

MEMORANDUM

DATE May 8, 2019

TO Andrea Chow, Sustainability Analyst, City of San Mateo

FROM Tammy L. Seale, PlaceWorks Project Manager
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SUBJECT Climate Action Plan Update – Summary of potential new GHG reduction strategies

This memo summarizes the results of efforts to develop new and revised greenhouse gas (GHG) reduction strategies (Task 3.3 of the CAP Update scope of work). This task will be ongoing as the project team collaborates with City staff, the Sustainability & Infrastructure Commission, and community stakeholders. This memo presents the team's first draft of potential new strategies. We look forward to review and discussion with staff and the Sustainability and Infrastructure Commission on May 8.

GHG Reduction Strategy Development

San Mateo's existing CAP, adopted in 2015, has 28 GHG reduction measures organized into eight categories, in addition to several existing and planned local activities that have helped to reduce the community's GHG emissions since 2005. Each GHG reduction measure has a list of "recommended actions." Some of these measures have been fully implemented and do not need to be included in the updated CAP, while others can be revised or expanded. There are also opportunities to add entirely new categories, measures, or actions to address new and emerging issues not covered in the adopted CAP. New measures and actions will be necessary to meet the City's 2030 and 2050 GHG reduction targets.

As was discussed at the March 13, 2019 meeting of the Sustainability and Infrastructure Commission, the project team assessed the measures in the existing CAP as "no action", "ongoing" (for efforts that have been started and are meant to continue in perpetuity), "in progress" (for efforts that have been started and will eventually finish), or "completed". At the March 13 meeting, the project team recommended how the measures should be treated in the updated CAP:

- Update: Continue to implement the measure, making changes or updates to the language and GHG calculations.
- Remove: Delete the measure or merge it with another.

Following the meeting, the project team revised the eight categories and developed a set of potential recommended strategies to include in the updated CAP. These strategies will be treated either as new measures or as action items for existing measures, as applicable. The team identified several new energy strategies through DNV GL's ongoing work with the Regionally Integrated Climate Action Planning Suite (RICAPS) program. These new strategies incorporate the results of a project funded by Peninsula Clean Energy, which is near completion, to identify policies that will help accelerate electrification of the built environment and increase the adoption of electric vehicles. The team also prepared new strategies that address GHG reductions from other sectors, including land use, transportation, solid waste, and water and wastewater.

All new strategies help address new and emerging topics related to GHG reduction. These strategies leverage research, funding opportunities, and state guidance and resources that were not available during preparation

of the existing CAP. These new strategies also build off San Mateo's and regional partners' successes in GHG reductions, and they are meant to continue San Mateo's role as a leader in sustainable policy.

Proposed Categories, Measures and Actions

This memo provides two sets of GHG reduction strategies in Table 1 and Table 2. Table 1 is the set of new strategies to be considered for inclusion in the updated CAP. This table includes the category and description of the strategy, whether it would be a stand-alone new measure or a new action item for an existing measure, and a qualitative assessment of the GHG reduction potential the strategy offers. The project team estimates that "low" GHG reduction potential is less than approximately 100 metric tons of carbon dioxide (MTCO₂e), "medium" is approximately 100 to 4,000 MTCO₂e, and "high" is approximately 4,000 MTCO₂e or greater. However, specific GHG reductions from measures will depend substantially on the specifics of implementation and will be calculated after the measure and action item language is confirmed. Table 1 is the first iteration of the new GHG reduction strategies. The project team anticipates modifying this list with feedback from Commission meetings (May 9 and July 10) and stakeholder engagement.

Table 2 was initially presented to the Sustainability and Infrastructure Commission on March 13. It identifies the measures in the existing CAP, their status to date and any future action, their potential GHG Reductions, and the recommendations to update or remove the measure. The team has updated this table to reflect feedback received at the March 13 Commission meeting and any discussions with staff following the March 13 meeting.

