation Division, Staff person	Long-term, FY "Year"
Transit Intersection Queue Jumps		
C. Based on work with VTA to identify congestion problems along primary transit routes, also investigate opportunities for integration of intersection queue jump lanes (in conjunction with priority signals) to further facilitate on-time transit service	Transportation Division, Staff person	Long-term, FY "Year"

MEASURE C-T-6   Transit-Oriented Development

Continue to encourage development that takes advantage of its location near local transit options (e.g., major bus stops) through higher densities and intensities to increase ridership potential.

Actions and Implementation Steps	Department/Staff Responsible	Phasing
A. Through City's General Plan process, identify areas that could support net increase in population or employment through land use changes within 1/4 mile walking distance of priority transit stops Planning Department	Planning Division, Staff person	Long-term, FY "Year"
B. Evaluate infrastructure capacity for higher-density/intensity development in transit areas, and develop prioritization and funding strategies to complete necessary improvements	Planning Division, Staff person	Long-term, FY "Year"
C. Continue to consider off-street parking requirements for transit-oriented and mixed-use developments, for developments providing shared parking, and for developments that incorporate travel demand management measures	Planning Division, Staff person	On-going, FY "Year"

MEASURE C-T-7	Community-Wide Alternative Fuel Vehicles

Encourage community-wide use of alternative fuel vehicles through expansion of alternative vehicle refueling infrastructure.

Actions and Implementation Steps	Department/Staff Responsible	Phasing
Alternative Fuel Vehicle Charging / Refueling Infrastructure		
A. Continue to explore cost-effective ways to increase alternative vehicle charging / refueling infrastructure within City for public use; review permitting and inspection process to identify potential barriers to installation and define strategies to reduce or remove barriers through SGC grant or other means)	Transportation Division, Staff person	Medium-term, FY "Year"
B. Develop Alternative Fuel Infrastructure Siting Plan focused on strategic development of EV charging stations and municipal CNG fueling stations based upon demand analyses and feasibility studies; EV station siting plans will identify appropriate locations for Level 1 (slow charge), Level 2 (fast charge), and Level 3 and DC (rapid charge) charging stations in community and will analyze different models for charging station ownership/management (i.e., public vs. private sector)	Sustainability & Transportation Divisions, Staff person	Near-term, FY "Year"
C. Work with MTC and Bay Area local governments to develop informational brochures and technical support for developers / contractors interested in providing public electric vehicle (EV) charging ports in new projects	Sustainability Division, Staff person	Near-term, FY "Year"
D. Identify regional partners for collaboration on multi-family EV charging station retrofit program to develop strategies for installing EV chargers in existing multi-family buildings/apartment developments	Sustainability & Planning Divisions, Staff person	Near-term, FY "Year"
EV Charging Station Pre-wiring Requirements for New Residential Construction (SFR and MFR)		
E. Continue to enforce pre-wiring for at-home/business electric vehicle charging ports in new construction per City's existing ordinance and evaluate additional building code and zoning code revisions recommended through SGC Grant	Planning Division, Staff person	On-going, FY "Year"
Alternative Fuel Vehicle Public Outreach Program		
F. Pursue local incentives, partnerships, and funding mechanisms guided by SGC Grant; Provide links on City's website to sources of cash rebates or other financial incentives for purchase and/or lease of alternative fuel vehicles	Sustainability Division, Staff person	Near-term, FY "Year"
G. Continue to provide links to existing maps identifying Bay Area alternative fuel charging and refueling infrastructure	Sustainability Division, Staff person	On-going, FY "Year"
H. Share information regarding City's efforts to transition its municipal fleet towards alternative fuel vehicles, including plans for additional installation of recharging / refueling infrastructure that would be open to public use	Sustainability Division, Staff person	Medium-term, FY "Year"

MEASURE C-T-7　　　Community-Wide Alternative Fuel Vehicles

Encourage community-wide use of alternative fuel vehicles through expansion of alternative vehicle refueling infrastructure.

Progress Indicator	Year
Community-wide motor vehicle profile shifts as follows: 5% of gasoline passenger vehicles shift to plug-in hybrid electric (PHEV); 5% of diesel passenger vehicles shift to PHEV; 5% of gasoline light-duty trucks shift to PHEV; 3% of gasoline heavy-duty trucks shift to CNG; 3% of diesel heavy-duty trucks shift to CNG; 40% of diesel buses shift to CNG, 20% shift to PHEV	2020
Community-wide motor vehicle profile shifts as follows: 8% of gasoline passenger vehicles shift to plug-in hybrid electric (PHEV); 2% shift to battery-electric (BEV); 5% shift to CNG 8% of diesel passenger vehicles shift to PHEV; 2% shift to battery-electric (BEV); 5% shift to CNG 8% of gasoline light-duty trucks shift to PHEV; 2% shift to battery-electric (BEV); 5% shift to CNG 25% of gasoline heavy-duty trucks shift to CNG; 25% of diesel heavy-duty trucks shift to CNG; 45% of diesel buses shift to CNG, 30% shift to PHEV	2035

Tracking Mechanisms

Goal: Track community-wide shift towards alternative fuel vehicles.

As with Measure C-T-3, tracking the transition of the community-wide vehicle mix towards greater numbers of alternative fuel vehicles will also be a challenge given the lack of readily-available data. The baseline level of community-wide vehicle composition was developed using the Air Resources Board's EMFAC model for Santa Clara County, and then scaled to Cupertino. This provided a modeled (i.e., not empirical) understanding of the community's fleet make up. The vehicle fleet transition estimates shown as Progress Indicators by vehicle and fuel type were then prepared based on industry estimates for technology adoption in the future.

Assuming the Department of Motor Vehicles will not provide data to the City detailing the number and type of vehicles registered to Cupertino addresses, the City could attempt to collect this information voluntarily. An online, voluntary community survey that asks residents about their personal vehicles could provide some insights. Questions might include:

- What are the number and type of vehicles owned / leased in your household?

- What are the ages of your vehicles?

- Would you consider purchasing an alternative fuel vehicle as your next personal vehicle?

- If no, what would prevent you from considering alternative fuel vehicles as an option?

- Are you aware of the refueling / recharging options available to you within Cupertino for alternative fuel vehicles?

MTC, ABAG, the County Office of Sustainability, ARB, or other organizations may have their own on-going studies related to this topic, which could also be analyzed and used as a proxy for empirical data. The City could also partner with the Chamber of Commerce and local businesses to perform informal surveys of employees' alternative fuel vehicles, based on use of EV charging stations, priority parking areas, or other employee-offered incentive programs.

The City could also advocate for ARB to develop vehicle characterization studies for cities, counties, and/or regions of the state using empirical Department of Motor Vehicle data, assuming it could be aggregated sufficiently to avoid data privacy concerns.

MEASURE C-W-1   SB-X7-7

Implement water conservation policies contained within Cupertino's Urban Water Management Plan to achieve 20 percent per capita water reductions by 2020.

Actions and Implementation Steps	Department/Staff Responsible	Phasing
A. Develop public information campaign that highlights/advertises City projects and landscaping practices that conserve water (e.g., drought-tolerant landscaping, efficient irrigations systems)	Sustainability Division, Staff person	Medium-term, FY "Year"
B. Work with local water providers to identify opportunities for water use data tracking and reporting at community-wide level; if successful, share this information through CAP's annual progress reporting procedures, aligned with required General Plan implementation annual reports	Sustainability Division, Staff person	Near-term, FY "Year"
C. Partner with community/neighborhood groups to promote existing water conservation programs and participation in voluntary turf-removal programs	Sustainability Division, Staff person	Near-term, FY "Year"

Progress Indicator	Year
20% per capita water use reduction of 2010 baseline use	2020
20% per capita water use reduction of 2010 baseline use	2035

Tracking Mechanisms

Goal: Track per capita water use compared to 2010 baseline levels.

