Appendix A - Climate Regulatory Context

As the impacts of climate change are being recognized, many strategies that address climate change have emerged at several different levels of government. This appendix provides an overview of the regulatory context at the international, State, and local levels relative to Cupertino's actions toward reducing its communitywide greenhouse gas (GHG) emissions.

International Climate Action Guidance

1992 United Nations Framework Convention on Climate Change

The primary international regulatory framework for GHG reduction is the United Nations Framework Convention on Climate Change Paris Agreement (UNFCCC). The UNFCCC is an international treaty adopted in 1992 with the objective of stabilizing atmospheric GHG concentrations to prevent disruptive anthropogenic climate change. The framework established non-binding limits on global GHG emissions and specified a process for negotiating future international climate-related agreements.[1]

1997 Kyoto Protocol

The Kyoto Protocol is an international treaty that was adopted in 1997 to extend and operationalize the UNFCCC. The protocol commits industrialized nations to reduce GHG emissions per county-specific targets, recognizing that they hold responsibility for existing atmospheric GHG levels. The Kyoto Protocol involves two commitment periods during which emissions reductions are to occur, the first of which took place between 2008-2012 and the second of which has not entered into force. [2]

2015 The Paris Agreement

The Paris Agreement is the first-ever universal, legally binding global climate agreement that was adopted in 2015 and has been ratified by 189 countries worldwide.[3] The Paris Agreement establishes a roadmap to keep the world under 2° C of warming with a goal of limiting an increase of temperature to 1.5° C. The agreement does not dictate one specific reduction target, instead relying on individual countries to set nationally determined contributions (NDCs) or reductions based on GDP and other factors. According to the International Panel on Climate Change (IPCC) limiting global warming to 1.5° C will require global emissions to reduce through 2030 and hit carbon neutrality by mid-century.[4]

1 United Nations Framework Convention on Climate Change (UNFCCC). United Nations Framework Convention on Climate Change. https://unfccc.int/files/essential_background/background_publications_htmlpdf/application/pdf/conveng.pdf
2 UNFCCC. What is the Kyoto Protocol? https://unfccc.int/kyoto_protocol
3 UNFCCC. Paris Agreement - Status of Ratification. https://unfccc.int/process/the-paris-agreement/status-of-ratification
4 IPCC. Global Warming of 1.5 C. https://www.ipcc.ch/sr15/

California Regulations and State GHG Targets

California remains a global leader in the effort to reduce GHG emissions and combat climate change through its mitigation and adaptation strategies. With the passage of Assembly Bill (AB) 32 in 2006, California became the first state in the United States to mandate GHG emission reductions across its entire economy. To support AB 32, California has enacted legislation, regulations, and executive orders (EO) that put it on course to achieve robust emission reductions and address the impacts of a changing climate. The following is a summary of executive and legislative actions most relevant to the CAP.

2002 Senate Bill 1078

In 2002, SB 1078, established the California Renewables Portfolio Standards (RPS) Program and was accelerated in 2006 by SB 107, requiring that 20 percent of retail electricity sales be composed of renewable energy sources by 2010. EO S-14-08 was signed in 2008 to further streamline California's renewable energy project approval process and increase the State's RPS to the most aggressive in the nation at 33 percent renewable power by 2020.

2002 Assembly Bill 1493

In 2002, AB 1493, also known as the Pavley Regulations, directed the California Air Resources Board (CARB) to establish regulations to reduce GHG emissions from passenger vehicles to the maximum and most cost-effective extent feasible. CARB approved the first set of regulations to reduce GHG emissions from passenger vehicles in 2004, with the regulations initially taking effect with the 2009 model year.

2005 Executive Order S-3-05

Executive Order (EO) S-3-05 was signed in 2005, establishing Statewide GHG emissions reduction targets for the years 2020 and 2050. The EO calls for the reduction of GHG emissions in California to 2000 levels by 2010, 1990 levels by 2020, and 80 percent below 1990 levels by 2050. The 2050 emission reductions target would put the State's emissions in line with the worldwide reductions needed to reach long-term climate stabilization as concluded by the IPCC *2007 Fourth Assessment Report*.

2006 Assembly Bill 32

California's major initiative for reducing GHG emissions is outlined in AB 32, the "California Global Warming Solutions Act of 2006," which was signed into law in 2006. AB 32 codifies the Statewide goal of reducing GHG emissions to 1990 levels by 2020 and requires CARB to prepare a Scoping Plan that outlines the main State strategies for reducing GHG emissions to meet the 2020 deadline. In addition, AB 32 requires CARB to adopt regulations to require reporting and verification of Statewide GHG emissions.

Based on this guidance, CARB approved a 1990 Statewide GHG baseline and 2020 emissions limit of 427 million metric tons of CO_2 equivalent (MMT CO_2e). The Scoping Plan was approved by CARB on December 11, 2008 and included measures to address GHG emission reduction strategies related to energy efficiency, water use, and recycling and solid waste, among other measures. Many of the GHG reduction measures included in the Scoping Plan (e.g., Low Carbon Fuel Standard, Advanced

Clean Car standards,[5] and Cap-and-Trade) have been adopted since approval of the Scoping Plan.

In May 2014, CARB approved the first update to the AB 32 Scoping Plan. The 2014 Scoping Plan update defined CARB's climate change priorities for the next five years and set the groundwork to reach post-2020 Statewide goals. The update highlighted California's progress toward meeting the "near-term" 2020 GHG emission reduction goals defined in the original Scoping Plan. It also evaluated how to align the State's longer-term GHG reduction strategies with other State policy priorities, including those for water, waste, natural resources, clean energy, transportation, and land use (CARB 2014).

2007 Executive Order S-1-07

Also known as the Low Carbon Fuel Standard, EO S-1-07, issued in 2007, established a Statewide goal that requires transportation fuel providers to reduce the carbon intensity of California's transportation fuels by at least 10 percent by 2020. EO S-1-07 was readopted and amended in 2015 to require a 20 percent reduction in carbon intensity by 2030, the most stringent requirement in the nation. The new requirement aligns with California's overall 2030 target of reducing climate changing emissions 40 percent below 1990 levels by 2030, which was set by Senate Bill 32 and signed by the governor in 2016.

2007 Senate Bill 97

Signed in August 2007, SB 97 acknowledges that climate change is an environmental issue that requires analysis in California Environmental Quality Act (CEQA) documents. In March 2010, the California Natural Resources Agency adopted amendments to the State CEQA Guidelines for the feasible mitigation of GHG emissions or the effects of GHG emissions. The adopted guidelines give lead agencies the discretion to set quantitative or qualitative thresholds for the assessment and mitigation of GHG and climate change impacts.