Table 1: New Strategies to be Added in CAP Update

Connection to Existing Measures		Recommended Action	Action Description	Estimated GHG Reduction Impact
1	New measure: "Building electrification"	Electrify municipal buildings and facilities	As feasible, design and build all-electric municipal buildings and facilities. Evaluate existing and new municipal buildings and facilities to determine projects where electrification is feasible. Retrofit existing facilities to be all-electric, including electric heating, cooling, and water heating.	Low
2	New measure: "Building electrification"	Incentivize all-electric new construction	Implement reach code to encourage residential and commercial new construction be built to an all-electric standard, including electric heating, cooling and water heating.	Medium
3	New measure: "Building electrification"	Encourage electric panel upgrades to accommodate all-electric technologies in existing buildings	Leverage incentives provided by PCE to encourage residents and businesses to upgrade electric panels to accommodate all-electric technologies including solar PV, battery storage, air source heat pumps, heat pump water heaters, electric dryers, and electric stoves.	High
4	Existing measure: RE 2 "Community choice aggregation"	Outreach to direct access customers to encourage use of carbon free electricity	Work with PCE to identify and reach out to large, commercial direct access electricity consumers to encourage them to procure carbon free electricity.	Low /Medium
5	Existing measure: RE 4 "Renewable energy systems for existing residences" and RE 6 "Renewable energy systems for existing nonresidential buildings"	Promote opportunities for microgrid demonstration projects	Work with appropriate property owners to identify potential sites for a microgrid demonstration project. Provide education and outreach to these property owners on the multiple benefits of developing a microgrid including reliability, cleaner energy, and cost savings.	Low

Connection to Existing Measures		Recommended Action	Action Description	Estimated GHG Reduction Impact
6	Existing measure: RE 4 “Renewable energy systems for existing residences” and RE 6 “Renewable energy systems for existing nonresidential buildings”	Encourage pairing battery storage systems with all solar PV systems	Energy storage systems improve resiliency by allowing buildings to remain functional during power outages, and help make renewable energy more viable by providing a means to store surplus power. San Mateo can provide education and outreach to stakeholders, including businesses, residents and contractors, on the benefits of pairing battery storage with solar PV systems.	Low
7	New measure: “Energy efficiency in new nonresidential construction”	Establish outdoor lighting reach code	Establish reach code reducing the maximum allowable wattages for various non-residential outdoor lighting applications. This measure topic could be included as part of a new “Efficient outdoor lighting” measure.	Low
8	Existing measure: EE 1 “Residential energy owner-occupied retrofits”	Implement program to provide free or subsidized shade trees to plant on residential private property	City program to reduce energy consumption associated with cooling homes through the provision of free or subsidized shade trees for buildings with eastern, western or southern exposures.	Low
9	Existing measure: EE 1 “Residential energy owner-occupied retrofits” and EE 2 “Residential energy efficiency renter-occupied retrofits”	Establish time of sale residential energy conservation program	Develop policy requiring energy assessments at the time of sale (Home Energy Score or Energy Upgrade California). Energy assessment would be either the responsibility of the seller or the buyer. Assessors could be required to be qualified under an established program. Results should be submitted to the purchaser. The City, in partnership with PCE, could explore providing financial incentives to make recommended retrofits identified in the assessment.	Medium

Connection to Existing Measures		Recommended Action	Action Description	Estimated GHG Reduction Impact
10	Existing measure: EE 3 “Nonresidential energy retrofits”	Establish commercial and multi-family energy conservation benchmarking programs	Develop policy requiring reporting of energy use (ENERGY STAR performance score) by commercial and multi-family buildings. Lower AB 802 square footage threshold of 50,000 so that benchmarking ordinance applies to smaller commercial +multi-family buildings. Additionally, all commercial buildings must receive energy assessment every 5-10 years, depending on size.	Medium
11	Existing measure: AF 1 Public EV chargers”	Encourage the expansion of EV charging infrastructure in existing buildings	Leverage incentives to encourage the expansions of EV charging infrastructure in public properties, multi-unit dwellings, and workplaces.	High
12	Existing measure: AF 1 Public EV chargers”	Mandate residential and commercial EV charging infrastructure in new buildings	Update residential and commercial building reach codes to increase the required percentage of parking spaces designed to accommodate the future installation of electric vehicle charging equipment and analyze the potential to mandate the installation of equipment.	Medium
13	Existing measure: AF 2 “EV adoption”	Increase procurement of clean energy vehicles in municipal fleet	Establish City policy to prioritize the purchase of electric vehicles (battery electric or plug-in hybrid electric) or compressed natural gas (CNG) vehicles.	Low
14	New measure: “Transit-oriented developments”	Increase transit-oriented developments along El Camino Real and near Caltrain stations	Increases in transit-oriented developments (TODs) in these areas can help make transit a viable option to a larger number of residents and community employees. Increases in TODs can also be coupled with changes to the Inclusionary Housing Ordinance as needed to ensure a greater supply of low and moderate-income units, and potential changes to parking levels.	Medium