The City's urban water providers (i.e., San Jose Water Company and California Water Service Company) should document progress towards and achievement of the SB-X7-7 legislation goals in future Urban Water Management Plan updates. Reductions associated with this measure are based on the assumption that both water providers would achieve the goals by 2020, and that water conservation targets would not be increased after 2020. UWMP are updated on five-year cycles, so the City will need to work with its water providers to estimate annual water savings for intermediary years (i.e., between UWMP updates). As described in the CAP, the City should work with its water providers to establish an aggregated water consumption reporting program to allow easier tracking of annual community-wide water consumption. These consumption levels can then be compared against each other to track actual water use reductions, as well as increased water efficiency in the form of declining per capita water use.

The City should also continue to monitor state and local efforts at water conservation, particularly if they result in mandates or incentive-based programs that aim to exceed the current requirements of SB-X7-7. Additional water conservation beyond the levels shown in the Progress Indicator would likely result in greater emissions reductions than those estimated in the CAP.

MEASURE C-W-2   Recycled Water Irrigation Program

Explore opportunities to use recycled water for irrigation purposes to reduce potable water demands.

Actions and Implementation Steps	Department/Staff Responsible	Phasing
A. Conduct feasibility analysis to determine potential for recycled water systems in Cupertino; map locations of large irrigation water users (now and likely future users) to identify feasible extent of new system	Grounds & Fleet Division, Staff person	Long-term, FY "Year"
B. Continue to monitor regional discussions regarding expansion of existing recycled water systems in neighboring jurisdictions	Sustainability Division, Staff person	On-going, FY "Year"
C. Identify City-owned site to install educational demonstration project that showcases water-efficient landscaping strategies, alternative irrigation options, and/or low-impact landscape design techniques	Sustainability, Grounds & Fleet Divisions, Staff person	Short-term, FY "Year"

MEASURE C-SW-1		Zero Waste Goal

Maximize solid waste diversion community-wide through preparation of a zero-waste strategic plan

Actions and Implementation Steps	Department/Staff Responsible	Phasing
A. Continue to implement City's goal to divert 75% of community-wide solid waste through franchise waste hauling contract	Environmental Division, Staff person	Near-term, FY "Year"
B. Prepare residential and commercial waste characterization studies to identify Cupertino-specific opportunities for additional waste diversion; use study results to develop outreach campaigns that increase participation in City's existing waste management programs, targeting specific waste types and/or sources	Environmental Division, Staff person	Medium-term, FY "Year"
C. Establish timeline and funding mechanism to perform periodic Waste Characterization Study updates to evaluate efficacy of new outreach programs	Environmental Division, Staff person	Long-term, FY "Year"
D. Develop robust outreach campaign to ensure community-wide understanding of materials management service offerings, drive behavior change focused on lifecycle of materials (i.e., source reduction, materials reuse, end-of-life), and facilitate access to emerging materials management support tools (i.e., those focused on sharing economy and collaborative consumption)	Environmental Division, Staff person	Long-term, FY "Year"

MEASURE C-SW-2	Food Scrap and Compostable Paper Diversion

Continue to promote the collection of food scraps and compostable paper through the City's organics collection program.

Actions and Implementation Steps	Department/Staff Responsible	Phasing
A. Continue to implement the City's organics collection program outreach campaign, including outreach to Cupertino's business community regarding upcoming commercial food waste ordinance	Environmental Division, Staff person	On-going, FY "Year"
B. Provide information to local elementary schools on existing organics collection program for incorporation into on-going recycling program curriculum	Environmental Division, Staff person	Medium-term, FY "Year"
C. Work with franchise waste haulers, the Cupertino Chamber of Commerce, and other local business organizations to increase voluntary participation in City's organics collection program; provide technical assistance based on best practice examples to overcome collection bin storage / placement barriers	Environmental Division, Staff person	Medium-term, FY "Year"

Progress Indicator	Year
Households divert 40% of food scraps and compostable paper; 10% of businesses divert 20% of food scraps and compostable paper; Households and businesses divert 85% of yard waste	2020
Households divert 60% of food scraps and compostable paper; 30% of businesses divert 20% of food scraps and compostable paper; Households and businesses divert 90% of yard waste	2035

Tracking Mechanisms

Goal: Track the percentage of compostable food and paper that are diverted from the solid waste stream.

The most accurate implementation monitoring strategy would include the preparation of residential and commercial solid waste characterization surveys to identify the specific ratios of various waste categories present in the community's trash. The reduction estimates prepared for this measure are based on the State's 2008 Waste Characterization Study. However, it is likely that the city's actual waste profile is different than that of the statewide average given the character of the community and existing waste diversion programs that have already been implemented.

StopWaste.org prepared community residential waste characterization surveys for participating cities in the East Bay, and would be a good reference to determine associated survey costs and appropriate update timelines. The City's contract waste hauler may also provide this type of service, along with tailored recommendations for how to increase diversion rates.

If financially viable, the City should prepare waste characterization surveys as part of the emissions inventory update process for the three target years (i.e., 2020, 2035, 2050), with additional interim surveys prepared when possible. The City can also solicit voluntary input on participation in waste diversion programs through partnerships with the Chamber of Commerce, local elementary schools, community events, and/or online questionnaires.

MEASURE C-SW-3　　Construction & Demolition Waste Diversion Program

Continue to enforce diversion requirements in City's Construction & Demolition Debris Diversion and Green Building Ordinances.

Actions and Implementation Steps	Department/Staff Responsible	Phasing
A. Continue to implement City's 60% C&D diversion requirement for applicable projects as defined in City's Construction and Demolition Debris Diversion Ordinance	Environmental Division, Staff person	On-going, FY "Year"
B. Work with franchise waste haulers to evaluate capability of area landfill operators to maximize C&D waste diversion (e.g., 75% diversion)	Environmental Division, Staff person	Long-term, FY "Year"
C. Consider increasing City's diversion requirements to 75% diversion to support zero-waste goal (see SW-1); alternatively, only target scrap lumber with 75% diversion requirement, if found to be feasible	Environmental Division, Staff person	Long-term, FY "Year"
D. Consider developing Construction and Demolition Debris Diversion Deposit Program to help enforce C&D ordinance, in which deposit is paid to City prior to issuance of building permit and refunded to applicant following submittal / approval of applicable waste diversion documentation	Environmental Division, Staff person	Long-term, FY "Year"

Progress Indicator	Year
60% of construction and demolition waste diverted, per City's ordinance – approximately 2,600 tons/yr	2020
75% of construction and demolition waste diverted – approximately 3,500 tons/yr	2035

Tracking Mechanisms

Goal: Track the percentage of construction and demolition waste that is diverted from the solid waste stream.

See Tracking Mechanism description in Measure C-SW-2

In addition to the previously described waste characterization surveys, the City could develop a Debris Diversion Deposit Program to allow tracking of C&D waste diversion participation. This type of program, popular in San Diego County jurisdictions, would require payment of a deposit prior to receipt of a building permit. The deposit could be based on a $/sqft ratio or a percentage of total project costs. Following project completion, the applicant may submit documentation (prepared by their contractor or landfill / recycling center staff) demonstrating compliance with the City's C&D diversion ordinance to receive a full deposit refund.

The reduction estimates associated with this measure assumes full implementation of the City's existing C&D diversion ordinance. If the City should begin requiring debris diversion documentation, it should be analyzed to identify the total tons of lumber diverted annually through implementation of this measure since lumber is an organic construction material that would otherwise generate methane emissions in a landfill environment. The CAP indicates the estimated tonnage of lumber diversion for the target years, which can be compared to actual diversion amounts. It should be noted, that simply entering this lumber tonnage value into ICLEI's GEM software will generate emissions reduction estimates that are incompatible with those used in the CAP because the GEM program is based on the EPA's WARM methodology, while the CAP utilized the ARB's first-order decay methodology.

MEASURE C-G-1   Urban Forest Program

Support development and maintenance of a healthy, vibrant urban forest through outreach, incentives, and strategic leadership.