2008 Senate Bill 375

SB 375, signed in August 2008, enhances the State's ability to reach AB 32 goals by directing CARB to develop regional GHG emission reduction targets to be achieved from passenger vehicles by 2020 and 2035. In addition, SB 375 directs each of the State's 18 major Metropolitan Planning Organizations (MPOs), including the Metropolitan Transportation Commission (MTC), to prepare a "sustainable communities strategy" (SCS) that contains a growth strategy to meet these emission targets for inclusion in the MPO's Regional Transportation Plan (RTP).

On March 22, 2018, CARB adopted updated regional targets for reducing GHG emissions from 2005 levels by 2020 and 2035.

2009 California Green Building Code

The California Green Building Standards Code (CALGreen) is Part 11 of the California Building Standards Code or Title 24 and is the first Statewide "green" building code in the nation. The purpose of CALGreen is to improve public health, safety, and general welfare by enhancing the

5 On September 19, 2019, the National Highway Traffic Safety Agency (NHTSA) and the US Environmental Protection Agency (EPA) issued a final action entitled the One National Program on Federal Preemption of State Fuel Economy Standards Rule. This action finalizes Part I of the Safer, Affordable, Fuel-Efficient (SAFE) Vehicles Rule. This rule states that federal law preempts State and local tailpipe greenhouse gas (GHG) emissions standards as well as zero emission vehicle (ZEV) mandates. The SAFE Rule withdraws the Clean Air Act waiver it granted to California in January 2013 as it relates to California's GHG and zero emission vehicle programs.

design and construction of buildings. Enhancements include reduced negative impact designs, positive environmental impact designs, and encouragement of sustainable construction practices. The first CALGreen Code was adopted in 2009 and has been updated in 2013, 2016, and 2019. The CALGreen Code will have subsequent, and continually more stringent, updates every three years.

2009 Senate Bill X7-7

In 2009, SB X7-7, also known as the Water Conservation Act, was signed, requiring all water suppliers to increase water use efficiency. This legislation sets an overall goal of reducing per capita urban water use by 20 percent by2020.

2011 Senate Bill 2X

In 2011, SB 2X was signed, requiring California energy providers to buy (or generate) 33 percent of their electricity from renewable energy sources by 2020.

2012 Assembly Bill 341

AB 341 directed the California Department of Resources Recycling and Recovery (CalRecycle) to develop and adopt regulations for mandatory commercial recycling. As of July 2012, businesses are required to recycle, and jurisdictions must implement a program that includes education, outreach, and monitoring. AB 341 also set a Statewide goal of 75 percent waste diversion by the year 2020.

2014 Assembly Bill 32 Scoping Plan Update

In 2014, CARB approved the first update to the Scoping Plan. This update defines CARB's climate change priorities and sets the groundwork to reach the post-2020 targets set forth in EO S-3-05. The update highlights California's progress toward meeting the near-term 2020 GHG emissions reduction target, defined in the original Scoping Plan. It also evaluates how to align California's longer-term GHG reduction strategies with other Statewide policy priorities, such as water, waste, natural resources, clean energy, transportation, and land use.

2014 Assembly Bill 1826

AB 1826 was signed in 2014 to increase the recycling of organic material. GHG emissions produced by the decomposition of these materials in landfills were identified as a significant source of emissions contributing to climate change. Therefore, reducing organic waste and increasing composting and mulching are goals set out by the AB 32 Scoping Plan. AB 1826 specifically requires jurisdictions to establish organic waste recycling programs by 2016, and phases in mandatory commercial organic waste recycling over time.

2015 Senate Bill 350

SB 350, the Clean Energy and Pollution Reduction Act of 2015, has two objectives: to increase the procurement of electricity from renewable sources from 33 percent to 50 percent by 2030 and to double the energy efficiency of electricity and natural gas end users through energy efficiency and conservation.

2015 Executive Order B-30-15

In 2015, EO B-30-15 was signed, establishing an interim GHG emissions reduction target to reduce emissions to 40 percent below 1990 levels by 2030. The EO also calls for another update to the CARB Scoping Plan.

2016 Senate Bill 32

On September 8, 2016, the governor signed SB 32 into law, extending AB 32 by requiring the State to further reduce GHGs to 40 percent below 1990 levels by 2030 (the other provisions of AB 32 remain unchanged). The bill charges CARB to adopt the regulation so that the maximum technologically feasible emissions reductions are achieved in the most cost-effective way.

2016 Senate Bill 1383

Adopted in September 2016, SB 1383 requires CARB to approve and begin implementing a comprehensive strategy to reduce emissions of short-lived climate pollutants. The bill requires the strategy to achieve the following reduction targets by 2030:

- Methane – 40 percent below 2013 levels
- Hydrofluorocarbons – 40 percent below 2013 levels
- Anthropogenic black carbon – 50 percent below 2013 levels

SB 1383 also requires the CalRecycle, in consultation with the CARB, to adopt regulations that achieve specified targets for reducing organic waste in landfills. The bill further requires 20% of edible food disposed of at the time to be recovered by 2025.

2017 Scoping Plan Update

On December 14, 2017, CARB adopted the 2017 Scoping Plan, which provides a framework for achieving the 2030 goal set by SB 32. The 2017 Scoping Plan relies on the continuation and expansion of existing policies and regulations, such as the Cap-and-Trade Program, as well as implementation of recently adopted policies, such as SB 350 and SB 1383 .

The 2017 Scoping Plan also puts an increased emphasis on innovation, adoption of existing technology, and strategic investment to support its strategies. As with the 2014 Scoping Plan Update, the 2017 Scoping Plan does not provide project-level thresholds for land use development. Instead, it recommends that local governments adopt policies and locally appropriate quantitative thresholds consistent with Statewide per capita goals of six metric tons (MT) CO_2e by 2030 and two MT CO_2e by 2050 (CARB 2017). As stated in the 2017 Scoping Plan, these goals may be appropriate for plan-level analyses (city, county, subregional, or regional level), but not for specific individual projects because they include all emissions sectors in the State.

2018 Senate Bill 100

Adopted on September 10, 2018, SB 100 supports the reduction of GHG emissions from the electricity sector by accelerating the State's Renewables Portfolio Standard Program, which was last updated by SB 350 in 2015. SB 100 requires electricity providers to increase procurement from eligible renewable energy resources to 33 percent of total retail sales by 2020, 60 percent by 2030, and 100 percent by 2045.