Connection to Existing Measures		Recommended Action	Action Description	Estimated GHG Reduction Impact
15	New measure: "Improved public transit service"	Support new rapid bus transit routes.	SamTrans studied the feasibility of Bus Rapid Transit along El Camino Real, and is currently planning to launch an express bus from San Mateo to San Francisco. The City can encourage these efforts and support their accelerated implementation.	Medium
16	New measure: "Improved public transit service"	Improve the frequency of Caltrain service, particularly to Hayward Park station.	Caltrain is currently updating its business plan, which will include improvements to service enabled by electrification efforts. Improving the frequency of Caltrain service for San Mateo's three stations, particularly for Hayward Park, makes Caltrain a more viable commute option for the community.	Medium
17	Existing measure: AT 1 "Public Shuttles"	Establish microtransit services to provide first-mile and last-mile connections with key job and housing centers.	Microtransit, in the form of shuttles or other smaller on-road vehicles, can provide critical first-mile last-mile connections around areas such as downtown, Hillsdale, Bridgepoint, and the College of San Mateo. Shuttles can be free to people who live and work in these areas (or to everyone) to help improve ridership. Carbon-free microtransit is the preferred option. This measure can be coordinated with efforts to improve shared mobility.	Medium
18	Existing measure: AT 2 "Transportation Demand Management"	Expand carpool options for San Mateo residents and employees.	City could work with C/CAG and other regional partners to promote carpooling. Carpooling helps to reduce traffic congestion and emissions by increasing the number of people in a vehicle. Carpool programs can be set up by a community or region, or they may be organized by a single employer or office complex to provide carpool options for workers. Smartphone apps and online systems can help make participating in carpools easier. Carpooling will be supported by the San Mateo 101 Express Lanes project, which will allow carpools of at least 3 people to use the express lanes for free.	Medium

Connection to Existing Measures		Recommended Action	Action Description	Estimated GHG Reduction Impact
19	Existing measure: AT 2 "Transportation Demand Management"	Encourage existing employers to participate in Transportation Demand Management efforts.	New developments are required to achieve minimum trip reductions. The City can encourage existing employers to meet trip reductions as well, potentially through partnership with Commute.org and incentive programs.	High
20	Existing measure: AT 4 "Increase bike mode share"	Provide shared mobility options for last-mile connections for residents and commuters	Implement permit program to allow for operations of shared mobility options in the community. Enhance City infrastructure to accommodate these options, including painting sidewalks and curbs to indicate dedicated dockless bike parking and converting parking spaces to accommodate dockless bike parking.	Medium
21	New measure: "Expanded recycling service"	Expand recycling programs to accommodate additional material types as economic conditions allow.	San Mateo residents can recycle many types of materials, but some still must be put in the trash. While economic conditions dictate what materials can be recycled, the City and its waste haulers can be prepared to recycle additional types of materials as they become feasible.	Medium
22	New measure: "Waste awareness and source reduction"	Work with partners to establish a source reduction program.	The City can expand and/or participate in education programs that increase awareness of the life cycle of materials, opportunities to reduce purchasing of new materials, especially single-use materials, and opportunities to reuse materials instead of sending them to the landfill.	Low
23	New measure: "Waste awareness and source reduction"	Establish a materials reuse program.	The City can support community-based organizations or businesses to collect materials that are suitable for reuse and make them available to community members. Similar "recycling stores" or "reuse centers" have been established in other regional communities.	Low

Connection to Existing Measures		Recommended Action	Action Description	Estimated GHG Reduction Impact
24	New measure: "Waste awareness and source reduction"	Explore a ban on single-use plastics.	California restricts the use of some single-use plastics, but others remain legal for use in the state. San Mateo can explore going beyond the state requirements and ban all single-use plastics that cannot be recycled or composted.	Low
25	New measure: "Waste awareness and source reduction"	Work with waste haulers to minimize recycling contamination.	Contaminated materials can prevent materials from being properly recycled. Improved education, signage, and other efforts can help to significantly reduce contamination in recycling bins, which may result in more waste that can be effectively recycled.	Medium
26	New measure: "Water efficiency in new construction"	Require new developments to meet the voluntary indoor and outdoor water efficiency standards in the California Green Building Standards Code.	The California Green Building Standards Code (CALGreen) lays out voluntary water efficiency standards, which the City can make mandatory for new residential and nonresidential development.	Low