	Actions and Implementation Steps	Department/Staff Responsible	Phasing
A.	Continue implementing landscaping requirements in City's Development Standards, Design Guidelines, and other regulatory documents	Planning Division, Staff person	On-going, FY "Year"
B.	Partner with neighborhood groups, community organizations, and business community to encourage voluntary tree planting on private property within Cupertino; identify opportunities for such organizations to assist City with maintenance of street trees planted within public rights-of-way	Sustainability Division, Staff person	Long-term, FY "Year"
C.	Consider developing strategic, long-range plan to identify policies and strategies to proactively manage and grow the City's street tree population	Trees & Right-of-Way Division, Staff person	Long-term, FY "Year"
D.	Evaluate opportunities to expand current ordinances and codes to prioritize expansion of City's green and cool roofs, as well as pervious and cool pavement	Sustainability Division; Planning Division, Staff person	Medium-term, FY "Year"
E.	Assess opportunities to expand Cupertino's network of community gardens, demonstration gardens, and edible schoolyards through Stevens Creek Corridor Maser Plan process, targeted Green@Home or Green@School campaign, and strengthened Rotary Club partnership	Recreation and Community Services Department, Staff person	Medium-term, FY "Year"
F.	Expand community and school gardens, and evaluate opportunities to develop prevalent demonstration garden that incorporates water-sensitive design and advanced irrigation control technology (if irrigation system is necessary)	Recreation and Community Services Department, Staff person	Medium-term, FY "Year"
G.	Pair expanded garden network with new naturalist and education programs and trainings to build community knowledge of gardening techniques and associated health, environmental, and financial benefits	Recreation and Community Services Department, Staff person	Medium-term, FY "Year"
H.	Install informational placards or signs at new gardens that quantify emissions reductions from local food sources and water saving potential from native plants and refer public to additional informational resources	Recreation and Community Services Department, Staff person	Medium-term, FY "Year"
Progress Indicator		**Year**	
2,500 net new trees planted in the city from 2015 onward		2020	
2,800 net new trees planted in the city from 2015 onward		2035	

MEASURE C-G-1   Urban Forest Program

Support development and maintenance of a healthy, vibrant urban forest through outreach, incentives, and strategic leadership.

Tracking Mechanisms

Goal: Count the number of net new trees planted community-wide.

The emissions reduction estimates for this measure are primarily based on the assumption that the nearly 2,400 net new trees to be planted as part of the Apple 2 Campus will actually occur. The City should continue to work closely with the project applicant to verify the actual final number of net new trees that are planted during project construction.

The remaining approximately 100 trees assumed to be planted by 2020 would occur in the remainder of the community. Since a building permit is not required to plant a tree, there is likely limited opportunity for City interaction with these remaining 100 trees. The City should maintain relationships with neighborhood organizations or non-profits that may lead local tree-planting campaigns, and ask for reports on program results.

Similarly, the City can check-in with its PG&E community representative annually to request results associated with utility shade tree planting campaigns. While no related programs are currently offered by PG&E, they may be offered again in the future.

Finally, the City should develop a CAP data collection program and procedure to gather relevant data from City departments on an annual basis. The Public Works Department or Parks Department may plant new trees each year along streets and in parks (beyond replacements for dead or diseased trees), which would also count towards the remaining 100 trees estimated in the measure reduction calculations.

MEASURE M-F-1   Sustainable Energy Portfolio

Procure low-carbon electricity through utility-based programs or participation in a Community Choice Energy District.

Actions and Implementation Steps	Department/Staff Responsible	Phasing
A. Support Utility-Enhanced Clean Generation Portfolio		
▪ Conduct feasibility study of PG&E Green Option financial costs (per kilowatt hour (kWh) costs have not been finalized yet as part of program development) for City to purchase part or all of its electricity from renewable sources ▪ Develop resolution to opt into PG&E Green Option program for municipal electricity purchases (Note: program is currently capped at 272 MW and as 5 year pilot program; it is currently unknown how enrollment decisions will be made should program become fully subscribed)	Sustainability Division, Staff person	Near-term, FY "Year"

Progress Indicator	Year
Assumes 100% of municipal electricity use in 2020 comes from 75% renewable (or zero carbon) sources via PG&E Green Option	2020

Tracking Mechanisms

Goal: Track portion of municipal electricity that comes from renewable sources.

Gather information on source(s) of municipal electricity (e.g, PG&E, CCE program) and each sources' emissions factor (i.e., MT CO_2e/kWh) annually

Monitor portion of municipal electricity that is generated from emissions-free sources on annual basis and compare to previous years in annual CAP update reports

Calculate total kWh that come from standard grid electricity (e.g., not generated on site through solar PVs, not provided through PG&E Green Option program or participation in a CCE); use this value when revising RPS emissions reductions for future CAP updates to accurately account for portion of municipal electricity use that would be affected by the RPS

B. Create Community Choice Energy Option		

▪ Continue to monitor CCE efforts within Santa Clara County, City of San Francisco, and East San Francisco Bay cities; if local support exists to further consider CCE options within Cupertino, pursue the following steps:
  o   Identify potential jurisdictional partners for development of CCE (e.g., Sunnyvale, Mountain View)
  o   Conduct feasibility study to assess viability of CCE program in Cupertino (can be conducted jointly with other jurisdictional partners)
  o   Based on results of feasibility study, pursue development of (or participation in) CCE per state requirements
  o   Adopt resolution for City to participate in CCE
  o   Determine feasibility of City to purchase electricity for municipal operations from CCE, based on approved CCE rate structure; CCE may provide options for level of participation (e.g., 50% clean electricity, 100% clean electricity)
	Sustainability Division,
	Staff person
		Near-term,
		FY "Year"

MEASURE M-F-1 Sustainable Energy Portfolio

Procure low-carbon electricity through utility-based programs or participation in a Community Choice Energy District.

Progress Indicator	Year
Assumes 100% of municipal electricity use in 2020 comes from 100% renewable (or zero carbon) sources via CCE program	2020

Tracking Mechanisms
Same as M-F-1 A

MEASURE M-F-2	Renewable or Low-Carbon Electricity Generation

Develop renewable energy facilities at municipal buildings and facilities.

Actions and Implementation Steps	Department/Staff Responsible	Phasing
A. Install Solar PV Installations on City Buildings / Property		
▪ Based on results of City's previous solar feasibility study, pursue PV installations at City Hall complex, Quinlan Community Center, Cupertino Library, Corporation Yard, and Civic Center carports through Santa Clara County Regional PPA or other financing option (e.g., City procurement, lease-to-own) ▪ Review future potential for additional PV installations at sites associated with implementation of Civic Center Master Plan (e.g., Teen Center, new City Hall, Sheriff's Office)	Capital Improvement Program Division, Staff person	On-going, FY "Year"

Progress Indicator	Year
Assumes five solar sites are developed for total installed capacity of 508 kW generating 818,000 kWh/yr	2020

Tracking Mechanisms

Goal: Calculate total electricity generation capacity of municipal solar PV systems.

Collect PV system installation data from renewable energy project contracts (or meters) and analyze to gauge progress toward goals:

- What was the total installed generation capacity (in kW) for the photovoltaic systems?

- How many kWh/yr of electricity are estimated to be generated from the photovoltaic systems (prior to installation)?

- How many kWh/yr of electricity are actually generated from the system (following one-year of system operation)?

Per Appendix B, emissions reductions were calculated by multiplying kWh/yr generated by PG&E's estimated 2020 emissions factor. The City can perform this same simple math annually to provide accurate estimates of emissions reductions associated with PV installations as they begin to occur. Should the City install a lower total capacity than estimated or the systems generate less electricity than estimated, revisions to the CAP's reduction totals can be prepared using empirical data. Similarly, should electricity generation be higher than estimated, then emissions reductions will also be higher (assuming the increased electricity is used by municipal buildings / facilities to offset grid-provided electricity, and not just sold back to the utility company).

B. Install Solar Thermal Installations on City Facilities		
▪ Following implementation of other energy audit improvement opportunities, conduct further feasibility analysis for primary solar thermal systems identified in audit (i.e., Blackberry Farm Pool and Sports Center) ▪ Identify funding / financing source to implement cost-effective solar thermal options at opportunity sites, either through ESCO contract or direct City install ▪ As part of the Capital Improvement Program (CIP), annually review hot water usage at City buildings and facilities to identify additional cost-effective opportunities for solar thermal installations; City could additionally consider developing a Green CIP that aggregates findings and recommendations from this CAP into one document mirroring existing CIP process	Facilities, Capital Improvement Program, and Sustainability Divisions, Staff person	Long-term, FY "Year"

MEASURE M-F-2   Renewable or Low-Carbon Electricity Generation

Develop renewable energy facilities at municipal buildings and facilities.