2018 Executive Order B-55-18

Also, on September 10, 2018, the governor issued Executive Order B-55-18, which established a new Statewide goal of achieving carbon neutrality by 2045 and maintaining net negative emissions thereafter. This goal is in addition to the existing Statewide GHG reduction targets established by SB 375, SB 32, SB 1383, and SB 100.

Appendix B - GHG Inventory Methodology

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Project 21-10845

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Subject: Future GHG Emissions Forecasts Memorandum
Cupertino Climate Action Plan Update

As part of Task 4 of the Cupertino Climate Action Plan (CAP) Update, Rincon Consultants, Inc. (Rincon) has calculated future greenhouse gas (GHG) emissions forecasts for GHG emissions sources associated with land use in Cupertino. The GHG emissions forecasts are based on the 2018 GHG emissions inventory and utilize Cupertino specific demographics projections. The forecasts were developed to better understand how population and job growth in Cupertino could affect future GHG emissions in the years 2023, 2036, 2030, 2035, 2040, and 2045. The GHG emissions forecast presents two scenarios:

- Business-as-Usual Scenario (BAU) that projects GHG emissions levels that scale with population, employment and transportation growth consistent with regional projections, and
- Adjusted Scenario (Adjusted) that accounts for GHG reductions expected to occur from adopted State legislation.

These two forecast scenarios allow for an understanding of how GHG emissions levels may evolve without further action and how State legislation will contribute to reducing future GHG emissions levels.

GHG Emissions Sectors and Sources

The GHG emissions forecast presented herein is based on the 2018 GHG emissions inventory calculated for Cupertino. Several updates to the transportation and commercial/industrial sectors were made to incorporate data from updated transportation models and energy data sets that were not available during the initial preparation of the 2018 inventory. Updates to the 2018 inventory will be described in further detail in the Baseline 2018 GHG Emissions Inventory section. The GHG emissions sources included in this analysis align with those in the GHG inventory, which includes GHG emissions sources related to land use and transportation in the Cupertino planning area. The GHG emissions sectors and associated sources included in this analysis are provided in Table 1.

Table 1 Cupertino GHG Emissions Sectors and Sources

GHG Emissions Sector	GHG Emissions Source
Transportation	Passenger On-Road Transportation
	Commercial On-Road Transportation
	Passenger On-Road – EV adjustment
	Commercial On-Road – EV adjustment
	Off Road - Diesel
	Off Road - Gasoline
	Off Road - Natural Gas (LPG)
Residential	Residential Electricity Consumption[1]
	Residential Natural Gas Consumption
	Residential Natural Gas Fugitive Emissions
Commercial/Industrial	Commercial/Industrial Electricity Consumption[1]
	Commercial/Industrial Natural Gas Consumption
	Commercial/Industrial Natural Gas Fugitive Emissions
Wastewater	Effluent from Treatment and Discharge of Wastewater
Solid Waste	Methane Commitment of Solid Waste Generated by Community

[1] Electricity Consumption includes electricity provided by Pacific Gas and Electric, Silicon Valley Clean Energy, and Direct Access sources.

Updates to the Cupertino 2018 GHG Emissions Inventory

The GHG emissions forecast analysis presented here is based upon the emissions levels from each emissions source included in the 2018 GHG emissions inventory, apart from the transportation and commercial/industrial sectors that were updated based on more recently available energy data and transportation models. Sources updated for the 2018 GHG Inventory baseline year include both on-road transportation, off-road vehicle emissions and commercial natural gas. The new transportation models described in more detail below are widely accepted and regularly updated; this contributes to consistency and replicability of the data for future forecasts.

Transportation Sector Updates

The 2018 GHG emissions inventory transportation sector was updated for both on- and off-road emissions sources. On-road transportation activity data, measured in vehicle miles traveled (VMT), was calculated using the Metropolitan Transportation Commission (MTC) VMT Data portal. On-road transportation emissions were recalculated using the updated VMT data and updated emissions factors were derived from the California Air Resources Board (CARB) EMission FACtor (EMFAC) 2021 on-road model. In addition, passenger and commercial electric vehicle (EV) electricity consumption was updated using EMFAC 2021. Passenger and commercial EV emissions from electricity consumption are subtracted from residential and commercial energy emissions respectively and then added to the transportation sector for 2018. In forecast years, emissions from EV charging are attributed to the transportation sector. This emissions reallocation is labeled as an “EV adjustment” in the forecasts. Off-road activity data, measured in gallons of fuel consumed by fuel type, was updated using the recently released OFFROAD2021 off-road emissions database, per CARB recommendations. The updated analysis includes the same vehicle classes used in the 2018 GHG inventory, using the newer model of vehicle classes for which there is updated data. The updated inventory also aggregates off-road activity by fuel type and

allocates these emissions to the transportation sector, rather than attributing them to the residential or commercial/industrial sectors.

Energy Sector Updates

Commercial/industrial natural gas consumption was updated to better incorporate detailed natural gas data from Apple's fuel cell. Apple is a large employer and user of natural gas in Cupertino, and therefore accounts for a large portion of the commercial/industrial natural gas. In an effort to reduce GHG emissions, Apple directly purchases biofuel through a book and claim agreement to power their fuel cell, located in Cupertino. The gas which arrives at Apple is delivered via PG&E infrastructure and is included in the natural gas total for the City.

Just like GHG-free electricity, which produces a Renewable Energy Credit (REC), biofuel generates a fuel attribute in the United States that can be bought or sold separately from the fuel itself, which is typically injected into the nearest common pipeline where it becomes indistinguishable from the other natural gas in the system. The fuel attribute is matched with the unit of energy purchased (therms, and that attribute belongs to the purchaser of the biofuel who holds the market credit. Apple purchases enough biofuel annually to power the fuel cell. The biofuel is then directly injected into a common natural gas pipeline in the United States.

Because the biogas avoids natural gas usage equal to Apple's fuel cell usage within the geographical boundaries of the United States, which is not being claimed by anyone else, natural gas fuel cell CO_2 emissions are considered zero. This process is verified annually through Apple's regular sustainability reporting. This approach to accounting for biofuels is supported by the California Air Resources Board as part of their Low Carbon Fuel Standard program.[1] Furthermore, while the U.S. Community Protocol "does not provide guidance on quantifying or reporting on GHG benefits associated with; actions that have been or could be taken to reduce emissions, carbon offset projects, purchased carbon credits, or renewable energy credits" they do state that information on these types of activities is "best presented in the context of climate action plans".[2] Therefore, as a key action towards decarbonization of the City, Cupertino will track the GHG reduction benefits of biofuels and electricity RECs (which are commonly included in the GHG emission factor for electricity) moving forward.