Table 2: Assessment of Existing Activities and GHG Reduction Measures

CAP measure number	Measure topic	Sector	Level	Status	Progress to Date and Future Action	Estimated GHG (MTCO ₂ e) reductions at current participation levels *	2020 GHG reduction potential in adopted CAP	Update/ Remove
PA 1	Increased housing density	Energy efficiency	Local	Ongoing	New infill development continues, and new policies are being evaluated through the General Plan process.	-	-	Update
PA 2	LED street lights	Energy efficiency	Local	Completed	In 2017, PG&E upgraded 5,629 street lights to LED bulbs.	-	230	Remove
PA 3	Digester gas to biomethane	Solid waste	Local	Completed	The digester was constructed. The City has purchased vehicles that can use the biomethane for fuel, and the biomethane could also be used for school buses, Recology trucks, and others.	-	1,750	Update
PA 4	County Health Building solar	Renewable energy	Regional	Completed	Solar panels were installed in 2016.	60	200	Remove
PA 5	Parking Management Plan	Alternative transportation	Local	Ongoing	The Parking Management Plan was adopted in 2014 and staff continues to evaluate implementation of the parking policies recommended in the plan.	-	1,570	Update
PA 6	Caltrain electrification	Alternative transportation	Regional	In progress	As of December 2018, infrastructure installation and other activities are proceeding.	- +	-	Update
RE 1	Expanded renewable electricity options	Renewable energy	Local	No action	This measure is an alternative to RE 2. Since PCE was established, it is not necessary.	-	500	Remove
RE 2	Community Choice Aggregation	Renewable energy	Regional	Completed/ Ongoing	PCE was established in 2016 and expanded to serve all of San Mateo in 2017.	19,630	23,720	Update

CAP measure number	Measure topic	Sector	Level	Status	Progress to Date and Future Action	Estimated GHG (MTCO ₂ e) reductions at current participation levels *	2020 GHG reduction potential in adopted CAP	Update/Remove
RE 3	Renewable energy for new homes	Renewable energy	Local	Ongoing	The City adopted a reach code requiring solar panel installations on all new homes. There is interest in expanding the reach code to cover additional types of buildings. The City is evaluating reach codes concurrent with preparation of the CAP Update.	40	140	Update
RE 4	Renewable energy for existing homes	Renewable energy	Local	Ongoing	The City promotes financial incentives and leads educational campaigns to encourage solar installation on existing homes.		3,970	Update
RE 5	Renewable energy for new businesses	Renewable energy	Local	Ongoing	The City adopted a reach code requiring solar panel installations on all new commercial developments.	30	130	Update
RE 6	Renewable energy for existing businesses	Renewable energy	Local	Ongoing	The City promotes financial incentives and leads educational campaigns to encourage solar installation on existing businesses. There is interest in expanding the reach code to cover additional types of buildings.		560	Update
RE 7	Advanced renewable energy systems	Renewable energy	Local	No action	The City will actively follow emerging technologies, but rapid Building Code cycle changes make this measure difficult to implement.	-	0	Remove
EE 1	Residential owner-occupied retrofits	Energy efficiency	Local	Ongoing	BayREN and PACE programs provide financial incentives and educational support for these retrofits.	10	440	Update
EE 2	Residential renter-occupied retrofits	Energy efficiency	Local	Ongoing	BayREN and PACE programs provide financial incentives and educational support for these retrofits.	30	650	Update

CAP measure number	Measure topic	Sector	Level	Status	Progress to Date and Future Action	Estimated GHG (MTCO ₂ e) reductions at current participation levels *	2020 GHG reduction potential in adopted CAP	Update/Remove
EE 3	Nonresidential retrofits	Energy efficiency	Local	Ongoing	Financing and education for nonresidential energy efficiency retrofits is available through the San Mateo Energy Watch and other programs.	10	3,990	Update
EE 4	Healthcare energy efficiency	Energy efficiency	Local	No action	The City does not have access to energy data for health care facilities and therefore consider merging with EE 3.	-	1,710	Remove
EE 5	Residential low-cost retrofits	Energy efficiency	Local	Ongoing	The City has provided funding to support energy efficiency education and low-cost retrofits to low-income households. Consider merging with EE 1 and EE 2.	-	230	Remove
EE 6	Nonresidential low-cost retrofits	Energy efficiency	Local	Ongoing	The county-wide Green Business Certification project helps encourage energy efficiency and other sustainable actions in local businesses. Consider merging with EE 3.	-	70	Remove
ME 1	Energy efficiency at new City buildings	Energy efficiency	Local	Ongoing	The City is considering renewable energy installations and energy efficiency actions at the new Wastewater Treatment Plant.	-	0	Update
ME 2	Energy efficiency at existing City buildings	Energy efficiency	Local	In Progress	In 2018, with funding from C/CAG the City worked with the San Mateo County Energy Watch program to upgrade lighting at 15 City facilities. Currently, the City is participating in PG&E's Sustainable Solutions Turnkey program to upgrade lighting and HVAC at the larger City facilities.	-	0	Update