Progress Indicator	Year
Assumes no solar thermal systems are pursued prior to 2020	2020

Tracking Mechanisms

Goal: Calculate total energy use avoided through installation of solar hot water heaters.

The CAP assumes that no solar hot water systems will be installed on municipal buildings / facilities prior to 2020. When these systems are installed in the future, the City should collect installation data from renewable energy project contracts (or meters) and analyze it to calculate associated emissions reductions:

- How many therms of natural gas are estimated to be reduced by the solar hot water systems (prior to system installation)?

- How many therms are actually reduced by the system (following one-year of system operation)?

- In the case of electric hot water heaters, how many kWh are reduced following installation of the system?

- Based on the actual system results, are there other opportunity sites for additional solar hot water system installations?

MEASURE M-F-3	Advance Energy Management Activities

Reduce energy consumption in existing municipal buildings through data analysis, interactive management systems, employee education, and building operation and maintenance policies.

Actions and Implementation Steps	Department/Staff Responsible	Phasing
A. Develop Advanced Energy Efficiency Analytics		
- Identify appropriate energy analytics firm with which to partner; this could be regional implementation opportunity to secure discounted large group rate - consult other area jurisdictions when pursuing this option - Create operating framework that allows facilities managers to implement findings into building operations - Use high-resolution data from analytics (e.g., appliance end-use) to inform development of targeted energy efficiency retrofit programs [see M-F-4]	Facilities & Sustainability Divisions, Staff person	Medium-term, FY "Year"
Progress Indicator	**Year**	
Assumes 14.5% reduction in 2010 baseline building electricity use (i.e., 410,000 kWh/yr saved) and 14.3% reduction in 2010 baseline building natural gas use (i.e., 6,900 therms/yr saved)	2020	

Tracking Mechanisms

Goal: Track energy savings from advanced energy analytics program participation.

Work with selected energy analytics firm to generate annual results summaries that show electricity and natural gas savings by building; set up data collection system to calculate year-over-year changes (e.g., additional 5,000 kWh saved in 2018) as well as provide total energy savings since program inception

Compare total energy savings across all buildings / facilities to CAP's 2010 baseline levels to calculate progress toward measure estimates (i.e., Progress Indicator)

B. Benchmark & Track Consumption Data Collected per Facility		
- Work with PG&E to install additional electricity and gas meters (where applicable) to allow improved facility-level energy use analysis; when feasible, combine similar end uses into one meter (e.g., park unit's lighting combined into one meter, park unit's buildings provided on separate meters) to allow monitoring of specific energy efficiency improvements or comparison of annual energy benchmarking - After installation of additional meters, organize PG&E data by facility and City department (e.g., Meters 1, 2 and 3 represent Memorial Park) - Benchmark all eligible municipal facilities using ENERGY STAR Portfolio Manager - Implement process to track and report municipal energy usage through quarterly or annual staff reports; explore options to make information publicly available through an open data portal system	Facilities & Sustainability Divisions, Staff person	Long-term, FY "Year"

No Tracking Mechanisms – Supports implementation of Action A

MEASURE M-F-3	Advance Energy Management Activities

Reduce energy consumption in existing municipal buildings through data analysis, interactive management systems, employee education, and building operation and maintenance policies.

C. Install Energy Management Systems

▪ Work with energy analytics firm and City IT department to identify additional opportunities for office system EMS to automate control and monitoring of office equipment (e.g., computers, monitors, printers), beyond those already installed, including strategy for advanced power strip purchases and use in City buildings ▪ Work with energy analytics firm to review existing advanced lighting controls/monitoring systems (e.g., automatic dimmers), ensure proper operation, and identify opportunities for additional installations in other City buildings/facilities	Facilities & Sustainability Divisions, Staff person	On-going, FY "Year"

No Tracking Mechanisms – Supports implementation of Action A

D. Introduce Retro-Commissioning Program

▪ Formalize program that requires all major systems (e.g., HVAC) in existing buildings / facilities to be retro-commissioned at 5-year intervals ▪ Sync regular retro-commissioning efforts with services provided by existing building systems maintenance contracts	Facilities & Sustainability Divisions, Staff person	Medium-Term, FY "Year"

No Tracking Mechanisms – Supports implementation of Action A

E. Design / Implement Facilities & Equipment Energy Management Policy

▪ Research and collect facility-related energy conservation policies and procedures from cities locally and nationally ▪ Develop draft Policy and Procedure that outlines facility energy and water conservation goals, employee responsibilities, operating equipment procedures, and purchasing guidelines, to ensure consistency with City's Environmentally Preferable Procurement Policy ▪ Implement Procedure and track progress to achieve utility cost and resource savings on periodic basis ▪ Adjust Procedure as best practices evolve and new technologies are introduced to achieve larger financial and utility conservation gains over time ▪ Identify third-party certification programs and rating criteria to recognize Cupertino's utility conservation efforts	Facilities & Sustainability Divisions, Staff person	Near-Term, FY "Year"

No Tracking Mechanisms – Supports implementation of Action A

F. Bolster Employee Behavior Change through Information / Education

▪ Install energy use dashboards in City Hall and primary municipal buildings (e.g., public-facing and high energy use); work with PG&E to install individual building meters, as necessary, to allow building-specific energy use reporting (see M-F-3 B)	Sustainability Division, Staff person	Medium-Term, FY "Year"

MEASURE M-F-3   Advance Energy Management Activities

Reduce energy consumption in existing municipal buildings through data analysis, interactive management systems, employee education, and building operation and maintenance policies.

▪ Provide facility managers with training on advanced building operations systems in order to maximize effectiveness of City's building systems		
▪ Set specific department-level energy use targets and encourage employees in the buildings to participate in energy efficiency achievement (may need additional PG&E meters installed, per M-F-3 B, to accurately track this)		
▪ Continue to distribute and refer staff to City's handbook with instructional guides to help implement ENERGY STAR purchasing requirements; existing handbook also serves as user-friendly resource to guide City purchases of "green" products, such as furniture, carpeting / flooring, paints, packaging materials, etc., which further supports Measure M-SW-1 C		

No Tracking Mechanisms – Supports implementation of Action A

MEASURE M-F-4	Grow Existing Building Energy Retrofit Efforts

Reduce energy consumption in existing municipal buildings through energy efficiency improvements.

Actions and Implementation Steps	Department/Staff Responsible	Phasing
A. Complete Building Retrofits		
▪ Use results from advanced analytics program (see M-F-3 A) to identify appliances and building systems that are underperforming from energy use perspective, and develop prioritization plan for equipment replacement / building retrofits; work with PG&E to identify available rebates, incentives, or on-bill financing opportunities for various improvements ▪ Continue to make progress on implementing efficiency opportunity findings from City's Detailed Energy Audit; establish budget priority for Energy Audit update in next five years	Facilities & Sustainability Divisions, Staff person	On-going, FY "Year"

Progress Indicator	Year
Assumes 254,000 kWh/yr saved as result of interior lighting retrofits and occupancy sensors, and 59,000 kWh/yr saved as a result of plug load controllers (assumed 200 controllers installed)	2020

Tracking Mechanisms

Goal: Track energy use reductions associated with building retrofits.

There will possibly be some overlap among reductions associated with Measures M-F-3 and M-F-4. While total municipal energy use reductions are the primary goal, the purpose of this appendix is to provide a framework that supports measure-specific implementation tracking to gauge the success and opportunities for growth of certain measures.

The City already has energy use reduction estimates associated with the prescribed building retrofits, which were included in the City's Detailed Energy Audit. The City should record the associated buildings' /facilities' electricity use prior to installation of the interior lighting retrofits and occupancy sensor installations, and record the resulting electricity use post-installation to roughly estimate the measure's energy savings. If other retrofit projects or advanced building energy analytics programs happened concurrently, these individual energy reductions should be calculated separately, to the extent feasible.