The biofuel usage for the fuel cell was separated from the commercial/industrial natural gas usage total for the City and updated in the 2018 GHG emissions inventory as a separate line item with its own emission factor. The GHG emission factor associated with Apple's biofuel was zero MT CO_2e per therm. However, note that the activity data used in the calculation of GHG emissions from commercial methane leakage includes both Apple and non-Apple gas usage, since biogas is still associated with methane leakage.

[1] https://ww2.arb.ca.gov/sites/default/files/classic/fuels/lcfs/guidance/lcfsguidance_19-05.pdf

[2] https://icleiusa.org/us-community-protocol/

Updated Cupertino 2018 GHG Emissions Inventory

A detailed summary of the updated 2018 GHG emissions inventory, incorporating the aforementioned individual sector updates, is provided in Table 2.

Table 2 Cupertino 2018 GHG Emissions Inventory Summary

GHG Emissions Sector/Source	CO_2 (MT)	CH_4 (MT)	N_2O (MT)	CO_2e (MT)	Activity Data	Activity Data Units
Transportation						
Passenger On-Road Transportation	130,863.9	8.2	5.8	132,635.3	381,045,902	VMT
Commercial On-Road Transportation	26.8	0.0	0.0	26.9	54,876,773	VMT
Passenger On-Road - EV adjustment	71,440.1	3.8	9.2	73,972.1	6,030,572	kWh
Commercial On-Road - EV adjustment	0.0	0.0	0.0	0.0	0	kWh
Off Road - Diesel	6,351.6	0.2	0.3	6,431.7	622,096	Gallons
Off Road - Gasoline	4,506.6	4.5	0.1	4,651.3	513,280	Gallons
Off Road - Natural Gas (LPG)	2,841.0	0.4	0.2	2,908.0	500,185	Gallons
Residential						
Residential Electricity - PG&E	253.5	0.0	0.0	255.8	2,660,801	kWh
Residential Electricity - SVCE	186.0	-	-	186.0	97,465,119	kWh
Residential Electricity - Direct Access	5.4	0.0	0.0	5.5	23,128	kWh
Residential Natural Gas	43,428.3	N/A	N/A	43,428.3	8,186,706	Therms
Natural Gas Fugitive - Residential	0.5	50.7	N/A	1,420.3	8,186,706	Therms
Commercial/Industrial						
Commercial/Industrial Electricity –PG&E	283.9	0.0	0.0	286.6	2,980,736	kWh
Commercial/Industrial Electricity – SVCE	214.9	0.0	0.0	214.9	112,588,606	kWh
Commercial/Industrial Electricity – Direct Access Other	3,544.5	0.4	0.0	3,564.1	15,098,936	kWh
Commercial/Industrial Electricity – Direct Access Apple	0.0	0.0	0.0	0.0	186,780,000	kWh
Commercial/Industrial Electricity – EV adjustment	0.0	0.0	0.0	0.0	0	kWh
Commercial/Industrial Natural Gas – PG&E[1]	39,957.1	N/A	N/A	39,957.1	7,532,350	Therms
Commercial/Industrial Biofuel – Apple Fuel Cell[1]	0.0	N/A	N/A	0.0	2,324,300	Therms
Natural Gas Fugitive - Commercial	0.7	61.1	N/A	1,710.1	9,856,650	Therms
Wastewater						
Wastewater Treatment and Discharge	N/A	695.0	0.7	19,634.5	136,216	BOD5 Treated
Solid Waste						
Solid Waste Generated/Disposal	N/A	561.1	N/A	15,709.4	30,470	Tons Landfilled

N/A = not applicable; CO_2 = carbon dioxide; CH_4 = methane; N_2O = nitrous oxide; CO_2e = carbon dioxide equivalent; PG&E = Pacific Gas and Electric; SVCE = Silicon Valley Clean Energy; kWh = kilowatt-hour; EV = electric vehicle.

1. Note that CH_4 and N_2O emissions from natural gas were considered de minimis and excluded from the inventory. For example, including CH_4 and N_2O combustion emissions from natural gas would increase total inventoried natural gas combustion GHG emissions by just 0.1%.

Business-as-usual GHG Emissions Forecast

A BAU GHG emissions forecast uses demographic projections and modeled on- and off-road transportation emissions to estimate future GHG emissions without the influence of approved GHG reduction legislation or policies. The BAU forecast is based on growth projected trends in population, and employment over time, consistent with local and regional projections. The BAU forecast does not account for GHG emissions reductions associated with local GHG reduction measures or legislative actions. BAU forecasts were estimated for 2023, 2026, 2030, 2035, 2040 and 2045. The BAU GHG emissions projections were calculated based on the guidance of the Association of Environmental Professionals 2012 whitepaper Forecasting Communitywide GHG Emissions and Setting Reduction Targets. To develop a GHG emissions forecast, the appropriate "growth metrics" (e.g., population, housing, and employment projections) are multiplied by BAU "growth indicators", which represent a baseline metric developed from the baseline GHG emissions inventory. This allows for projections of activity data that can be converted into GHG emissions estimates using specific GHG emissions factors, which is assumed to be the same in the future as in the 2018 GHG emissions inventory. The result is a BAU forecast in which GHG emissions change with time in relation to demographics, with the assumption that GHG emissions rates and activity data will continue in the future as they did in the year of the 2018 GHG emissions inventory. This methodology is used for all GHG emissions sectors and sources included in the 2018 GHG emissions inventory, with the exception of two sectors. The first is direct access electricity consumption for the Apple campus, which is held constant across the forecasted time period, under the assumption there will be no expansion of the campus. Emission factors for Apple's direct access electricity were zero in the 2018 baseline inventory, so this assumption does not change the emissions projected in the BAU forecast. The second sector to use a different methodology for the BAU forecast is the off-road emissions sector. To forecast off-road emissions, the OFFROAD2021 off-road emissions database was used to project fuel use since no significant GHG emission reduction legislation is included in the model. The following provides an overview of the growth metrics, growth indicators, and GHG emissions factors used to project GHG emissions for the BAU forecast calculations.

Growth Metrics

GHG emissions are largely driven by consumption of fuel and energy, and generation of solid waste and wastewater by residents, households, and employees in a jurisdiction. As such, as population and employment grow over time, it is expected that GHG emissions levels will also grow. In a BAU forecast, this growth is assumed to be the primary metric for determining changes in future GHG emissions. For the Cupertino planning area, the growth and demographic projections used as the growth metrics for the BAU GHG emissions forecast were drawn from Plan Bay Area 2040 data portal. Plan Bay Area 2040 was developed as a joint effort between the Metropolitan Transportation Commission, the region's transportation planning, financing, and coordinating agency, and the Association of Bay Area Governments, the regional planning agency and Council of Governments. Cupertino growth metrics for the BAU forecast, are provided in Table 3.