CAP measure number	Measure topic	Sector	Level	Status	Progress to Date and Future Action	Estimated GHG (MTCO ₂ e) reductions at current participation levels *	2020 GHG reduction potential in adopted CAP	Update/Remove
AF 1	Public EV chargers	Alternative fuels	Local	Ongoing	There are 14 chargers at City-owned parking garages and lots, used an average of 700 times monthly. Two DC Fast Chargers have been installed at the Transit Center Garage and are used an average of 720 times monthly, along with another two Level 2 chargers at this facility. There is interest in expanding this measure to address all forms of EV charging.	10	40	Update
AF 2	EV adoption	Alternative fuels	Local	Ongoing	The City has hosted several events to raise awareness about EVs and has adopted a reach code requiring more EV-ready parking spaces at new multifamily and commercial projects than what the State mandates.	3,370	6,110	Update
AT 1	Public shuttles	Alternative transportation	Local	Ongoing	The City contributes to Commute.org to support shuttles in San Mateo. Caltrain shuttle service continues in San Mateo.	20	50	Update
AT 2	Transportation Demand Management	Alternative transportation	Local	Ongoing	The City continues to require new development projects to adopt TDM plans to reduce the number of vehicle trips they generate.	270	3,090	Update
AT 3	Car sharing	Alternative transportation	Local	Ongoing	The City offers carshare in public parking lots through a partnership with Zip Car. Recommend merging with AT2.	Unknown	2,120	Remove

CAP measure number	Measure topic	Sector	Level	Status	Progress to Date and Future Action	Estimated GHG (MTCO ₂ e) reductions at current participation levels *	2020 GHG reduction potential in adopted CAP	Update/Remove
AT 4	Increased bike mode share	Alternative transportation	Local	Ongoing	The City has been installing new bike lanes and other bike infrastructure. The City is updating the Bicycle Master Plan. The City has supported bike share pilot programs since 2016 and is currently in the process of developing a shared mobility permit program to formalize regulations. Ensure that the updated measure addresses integration of San Mateo's bike lanes with regional networks.	40	660	Update
AT 5	Increased pedestrian mode share	Alternative transportation	Local	Ongoing	The City has made numerous improvements to the pedestrian infrastructure in the community. The City has an adopted Pedestrian Master Plan.	-	0	Update
SW 1	Increased composting	Solid waste	Local	Ongoing	The composting program has near-total participation among single-family houses. While San Mateo has increased the number of businesses and multifamily households participating, opportunities remain to increase the amount of organic material collected. RethinkWaste is looking at ways to use organic material to generate fuel.	1,690	8,940	Update
WW 1	Water efficiency retrofits	Water and wastewater	Local	Ongoing	The City libraries distribute kits that help residents conduct low-cost energy and water efficiency retrofits. Rebates are available for various energy efficiency retrofits.	-	20	Update

CAP measure number	Measure topic	Sector	Level	Status	Progress to Date and Future Action	Estimated GHG (MTCO ₂ e) reductions at current participation levels *	2020 GHG reduction potential in adopted CAP	Update/Remove
WW 2	Water-efficient landscaping	Water and wastewater	Local	Ongoing	The City is conducting education efforts on water-efficient landscaping, has reduced water use for landscapes at City properties, and offers rebates for community members who install rain barrels. This is not a GHG reduction strategy and therefore does not need to be tracked through the CAP.	-	0	Remove
WW 3	New non-potable water sources	Water and wastewater	Local	In Progress	The Clean Water Program is evaluating the possibility of providing recycled water to the community. This is not a GHG reduction strategy and therefore does not need to be tracked through the CAP.	-	0	Remove
OR 1	Alternative fuel lawn and garden equipment	Off-road equipment	Local	Ongoing	City maintenance staff are looking at the feasibility of alternative-fuel landscaping equipment in an ongoing pilot program.	-	40	Update
OR 2	Alternative fuel construction equipment	Off-road equipment	Local	No action	Implementation has not proven feasible.	-	30	Remove

* Reductions from action taken after 2017. All actions taken in 2017 or earlier are included in the inventory, and by extension are already built into the forecast.