The City may find it useful to create building / facility-specific Excel spreadsheets to track annual electricity and natural gas use; identify associated utility account numbers; and track all associated energy conservation project installations, including project date, estimated savings, actual savings (one year post-installation), and pre- and post-energy use levels

B. Establish Energy Efficiency Fund		
▪ Evaluate the potential for and requirements (e.g., size, terms, etc.) of a self-sustaining City energy efficiency revolving loan fund to implement findings of various City energy efficiency and renewable energy development opportunity studies; City of San José used this approach as one source of multiple project financing sources ▪ Develop fund parameters that support continual replenishment of funding pool (e.g., 80% of cost savings resulting from project implementation are returned to fund for 5 years after which additional savings accrue to project's implementing department) ▪ Allocate or secure funding for long-term energy	Sustainability Division, Staff person	Long-term, FY "Year"

MEASURE M-F-4	Grow Existing Building Energy Retrofit Efforts

Reduce energy consumption in existing municipal buildings through energy efficiency improvements.

efficiency fund (from EECBG program, municipal bond, etc.) ▪ Assign manager to support and coordinate fund and its projects ▪ Discuss opportunities and potential program structure for regional revolving loan fund with neighboring jurisdictions, which could provide access to additional seed funding sources		

<div align="center">No Tracking Mechanisms – Supports implementation of Action A</div>

C. Set Standards and Targets		
▪ Continue to implement City's Green Building Ordinance as it relates to municipal building retrofits ▪ Consider developing additional guidance for municipal building retrofits that encourages pursuit of energy- or water conservation-related points towards achievement of required LEED certification to prioritize these building efficiency outcomes; alternatively, City could define explicit energy efficiency performance levels or design feature expectations for new projects	Facilities & Planning Divisions, Staff person	Long-term, FY "Year"

<div align="center">No Tracking Mechanisms – Supports implementation of Action A</div>

D. Adopt a Demonstration Policy		
▪ Draft City Technology Demonstration Policy to assist local businesses with testing and demonstrating functionality of emerging technologies ▪ Implement the policy and revise based on industry best practices and trends as they arise ▪ Pursue grant opportunities that expand technology demonstration opportunities in municipal facilities and through local business partnerships, coordinated with the City's Economic Development Office (e.g., CEC Electric Power Investment Charge Grants (EPIC) - http://www.energy.ca.gov/research/epic/)	Facilities & Planning Divisions, Staff person	Medium-term, FY "Year"

<div align="center">No Tracking Mechanisms – Supports implementation of Action A</div>

MEASURE M-F-5	Expand New Building Energy Performance

Establish energy efficiency targets for new municipal buildings.

Actions and Implementation Steps	Department/Staff Responsible	Phasing
A. Update Green Building Standard – Energy Performance Guidance		
▪ Continue to implement City's Green Building Ordinance as it relates to new municipal building construction ▪ Consider developing additional guidance for new municipal building projects that encourages pursuit of energy- or water conservation-related points towards achievement of required LEED certification to prioritize these building efficiency outcomes; alternatively, City could define explicit energy efficiency performance levels or design feature expectations for new projects ▪ Build recommendations into City's Capital Improvement Program ▪ Identify opportunities for passive solar design and consider solar orientation for active solar installments in new construction ▪ Consider including solar-ready construction requirements for new municipal buildings with appropriate solar orientation, roof size, etc.	Facilities, Capital Improvement Program & Sustainability Divisions, Staff person	Long-term, FY "Year"

Progress Indicator	Year
All new municipal construction complies with the City's Green Building Ordinance	2020

Tracking Mechanisms

Goal: Calculate energy savings related to implementation of City's Green Building Ordinance.

The CAP does not include reductions associated with this measure because it was too speculative at the time of plan development to estimate the exact nature of future new municipal construction projects. However, the City has adopted a Green Building Ordinance, which will likely result in reduced energy use over a typical baseline scenario.

As part of the LEED certification process, a project needs to model the proposed building's energy use under a baseline scenario and demonstrate how achievement of certain LEED design requirements will result in a building with a reduced modeled energy use.

As the City pursues construction of new municipal buildings in the future, the proposed building's baseline modeled energy use should be recorded, as well as the estimated energy use from the final design. This information should be recorded in the same place as the building retrofit data described in Measure M-F-4 A (i.e., in a comprehensive Excel file that tracks energy use of each municipal building / facility). After one full year of building occupancy, the building's actual energy use should be recorded as well. The difference between the modeled baseline energy use and the actual occupied building energy use should be converted to MT CO_2e/yr, and can be included in future CAP updates as a new reduction source. This reduction would take credit for any energy use savings resulting from the difference between a building constructed without the City's Green Building Ordinance and one constructed to its requirements.

MEASURE M-F-6	Complete Citywide Public Realm Lighting Efficiency

Upgrade public realm lighting to more efficient technology.

Actions and Implementation Steps	Department/Staff Responsible	Phasing
A. Complete Street Light Retrofits		
- Consider best practices in lighting technology at time of bulb and / or fixture replacement or repair - Ensure that new street light installations achieve comparable or better efficiency level as achieved through previous street light retrofit program.	Streets Division, Staff person	On-going, FY "Year"
Progress Indicator	**Year**	
Achieved! – 872,000 kWh/yr saved through street light retrofit program	2020	

Tracking Mechanisms

Goal: Track electricity savings from street light retrofits.

The City already implemented street light retrofits and quantified their resulting electricity savings through its Detailed Energy Audit.

Should the City's street light service expand in the future into currently un-lighted areas, then the City should estimate the new lights' energy use under two scenarios. In Scenario 1, the City would install lights comparable to those used throughout the City prior to the street light retrofit program (e.g., high-pressure sodium lights). In Scenario 2, the City would install its selected new street lights. The difference in these two scenarios could represent an additional reductions source.

Before applying this reduction to future CAP updates though, the City should first verify that the new street light energy use falls within the estimated street light emissions sector growth shown on Table 2.5 of the CAP (e.g., 16 MT CO_2e/yr between 2010 and 2020). If it does, then this new reduction source can be applied. If it doesn't, then the future year Public Lighting energy use estimates would need to be revised upward to accommodate this new emissions source (e.g., the Scenario 1 energy use) before the reductions estimate could be applied.

B. Retrofit Remaining Parking Lot and Park Facility Lighting		
- Identify City-owned parking lot lighting that has not yet been converted to LED, magnetic induction, or similar highly-efficient technology - Identify park lighting (e.g., pathways, restroom facilities, area lighting, sport field lighting) that has not yet been converted to LED, magnetic induction, or similar high-efficiency technology - Identify appropriate energy-efficient lighting technologies for sports fields / courts that still provide lighting levels required for applicable sporting use - Develop implementation timeline and funding program; contact City's PG&E account representative regarding availability of rebate programs and / or on-bill financing options to cover retrofit program - Consider updating City's Standard Provisions or other lighting guidance documents to specify efficiency levels to be achieved in new installations or lighting retrofit projects.	Streets Division, Staff person	Near-term, FY "Year"

MEASURE M-F-6   Complete Citywide Public Realm Lighting Efficiency

Upgrade public realm lighting to more efficient technology.

Actions and Implementation Steps	Department/Staff Responsible	Phasing
Progress Indicator	**Year**	
Achieved! – 75,000 kWh/yr saved through park unit parking lot and pathway light retrofit program	2020	

Tracking Mechanisms

Goal: Track electricity savings from park light retrofits.

The City already implemented some park light retrofit opportunities, and quantified their resulting electricity savings through its Detailed Energy Audit.

If the City decides to pursue additional park unit parking lot and / or pathway lighting retrofits in the future, it should prepare electricity savings estimates and compare those estimates to actual results following installation. This post-installation monitoring may be a challenge, depending on whether or not the lights in question are on their own utility meter or can easily be disaggregated from their larger unit. If the light data cannot be easily disaggregated, it may be possible to measure lighting retrofit efficacy by measure pre- and post-installation electricity use for the associated utility meter. If the other electricity uses contributing to that meter are static (i.e., do not fluctuate day to day) and do not undergo their own retrofits at the same time, the difference between pre- and post-installation could serve as a proxy for actual retrofit project energy savings.

MEASURE M-F-7	Conserve Water Through Efficient Landscaping

Implement best management practices in landscaping design and share City successes community-wide to lead by example in water conservation action.