Table 3 Plan Bay Area Growth Metrics for Cupertino BAU GHG Emissions Forecast

Growth Metric	2023	2026	2030	2035	2040	2045
Population[1]	64,241	64,921	65,690	66,565	68,305	70,090
Employment[2]	36,137	37,213	37,830	38,055	37,980	37,905
Service Population[3]	100,378	102,134	103,520	104,620	106,285	107,996
Housing[4]	22,670	22,777	22,805	27,573	28,071	28,579

Notes: Service Population = Population + Employment

1-4. Plan Bay Area 2040 projections end in 2040. The compound growth rate for 2035-2040 period was used to forecast growth for 2040-2045 period.

4. Plan Bay Area 2040 Multifamily and Single-Family housing numbers were summed to get the total number housing units. The total RHNA Housing Allocation for 2023-2031 was added to the annual housing estimate for 2031. RHNA housing allocations for Cupertino were drawn from Draft ABAG RHNA Allocations 2023-2031 publication, Table 4.

Growth Indicators

Growth indicators were developed from the baseline 2018 GHG emissions inventories by dividing the activity data for each emissions source by the appropriate metric for the year 2020. The appropriate metric used for each growth indicator is developed based on the relevance of the GHG emissions source. For example, residential energy consumption would be expected to grow with the number of new households, commercial/industrial energy consumption would be expected to grow with the number of new jobs, and total solid waste generation would be expected to grow with both residents and employment (service population). Table 4 provides the metrics that were associated with each GHG emissions sector to develop growth indicators and project GHG emissions from each GHG emissions source in the respective sectors. Different growth metrics were used for the transportation sector as appropriate for each source, that variation is reflected in the table. Growth for passenger on-road transportation activity was modeled separately using MTC projections.

Table 4 Growth Metrics and Associated GHG Emissions Sectors

GHG Emissions Sector	GHG Emission Source	Associated Growth Metric	Growth Metric Data Source
Transportation	Commercial On-Road Transportation	Service Population	Plan Bay Area 2040
	Passenger On-Road - EV Adjustment	Households	Plan Bay Area 2040
	Commercial On-Road - EV Adjustment	Employment	Plan Bay Area 2040
Residential	All GHG Emissions Sources	Households	Plan Bay Area 2040
Commercial/Industrial	All GHG Emissions Sources	Employment	Plan Bay Area 2040
Wastewater	All GHG Emissions Sources	Service Population	Plan Bay Area 2040
Solid Waste	All GHG Emissions Sources	Service Population	Plan Bay Area 2040

The growth indicators for Cupertino are provided in Table 5 for each GHG emissions source, excluding passenger on-road transportation and off-road fuel consumption.

Table 5 Growth Indicators for BAU GHG Emissions Forecast

GHG Emissions Source	Cupertino	Units
Transportation		
Commercial On-Road Transportation	578.2	VMT/Service Population
Passenger On-Road - EV Adjustment	267.8	kWh/Household
Commercial On-Road - EV Adjustment	0.0	kWh/Employment
Off Road - Diesel	0.0	OFFROAD Model
Off Road - Gasoline	0.0	OFFROAD Model
Off Road - Natural Gas (LPG)	0.0	OFFROAD Model
Residential		
Residential Electricity - PG&E	118.2	kWh/Household
Residential Electricity - SVCE	4,327.9	kWh/Household
Residential Electricity - Direct Access	1.0	kWh/Household
Residential Natural Gas	363.5	Therms/Household
Commercial/Industrial		
Commercial/Industrial Electricity - PG&E	94.1	kWh/Employment
Commercial/Industrial Electricity - SVCE	3,554.3	kWh/Employment
Commercial/Industrial Electricity - DAO	476.7	kWh/Employment
Commercial/Industrial Electricity - DAA	0.0	MT CO_2e/Apple Employee
Commercial/Industrial Natural Gas – PG&E	237.79	Therms/Employment
Commercial/Industrial Biofuel – Apple Fuel Cell	0.0	Therms/Employment
Wastewater		
Wastewater Treatment and Discharge	1.4	BOD5 Treated/Service Population
Solid Waste		
Solid Waste Generated/Disposal	0.3	Tons Landfilled/Service Population

Notes: NA = not applicable MT CO_2e = metric ton carbon dioxide equivalent; PG&E = Pacific Gas and Electric; SVCE = Silicon Valley Clean Energy; DAO = Direct Access Other; DAA = Direct Access Apple; kWh = kilowatt-hour.

On-Road Activity Data

Activity data for the forecast of passenger on-road transportation was modeled separately from the above growth metrics and growth indicators, using the MTC Vehicle Miles Traveled Data portal output for Cupertino. Climate Action Plan VMT Data was pulled for 2015, 2020, 2030, 2040. Trip data was allocated based on whether the entirety of a trip took place within Cupertino transit area, started or ended within the transit area, or started and ended outside of the transit area. 100 percent of daily trips completely within the jurisdiction, 50 percent of partially-within trips, and 0 percent of outside trips were allocated to Cupertino. Daily VMT data was annualized using the same annualization factor of 338, that DVN GL utilized in the 2018 GHG baseline Inventory. Annual compound growth rates were calculated for each time period, and used to find VMT totals for the years between those provided by the MTC data portal. The growth rate for the 2030-2040 period was used to forecast 2045 VMT activity data. The results are summarized in Table 6.

Table 6 Cupertino Passenger On-Road Transportation Forecast

Growth Metric	2023	2026	2030	2035	2040	2045
VMT	392,383,890	396,745,143	402,635,644	415,695,482	429,178,926	443,099,718

Notes: VMT = vehicle miles traveled

Data Source: Metropolitan Transportation Commission, Vehicle Miles Traveled Data portal. Available: http://capvmt.us-west-2.elasticbeanstalk.com/data.