Actions and Implementation Steps	Department/Staff Responsible	Phasing
A. Utilize Weather-Track System to Reduce Park & Median Water Use		
▪ Continue to use weather-based irrigation technology in City irrigation practices to prevent unnecessary or excessive water in public spaces ▪ Continue to provide training on the City's irrigation technology to existing and new staff to ensure proper use of the system	Grounds & Fleet Division, Staff person	On-going, FY "Year"

Progress Indicator	Year
Achieve Bay Area Climate Compact's goal for 20% water savings by 2018 over 2008 baseline Assumes 27.5 million gallons of water saved per year over 2008 baseline of 138 million gallons	2020

Tracking Mechanisms

Goal: Track municipal water use and conservation efforts.

Establish reporting framework to collect water use data from all municipal accounts into one location for use in annual CAP progress reports; report consumption by end use, if possible (e.g., park irrigation, median/roadway irrigation, indoor water use by building / facility)

If historical data is available, compare municipal water user on annual basis beginning in 2008 (i.e., baseline year for Bay Area Climate Compact water reduction goal); track changes in water consumption by end use to identify unexplained consumption increases

B. Benchmark & Track Water Use per Meter		
▪ Establish operational framework for tracking and reviewing water use at the meter level to allow identification of improper irrigation system use, leaks, or other wasteful water activities ▪ Incorporate water use reporting into overarching annual CAP reporting procedure described in Chapter 7	Sustainability, Grounds & Fleet Divisions, Staff person	On-going, FY "Year"

No Tracking Mechanisms – Supports implementation of Action A

C. Adopt Water Budget & Green Grounds Policy		
▪ Develop landscaping policy that promotes efficient watering schedules, high- and low-priority water zones (for use during pre-drought conditions), water-efficient and climate-sensitive plant selection, and compost-friendly landscape maintenance ▪ Evaluate alternative or maintain existing water-efficient irrigation technology systems, particularly in areas of high irrigation use (e.g., turf playing fields), with ET sensors and integration with weather station data streams to automate watering schedules based on current and near-term environmental conditions ▪ Train maintenance crews in use and maintenance of irrigation systems and implementation of Green	Sustainability, Trees & Right of Way, and Grounds & Fleet Divisions, Staff person	Near-term, FY "Year"

MEASURE M-F-7	Conserve Water Through Efficient Landscaping

Implement best management practices in landscaping design and share City successes community-wide to lead by example in water conservation action.

Grounds policy		
▪ Consider use of water budgets for irrigated landscape areas		
Create education stations or post information to City's website that describe City's green grounds practices		

<div align="center">No Tracking Mechanisms – Supports implementation of Action A</div>

D. Use Bay-Friendly Landscaping Techniques across Parks & Medians; Install Demonstration Gardens

▪ Adopt city-wide policy that requires specification of Bay-Friendly, drought-tolerant landscapes in any new City project or private project receiving City funds to include landscaped areas as project element ▪ Expand Parks & Recreation Green Policies, which focus on water-efficient landscaping, across all departments to prioritize Bay-friendly and efficient irrigation practices and technologies to maintain City's landscaped facilities, parks, medians, and streetscapes, and to become more resilient to water shortages; Couple implementation of these goals with projects that also minimize impervious surfaces and ensure adequate soil drainage ▪ Develop implementation and funding schedule to update public landscapes, including turf conversion and hydrozoning projects, to designs that more closely align with Bay-friendly landscaping techniques ▪ Provide maintenance specifications and procedures to support staff's pruning, pest-control, irrigation, and general oversight of these new plant materials ▪ Pursue project third-party certification through Bay-Friendly Rated Landscapes, where applicable, or build landscaping water conservation initiatives into future site-wide comprehensive rating program applications (e.g., LEED, California Green Business Program) ▪ Install informational placards or signs at new landscaping installations that quantify water saving potential from new designs and refer public to additional informational resources ▪ Develop informational materials based upon City's practices and lessons learned to support effective implementation of City's Water Efficient Landscaping Ordinance	Sustainability, Grounds & Fleet Divisions, Staff person	On-going, FY "Year"

<div align="center">No Tracking Mechanisms – Supports implementation of Action A</div>

E. Install Graywater and Rainwater Catchment Systems in New Construction and Major Retrofit Projects

▪ Incorporate graywater plumbing and/or rainwater catchment systems in new municipal buildings, where appropriate ▪ Develop public-facing informational placards/signs that explain these systems and quantify their potable water-savings potential	Facilities, Capital Improvement Program & Sustainability Divisions, Staff person	On-going, FY "Year"

<div align="center">No Tracking Mechanisms – Supports implementation of Action A</div>

MEASURE M-F-7   Conserve Water Through Efficient Landscaping

Implement best management practices in landscaping design and share City successes community-wide to lead by example in water conservation action.

F.   Recognize Staff "Water Wise" Practices

- Research municipal operations-oriented behavior change and utility conservation incentives programs to create model for Cupertino - Develop outreach and engagement tools to notify employees of campaign and support their program enrollment and continued involvement - Educate and train staff by sharing strategies to save water indoors and out so they may effectively participate in program - Launch "Water Wise" program and offer ongoing coaching and support - Accept "Water Wise" nominations for leading practices and employees; Collect user-generated data (e.g., checklists) and City water utility data to inform awardee selection - Recognize leaders and efforts through civic media assets, intranet, and through Council Proclamation - Survey staff following distribution of rewards to determine what worked best and where improvements can be made; This could also serve to assess what conservation measures were most frequently taken	Sustainability Division, Staff person	On-going, FY "Year"
No Tracking Mechanisms – Supports implementation of Action A		

MEASURE M-VF-1   Low Emission and Alternative Fuel Vehicles

Transition City vehicle fleet to fuel-efficient and alternative-fuel vehicle models.

Actions and Implementation Steps	Department/Staff Responsible	Phasing
A. Update Green Purchasing Policy and Vehicle Replacement Schedule to Prioritize Alternative Fuel Vehicles and Infrastructure		

▪ Develop municipal fleet low-carbon target; defined as A) Total vehicle fleet composed of X% zero- or lower-carbon vehicles; or, B) Total vehicle fleet emissions reduction target (can be achieved through combination of reduced VMT, vehicle technology, mode shift, etc.)
▪ Define vehicle fleet transition pathway to achieve Bay Area Climate Compact's Action Area Goal #10 to increase the number of zero emission and other advanced ultra-low emission light duty vehicles to 10% of municipal fleets by the end of 2013, and to 25% by the end of 2018; extend goal to 28% of municipal fleet by 2020
▪ Review existing vehicle fleet lifespan to identify number and type of vehicles to be replaced by 2020, and which could be replaced with existing models of zero- or low-emissions vehicles
▪ At time of replacement, shift passenger vehicle purchases toward EV, hybrid-electric, hydrogen fuel cell, or CNG models; consider new vehicles' carbon emissions and fuel efficiency as regular procurement criterion
▪ Fully implement fleet management software to:
   o benchmark agency fleet size and composition;
   o track fleet vehicle fuel usage, mileage, location, maintenance schedule;
   o provide maintenance diagnostic data; and
   o activate online reservation system to expand pool opportunities.
▪ Develop vocational specifications to pair with revised Vehicle Replacement Schedule and Policy
▪ Perform staff training needs assessment to support driver and mechanic transition to alternative fuel vehicles
▪ Prioritize funding for mechanic training in advanced fuel automotive technologies and offer trainings for drivers and first responders
▪ Confirm fleet-parking designations to mitigate staff concerns and maximize public parking opportunities in areas with high parking congestion; Designating locations for parking, as well as fleet vehicle charging, will create further staff-level efficiencies by enabling quick facility access upon returning from fieldwork
▪ Explore joint procurement options with other area jurisdictions to leverage regional shift towards cleaner municipal fleets into lower per vehicle costs; To facilitate this, reconnect with Public Fleet Supervisors Association as access point for piggybacking opportunities, competitive vendor pricing, and industry best management practices
	Grounds & Fleet Division,
	Staff person
		Long-term,
		FY "Year"

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MEASURE M-VF-1   Low Emission and Alternative Fuel Vehicles

Transition City vehicle fleet to fuel-efficient and alternative-fuel vehicle models.

Note: Implementation of this action is budget- and technology-dependent; emergency vehicles could be excluded from fleet target calculations and progress monitoring		
Progress Indicator		**Year**
Achieve Bay Area Climate Compact's goal for 25% of vehicle fleet to comprise zero- or low-emissions light duty vehicles by 2018. Assumes the following vehicle replacements: 5 passenger vehicles replaced with hybrid-electric models; 12 light-duty trucks replaced with hybrid-electric SUV models; 2 heavy-duty trucks replaced with more fuel-efficient heavy-duty truck models; In addition to existing 3 hybrid-electric passenger vehicles, and 2 hybrid-electric SUVs		2020

Tracking Mechanisms

Goal: Track composition of municipal fleet by vehicle type / fuel type.

The City already has a municipal fleet inventory. This inventory should be maintained to include accurate information on:

- vehicle age and target replacement year / lease duration

- fuel type and efficiency level (i.e., mpg)

- annual fuel consumption

- annual mileage

- vehicle ID #, departmental ownership

- use, specialized duties / tasks

In addition to the above information, the inventory should include the current composition of the fleet based on vehicle type (e.g., hybrid electrics, CNGs, fuel cells), as well as an indication for which vehicles should be replaced next and suitable replacement vehicle options. The fleet composition and target composition numbers should be included in the annual CAP progress reports.

B. Expand City Bike Fleet, Training, and Promotion		
▪ Continue to pursue implementation of municipal bike fleet in instances where vehicle trips can safely and easily be replaced with trips via bicycle; comprehensive bike fleet could result in opportunities to downsize municipal vehicle fleet or reduce VMT to help achieve fleet emissions target	Sustainability Division, Staff person	On-going, FY "Year"

MEASURE M-VF-1   Low Emission and Alternative Fuel Vehicles

Transition City vehicle fleet to fuel-efficient and alternative-fuel vehicle models.

<table>
<tr><td colspan="3" align="center">No Tracking Mechanisms – Supports implementation of Action A</td></tr>
<tr><td colspan="3">C.   Promote Vehicle Alternatives to Reduce Car-Travel to City-Sponsored Events</td></tr>
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Continue to pursue implementation of municipal car share program, which like municipal bike fleet could allow City to downsize its municipal vehicle fleet
Consider opportunities to expand municipal bike fleet and / or car share program as part of municipal fleet transition strategy and at time of regular vehicle replacement (e.g., could tasks performed by retired vehicle be performed with shared vehicle?)
Ensure that community-wide shuttle, car share, bike share assessment includes consideration of City staff commutes and special-event opportunities

</td>
<td align="center">Sustainability, Grounds & Fleet Divisions,
Staff person</td>
<td align="center">On-going,
FY "Year"</td>
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<tr><td colspan="3" align="center">No Tracking Mechanisms – Supports implementation of Action A</td></tr>
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MEASURE M-VF-2	Increase Alternative Fuel Infrastructure

Increase availability of alternative refueling infrastructure to support municipal fleet transition.

Actions and Implementation Steps	Department/Staff Responsible	Phasing
A. Install Electric Vehicle Charging Stations		
▪ Develop City-owned EV Charging Station Procedure to ensure proper finance, training, maintenance, and reporting functions are established for effective staff oversight ▪ Develop Alternative Vehicle Fueling Infrastructure (AVFI) standards and plan to define prospective locations and siting criteria (e.g., design guidelines, standard drawings, specifications) to facilitate on-street and off-street applications ▪ Install additional electric vehicle charging stations for municipal fleet use; as share of electric vehicles in fleet increases, ensure adequate access to charging stations for municipal vehicles through additional installations or controlled access ▪ Install portion of electric vehicle charging stations in areas accessible to community members, such as Civic Center parking lots; consider new electricity load created from EV charging stations during building design phase of Civic Center Master Plan to provide opportunities to offset this increased load through additional installation of rooftop PV systems	Transportation, Grounds & Fleet, and Sustainability Divisions, Staff person	Medium-term, FY "Year"

Progress Indicator	Year
Assumes 10 dual-port electric vehicle charging stations installed	2020

Tracking Mechanisms

Goal: Track installation of alternative vehicle refueling infrastructure as compared to vehicle fleet composition targets.

The following implementation tracking approach would apply to EV charging ports, fuel cell stations, and CNG refueling stations.

As part of the City's strategic vehicle fleet transition plan, the Grounds and Fleet Division should establish alternative fuel vehicle recharging infrastructure targets to support continued transition of the fleet. For example, it may be determined that one additional EV charging port is required to accommodate every four hybrid electric vehicles.

As part of the vehicle fleet inventory described in Action A above, the City should also inventory its alternative fuel vehicle infrastructure, including refueling stations designated for municipal use and stations available for public use (but that City vehicles would regularly use). These refueling stations should be linked to the alternative fuel vehicles in the City's fleet to identify deficiencies in refueling options.

Based on the existing refueling infrastructure, the current vehicle fleet composition, and the near-term estimated fleet composition, the City should establish alternative refueling infrastructure targets that align with the expected growth in municipal alternative fuel vehicles.

B. Evaluate Fuel Cell Fueling Station		
▪ Continue exploring opportunities to develop local fuel cell fueling station for municipal and community use ▪ Share information with neighboring jurisdictions to determine interest and feasibility of joint procurement	Transportation & Sustainability Divisions, Staff person	Long-term, FY "Year"

MEASURE M-VF-2   Increase Alternative Fuel Infrastructure

Increase availability of alternative refueling infrastructure to support municipal fleet transition.

through local vendors		
▪ Due to current limited vehicle model availability, consider model types and cost when estimating fuel cell vehicles' future role in municipal fleet transition strategy (see M-VF 1 A)		
▪ Pending feasibility analysis, construct fuel cell fueling station for municipal and / or community-wide use		

See Tracking Mechanism described in Action A

C.   Evaluate CNG Fueling Station

▪ Research opportunities for development of municipal CNG refueling station; look for partnerships with neighboring cities or local employers with large vehicle fleets for cost-share opportunities of joint-use facility ▪ Pending results of CNG feasibility study, identify funding and pursue development of CNG refueling station for municipal and public use; transition municipal fleet diesel vehicles to CNG, as appropriate, as bridge technology until cleaner heavy-duty vehicle models become widely available for integration into fleet; if better heavy-duty vehicle options become available before development of CNG station, reconsider if there is long-term role for CNG vehicles in municipal fleet	Transportation & Sustainability Divisions, Staff person	Long-term, FY "Year"

See Tracking Mechanism described in Action A

MEASURE M-VF-3   Promote Behavior/Fuel Optimization

Encourage and promote fuel efficient driving.

Actions and Implementation Steps	Department/Staff Responsible	Phasing
A. Implement Telematics to Improve Route and Fuel Optimization		
▪ Continue use of route optimization practices by Building Department for inspections ▪ Evaluate opportunities for additional route optimization of municipal vehicles that have standard operating routes (e.g., Parks Department landscaping crews); identify VMT reduction potential through new routes ▪ Develop telematics program (e.g., vehicle tracking) for City fleet to optimize vehicle operations	Grounds & Fleet, Sustainability Division, Staff person	Medium-term, FY "Year"

Progress Indicator	Year
Assumes 10% fuel savings over 2010 baseline for all passenger and light-duty trucks (i.e., 2,100 gallons of gasoline saved per year); assumes full implementation of Measure VF-1, Action A assumptions	2020

Tracking Mechanisms

Goal: Track fuel savings in vehicles equipped with telematics hardware and/or route optimization practices.

Identify vehicles to use route optimization strategies and / or telematics hardware.

Using vehicle fleet inventory data (collected annually, as described in Measure M-VF-1), track changes in annual fuel consumption for identified vehicles following implementation of telematics strategies.