Off-Road Activity Data

Activity data for the forecast of off-road GHG emissions was modeled separately from the above growth metrics and growth indicators, using the outputs from the CARB web-based OFFROAD2021 off-road emissions database, per CARB recommendations. The OFFROAD2021 database was queried for annual emissions for Santa Clara County for the forecast years to obtain fuel consumption for gasoline, diesel, and natural gas. The BAU GHG Forecast aggregated fuel consumption from the same equipment sectors as the 2018 baseline year. The inclusion of specific equipment sectors from the database query was determined based on their relevance to activities occurring within the City of Cupertino. The following equipment sectors are included in the 2018 baseline year inventory and the GHG emissions forecast:

- Construction and Mining
- Light Commercial
- Industrial
- Portable Equipment
- Recreational Vehicles
- Lawn and Garden
- Transportation Refrigeration Units

The results of the database query were summarized for all equipment sectors in Santa Clara County. Cupertino was allocated a percentage of county fuel consumption for each sector relative to Cupertino's proportion of jobs or population in the county. The results are summarized in Table 7.

Table 7 Cupertino BAU GHG Emissions Forecast Off-Road Fuel Consumption

Off-road Fuel Category	2023	2026	2030	2035	2040	2045
Diesel	747,192	834,695	931,569	980,552	1,003,261	1,024,102
Gasoline	607,314	635,982	658,273	676,795	680,961	657,976
Natural Gas	590,605	620,593	648,514	677,920	690,873	658,042

Notes: All values are of the unit gallons of fuel

Data Source: California Air Resources Board. 2021. OFFROAD2021 v1.0.1 Emissions Inventory . Available: https://arb.ca.gov/emfac/emissions-inventory/b3e3139ff7a2304c48acb2a0684ab41b38c5c26e. Accessed November 30, 2021.

Emissions Factors

The BAU GHG emissions forecast is representative of a scenario where community activities are generally similar to that of the baseline 2018 GHG emissions inventory. As such, BAU activity data growth is multiplied by the emissions factors used to calculate GHG emissions from the baseline GHG emissions inventory to generate an estimate of future GHG emissions without influence from GHG reduction policies at the State or local level. The BAU GHG emissions factors for the relevant GHG emissions sources and sectors are provided in Table 8, reported in MT CO_2e. GHG emissions factors for

direct access electricity provided to Apple is excluded from the below table but is presented in the discussion that follows.

Table 8 BAU GHG Emissions Factors

GHG Emissions Source	GHG Emissions Factor	Units
Transportation		
Passenger On-Road Transportation	0.0003481	MT CO_2e/VMT
Commercial On-Road Transportation	0.0013480	MT CO_2e/VMT
Passenger On-Road - EV Adjustment	0.0000045	MT CO_2e/kWh
Commercial On-Road - EV Adjustment	0.0000045	MT CO_2e/kWh
Off Road - Diesel	0.0103387	MT CO_2e/Gallons
Off Road - Gasoline	0.0090620	MT CO_2e/Gallons
Off Road - Natural Gas (LPG)	0.0058138	MT CO_2e/Gallons
Residential		
Residential Electricity - PG&E	0.0000962	MT CO_2e/kWh
Residential Electricity - SVCE	0.0000019	MT CO_2e/kWh
Residential Electricity - Direct Access	0.0002360	MT CO_2e/kWh
Residential Natural Gas	0.0053047	MT CO_2e/Therm
Natural Gas Fugitive - Residential	0.0001735	MT CO_2e/Therm
Commercial/Industrial		
Commercial/Industrial Electricity - PG&E	0.0000962	MT CO_2e/kWh
Commercial/Industrial Electricity - SVCE	0.0000019	MT CO_2e/kWh
Commercial/Industrial Electricity - DAO	0.0002360	MT CO_2e/kWh
Commercial/Industrial Electricity - DAA	0.0000000	MT CO_2e/kWh
Commercial/Industrial Electricity - PG&E	0.0000962	MT CO_2e/kWh
Natural Gas Fugitive - Commercial	0.0001735	MT CO_2e/Therm
Commercial Natural Gas – PG&E	0.0053047	MT CO_2e/Therm
Commercial Biofuel – Apple Fuel Cell	0.0000000	MT CO_2e/Therm
Wastewater		
Wastewater Treatment and Discharge	0.1441426	MT CO_2e/BOD5 Treated
Solid Waste		
Solid Waste Generated/Disposal	0.5155722	MT CO_2e/Tons Landfilled

Notes: NA = not applicable MT CO2e = metric ton carbon dioxide equivalent; PG&E = Pacific Gas and Electric; SVCE = Silicon Valley Clean Energy; DAO = Direct Access Other; DAA = Direct Access Apple; kWh = kilowatt-hour.

BAU GHG Emissions Forecast Results

The following provides a summary of the results of the BAU GHG emissions forecast for each source in Cupertino. The results have been reported in MT CO_2e. The BAU forecast projects an increase in GHG emissions above the baseline 2018 GHG emissions inventory from all GHG emissions sources through 2045. An increase in housing stock commensurate with the RHNA allocations for 2021-2030 is attributed to 2030 and all growth indicators utilizing households will increase significantly that year. Table 9 and Figure 1 provide a summary of the Cupertino BAU GHG emissions forecast.

Table 9 Cupertino BAU GHG Emissions Forecast Summary

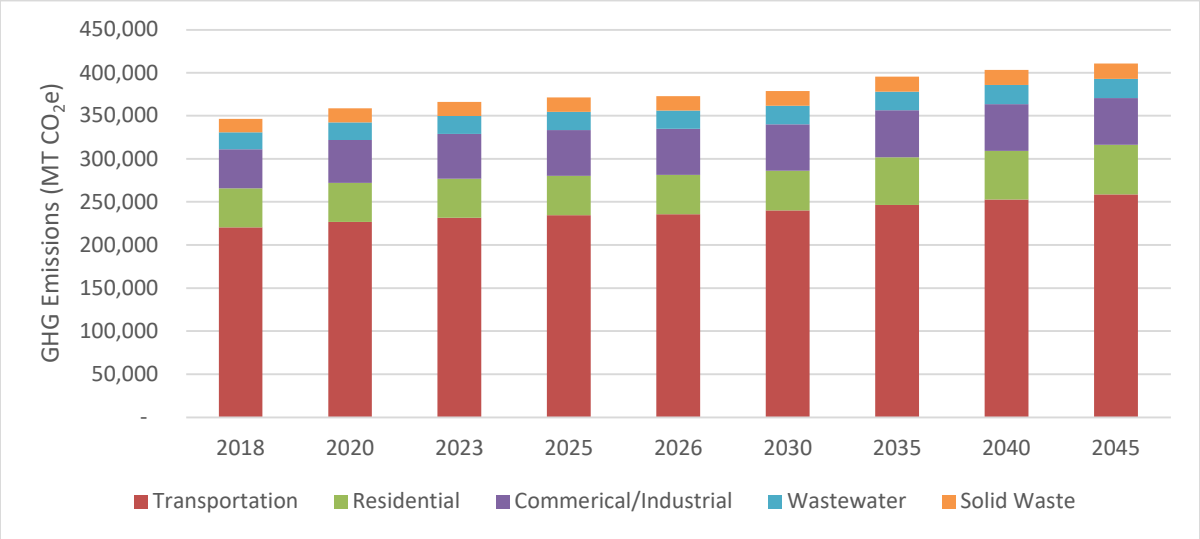
GHG Emissions Source	2023	2026	2030	2035	2040	2045
Transportation	**231,509**	**235,735**	**240,232**	**246,486**	**252,825**	**258,821**
Passenger On-Road Transportation	136,582	138,100	140,150	144,696	149,390	154,235
Commercial On-Road Transportation	78,238	79,607	80,687	81,545	82,842	84,176
Residential Electricity - EV Adjust	27	27	27	33	34	34
Commercial/Industrial Electricity - EV Adj	0	0	0	0	0	0
Off Road - Diesel	7,725	8,630	9,631	10,138	10,372	10,588
Off Road - Gasoline	5,503	5,763	5,965	6,133	6,171	5,963
Off Road - Natural Gas (LPG)	3,434	3,608	3,770	3,941	4,017	3,826
Residential	**45,597**	**45,813**	**45,869**	**55,459**	**56,462**	**57,482**
Residential Electricity - PG&E	258	259	259	313	319	325
Residential Electricity - SVCE	187	188	188	228	232	236
Residential Electricity - Direct Access	5	6	6	7	7	7
Residential Natural Gas - PG&E	43,717	43,924	43,978	53,173	54,134	55,112
Natural Gas Fugitive - Residential	1,430	1,437	1,438	1,739	1,770	1,802
Commercial/Industrial	**52,115**	**53,655**	**54,538**	**54,860**	**54,753**	**54,646**
Commercial/Industrial Electricity - PG&E	327	337	342	344	344	343
Commercial/Industrial Electricity - SVCE	245	252	257	258	258	257
Commercial/Industrial Electricity - DAO	4,066	4,187	4,256	4,282	4,273	4,265
Commercial/Industrial Electricity - DAA	0	0	0	0	0	0
Commercial/Industrial Natural Gas - PG&E	45,583	46,940	47,719	48,003	47,908	47,814
Commercia/Industrial Natural Gas – Apple Fuel Cell	0	0	0	0	0	0
Natural Gas Fugitive - Commercial	1,894	1,938	1,964	1,973	1,970	1,967
Wastewater	**20,767**	**21,130**	**21,417**	**21,645**	**21,989**	**22,343**
Wastewater Treatment and Discharge	20,767	21,130	21,417	21,645	21,989	22,343
Solid Waste	**16,615**	**16,906**	**17,136**	**17,318**	**17,593**	**17,876**
Community Generated Solid Waste	16,615	16,906	17,136	17,318	17,593	17,876
TOTAL	**366,604**	**373,239**	**379,192**	**395,768**	**403,622**	**411,169**

Notes: Values in this table may not add up to totals due to rounding

All values are of the unit metric tons of carbon dioxide equivalent (MT CO_2e)

PG&E = Pacific Gas and Electric; SVCE = Silicon Valley Clean Energy; DAO = Direct Access Other; DAA = Direct Access Apple; kWh = kilowatt-hour.

Figure 1 Cupertino BAU GHG Emissions Forecast (MT CO_2e) through 2045



Adjusted GHG Emissions Forecasts

The Adjusted forecast accounts for GHG emissions reductions that can be reasonably expected from State legislation and regulations. While there are numerous pieces of legislation that are likely to achieve long-term GHG emissions reduction, there can be wide variations on how these are implemented within a specific jurisdiction.

GHG Reduction Legislation Included in Cupertino Forecasts

Several State regulations have been enacted that reduce Cupertino's future GHG emissions. The impact of these regulations was quantified and incorporated into an Adjusted forecast to provide a more accurate depiction of future GHG emissions growth and the responsibility of GHG emissions reduction for Cupertino beyond established State regulations. The following State legislation were applied to the Adjusted Forecasts based on the unique sectors within Cupertino.

- 2019 Title 24 Building Energy Efficiency Standards
- Senate Bill 100 - California Renewables Portfolio Standard Program: emissions of greenhouse gases
- SAFE Part One - U.S. EPA and NHTSA Safer Affordable Fuel-Efficient or SAFE Vehicles Rule Part One
- Innovative Clean Transit (ICT) Regulation
- Advanced Clean Trucks (ACT) Regulation

GHG Reduction Legislation Calculations

EMFAC 2021 version was used to model transportation-related GHG emissions for the Cupertino forecasts. In addition, the following methodology was used to calculate energy-related GHG emissions reduction related to Title 24 and SB 100.

- **Title 24:** It is assumed that all growth in the residential sector is from new construction. Accordingly, Title 24 GHG emissions reduction for natural gas and electricity are calculated as a percentage of the projected increase in energy consumption beyond the baseline 2018 GHG emissions inventory, under the BAU forecast, as provided in 9. Overall, the energy consumption reduction impact of Title 24 is:
  - 53 percent reduction beyond the 2018 baseline for residential electricity; and

- 7 percent reduction beyond the 2018 baseline for residential natural gas.[3]

- **SB 100:** PG&E, SVCE, and Direct Access providers currently provide electricity in Cupertino and are subject to SB 100 requirements. GHG emissions from electricity consumption are largely determined by the emissions factor associated with the supplied electricity. Legislative GHG emissions reductions from SB 100 are calculated as the difference between GHG emissions under the BAU forecast electricity and GHG emissions calculated using a SB 100-adjusted GHG emissions factor for a given forecast year. An adjusted GHG emission factors is calculated by scaling the baseline electricity GHG emissions factor with the RPS percentage for eligible renewable electricity required for compliance with SB 100. Each of the electricity providers for Cupertino had different electricity emissions factors due to different RPS percentages in their electricity delivery mix. The RPS percentages and associated GHG emissions factors used to determine the Adjusted forecast electricity emissions are provided in Table 10. GHG emissions factors were also converted from kilowatt-hour (kWh) to Megawatt-hour (MWh) in the table. Note that while both Title 24 and SB 100 influence GHG emissions reductions in the electricity sector, double counting of these reductions is avoided by accounting for Title 24 reductions first and then accounting for reductions from SB 100.