B. Update Vehicle Use Policy to Prioritize Fuel-Efficient Operations and Maintenance		
▪ Establish vehicle fleet efficiency policy (i.e., operation and maintenance) that includes formal vehicle maintenance check-list targeting fuel efficiency tune-ups and fuel-efficient driving training (e.g., no speeding, idling, excessive tools/gear in vehicles); fuel-efficient driving could be monitored through vehicle fleet telematics program ▪ Continue implementation of City's anti-idling policy (with exemptions for emergency vehicles) ▪ Provide anti-idling outreach city-wide through partnership with neighborhood and community groups, with specific campaigns targeting idling in School Zones; partner with Cupertino Chamber of Commerce on anti-idling campaign in commercial districts	Grounds & Fleet, Sustainability Division, Staff person	Medium-term, FY "Year"

No Tracking Mechanisms – Supports implementation of Action A

C. Expand Commuter Benefits Program		
▪ Conduct employee commuter benefits survey to evaluate areas of priority and highest use ▪ Develop commuter benefits program expansion options, budget, and resource needs; Evaluate vendor proposals if applicable ▪ Create outreach plan and materials for communicating new unified program and benefits to employees; Develop carpool/bike/walk matching activities; Design	Sustainability & Human Resources Division, Staff person	Medium-term, FY "Year"

MEASURE M-VF-3	Promote Behavior/Fuel Optimization

Encourage and promote fuel efficient driving.

additional incentives (e.g., recognition program) ▪ Launch program, implement outreach plan, and track participation/employee feedback; Adjust as needed		

No Tracking Mechanisms – Supports implementation of Action A

D. Introduce Fuel Saving Recognition Program for Employees/Departments		
▪ Establish inter-departmental fuel savings recognition program (excluding emergency vehicles) that tracks annual fuel use by department and provides departmental employee rewards for annual improvement (either total reduction compared to a department historic average or per employee efficiency) ▪ Implement process to track and report municipal vehicle fuel usage through quarterly or annual staff reports; explore options to make information publicly available through an open data portal system	Sustainability Division, Staff person	Medium-term, FY "Year"

No Tracking Mechanisms – Supports implementation of Action A

MEASURE M-SW-1   Waste Reduction

Reduce municipal waste through procurement policies, waste diversion goals, and waste stream monitoring and analysis.

Actions and Implementation Steps	Department/Staff Responsible	Phasing
A. Establish Stretch Waste Reduction and Diversion Goals		
▪ Establish specific zero-waste goal for municipal operations (target to be included in Zero Waste Strategy update) that achieves Bay Area Climate Compact's Action Area Goal #9 to increase solid waste diversion from landfills to 75% by end of 2013 and achieve zero waste by end of 2020; City's goal is to achieve 75% diversion by 2016 ▪ In conjunction with municipal waste audits (see M-SW-1 D), establish waste reduction / diversion goals by building or department (whichever is easier to track) as means to achieving overarching zero-waste goal; re-evaluate building or department goals as part of regular waste audits ▪ Implement process to track and report municipal solid waste generation through quarterly or annual staff reports; explore options to make information publicly available through an open data portal system	Environmental Division, Staff person	Long-term, FY "Year"

Progress Indicator	Year
Assumes 80% reduction in organic waste (e.g., food scraps and compostable paper, landscape debris/trimmings, scrap lumber, paper/cardboard) from 2010 baseline; emissions reductions are shown next to actions that address specific organic waste sources (i.e., M-SW-1 B, M-SW-2 A, M-SW-3 A)	2020

Tracking Mechanisms

Goal: Track reductions in municipal solid waste disposal by waste category.

As described previously in community-wide measure C-SW-2, the best method for tracking solid waste diversion success is through waste characterization studies. Regular studies would allow the City to track increased diversion by category over time. Alternatively, one study prepared to support each target horizon year inventory update would still provide City-specific data points that can be compared against the State's 2008 Waste Characterization Study (which was used as a proxy for the City's baseline waste disposal rates by category in the emissions inventory).

The City should prepare a comprehensive waste characterization study and identify the amount of waste disposed in the solid waste stream among the following categories:

- food scraps and compostable paper

- landscape debris / trimmings

- scrap lumber

- mixed office paper / cardboard

The City can work with its solid waste auditor and / or its franchise waste hauler to identify additional waste diversion strategies to target these specific waste categories.

If possible, the waste study should provide results per City building / facility to identify specific locations for improvement.

MEASURE M-SW-1   Waste Reduction

Reduce municipal waste through procurement policies, waste diversion goals, and waste stream monitoring and analysis.

B.   Create Paperless Office Policy/Program

- Continue to implement and monitor success of office paper reduction strategies - Work with IT Department to install printer-tracking software that allows printer analytics - Conduct analysis of paper use per department to establish data trends (e.g., reams used per year, pages printed per month) - Establish City-wide paper use reduction goals based on printing analysis - Meet with individual departments to discuss results of analysis and identify additional opportunities for printing reduction and / or conversion of some file types from hard copy forms to electronic - Establish "dry" recycling collection for paper and cardboard products, as opposed to co-mingled collection for these items, to ensure highest value during recycling	Sustainability & Environmental Division, Staff person	Long-term, FY "Year"

Progress Indicator	Year
Assumes 80% diversion of municipal office paper over 2010 baseline levels	2020

See Tracking Mechanisms description in Measure M-SW-1 A

C.   Revise Green Procurement & Event Specifications, Pair with Implementation Handbook

- Continue to implement City's Environmentally Preferable Procurement Policy and refinement of staff handbook to serve as user-friendly resource to guide City purchases of "green" products, such as furniture, carpeting / flooring, paints, packaging materials, energy-efficient appliances, etc. - Design purchasing specifications that give preference to recycled products, recyclable and compostable products, products derived from renewable materials, and other products that produce lower waste across the product's lifecycle - Include reference to City's ENERGY STAR appliance procurement policy, or include as part of new Green Purchasing Guide to provide one comprehensive guidance document	Sustainability & Environmental Division, Staff person	Long-term, FY "Year"

No Tracking Mechanisms – Supports implementation of Actions A and B

D.   Conduct Waste Characterization Audits and Track Materials/Diversion

- Continue to perform waste audits at various City facilities to: - determine type / quantity of waste being produced, - measure effectiveness of existing waste diversion practices, - identify opportunities for new waste diversion practices,	Environmental Division, Staff person	Near-term, FY "Year"

MEASURE M-SW-1 Waste Reduction

Reduce municipal waste through procurement policies, waste diversion goals, and waste stream monitoring and analysis.

o establish baseline data for measuring progress towards waste reduction and diversion goals using CalRecycle data or EPA ReTrac Tool		
▪ Establish regular waste audit cycle to track implementation of various waste reduction practices		

No Tracking Mechanisms – Supports implementation of Actions A and B and Measure M-SW-2 A

MEASURE M-SW-2 Food Scrap and Compostable Paper Diversion

Continue to divert food scraps and compostable paper from municipal waste stream.

Actions and Implementation Steps	Department/Staff Responsible	Phasing
A. Expand Municipal Collection and Composting Program		
▪ Continue implementation of food scrap / compostable paper collection program at municipal buildings ▪ As part of municipal waste audits (see M-SW-1 D), identify City buildings or facilities (e.g., parks) where substantial amount of compostable waste is still disposed of in general waste bins; develop additional employee educational materials (or community materials in case of public facilities) explaining how composting program works, what items can be collected, and benefits of City action in this area ▪ If participation within City buildings indicates room for improvement, consider holding annual competitions (by building or department) to achieve lowest amount of compostable waste in landfill waste bins; competition could be timed with waste audits	Environmental Division, Staff person	Medium-term, FY "Year"
Progress Indicator	**Year**	
Assumes 90% diversion of municipal food waste and plant waste over 2010 baseline levels	2020	

See Tracking Mechanisms description in Measure M-SW-1 A

MEASURE M-SW-3   Construction and Demolition Waste Diversion

Enhance construction and demolition waste diversion rates for municipal projects.

Actions and Implementation Steps	Department/Staff Responsible	Phasing
A. Set C&D Diversion Policy for Municipal Projects		
▪ Consider amending Green Building Ordinance to require 75% diversion of C&D waste in all municipal construction projects and major retrofits (this would exceed state requirements of 50% diversion, and Cupertino's existing requirements for 60% diversion); discuss implementation feasibility with landfill operator	Environmental Division, Staff person	Long-term, FY "Year"

Progress Indicator	Year
Assumes City continues to achieve 60% diversion of construction and demolition waste from municipal projects	2020

See Tracking Mechanisms description in Measure M-SW-1 A