Table 10 Electricity Provider Forecasted RPS and Electricity GHG Emissions Factors

Energy Provider	2018 (Baseline)	2023	2026	2030	2035	2040	2045
PG&E							
Renewable Portfolio Standard Percentage	39%	48%	53%	60%	73%	87%	100%
Adjusted Electricity Emission Factor (MT CO_2e/MWh)	0.09615	0.08159	0.07364	0.06305	0.04203	0.02102	0
SVCE							
Renewable Portfolio Standard Percentage	56%	58%	59%	60%	73%	87%	100%
Adjusted Electricity Emission Factor (MT CO_2e/MWh)	0.00191	0.00184	0.00180	0.00174	0.00116	0.00058	0
Direct Access							
Renewable Portfolio Standard Percentage	31%	44%	51%	60%	73%	87%	100%
Adjusted Electricity Emission Factor (MT CO_2e/MWh)	0.23605	0.19240	0.16859	0.13684	0.09123	0.04561	0
Notes: MT CO_2e = metric tons of carbon dioxide equivalent; MWh = Megawatt-hour							

State legislation is expected to result in GHG emissions reduction from the BAU forecast in both the residential and commercial/industrial sectors. Title 24 is expected to reduce GHG emissions from reduced electricity and natural gas consumption in new residential housing units. SB 100 is expected to further reduce GHG emissions in the residential sector through reduced GHG emissions associated with electricity generation, as well as similar reductions in the commercial/industrial sector. The expected legislative reductions from SB 100 and Title 24 are summarized in Table 11.

[3] California Energy Commission. 2018. 2019 Building Energy Efficiency Standards Frequently Asked Questions. Available: <https://www.energy.ca.gov/sites/default/files/2020-03/Title_24_2019_Building_Standards_FAQ_ada.pdf>. Accessed June 21, 2021.

Table 11 Cupertino Adjusted GHG Emissions Reductions

GHG Emissions Source	2023	2026	2030	2035	2040	2045
Transportation Rules Reductions						
Transportation	**17,588**	**30,284**	**45,903**	**63,585**	**75,497**	**82,850**
Passenger On-Road Transportation	13,385	21,068	29,426	36,315	40,625	43,349
Commercial On-Road Transportation	4,222	9,239	16,585	27,422	34,966	39,467
Passenger On-Road EV Adjust[1]	-17	-23	-24	-5	13	34
Commercial On-Road EV Adjust[1]	-3	-20	-84	-148	-107	0
Title 24 Reductions	**22**	**16**	**4**	**715**	**75**	**76**
Residential Electricity - PG&E	1	1	0	29	3	3
Residential Electricity - SVCE	1	0	0	21	2	2
Residential Electricity - Direct Access	0	0	0	1	0	0
Residential Natural Gas	20	14	4	644	67	68
Natural Gas Fugitive - Residential	1	0	0	21	2	2
SB 100 Reductions	**858**	**1,364**	**2,037**	**3,167**	**4,307**	**5,427**
Residential	**47**	**73**	**108**	**245**	**412**	**562**
Residential Electricity - PG&E	39	60	89	160	247	322
Residential Electricity - SVCE	7	11	16	81	160	234
Residential Electricity - Direct Access	1	2	2	4	5	7
Commercial/Industrial	**811**	**1,290**	**1,929**	**2,922**	**3,895**	**4,865**
Non-Residential Electricity - PG&E	50	79	118	194	269	343
Non-Residential Electricity - SVCE	9	15	22	101	179	257
Non-Residential Electricity - Direct Access Other	752	1,197	1,789	2,627	3,448	4,265
TOTAL REDUCTIONS	**18,469**	**31,644**	**47,945**	**67,466**	**79,880**	**88,354**

Notes: Values in this table may not add up to totals due to rounding

All values are of the unit metric tons of carbon dioxide equivalent (MT CO_2e)

[1] Negative emissions reduction indicate an increase in emissions from electric vehicle adoption, and consequently energy usage.

PG&E = Pacific Gas and Electric; SVCE = Silicon Valley Clean Energy; DAO = Direct Access Other; EV = electric vehicle.

Figure 2 shows the GHG emissions trends in terms of MT CO_2e for the Adjusted forecast. Adjusted forecast emissions trend downward over time through 2045.

Figure 2 Cupertino Adjusted GHG Emissions Forecast (MT CO_2e) through 2045

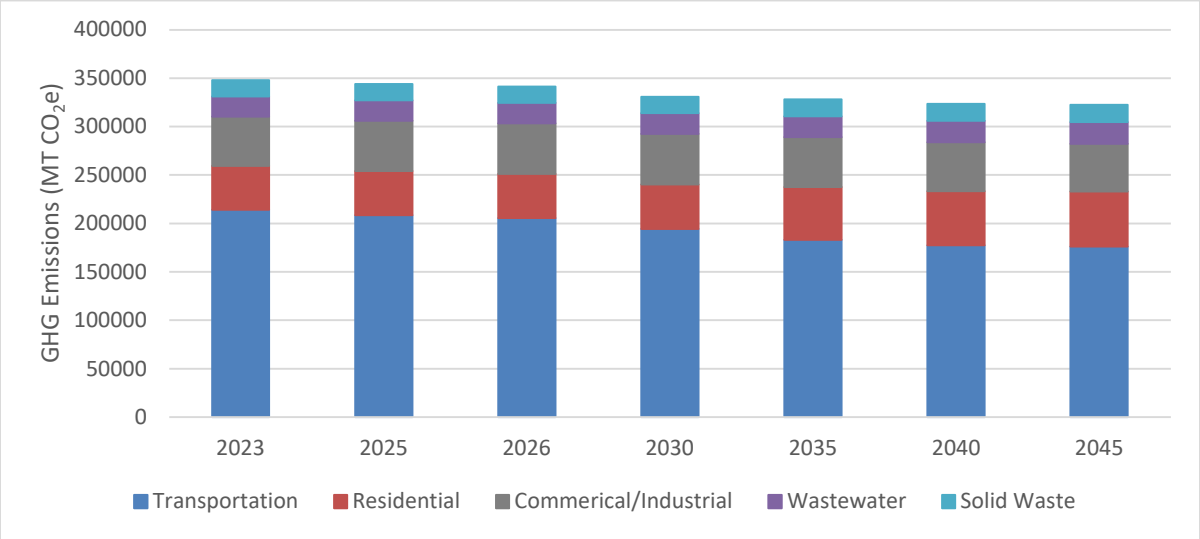


Figure 3 shows the GHG emissions trends in terms of MT CO_2e over the course of the BAU and Adjusted forecasts to illustrate the influence of State legislation on projected emissions.

Figure 3 Cupertino BAU and Adjusted GHG Emissions Forecasts (MT CO_2e) through 2045

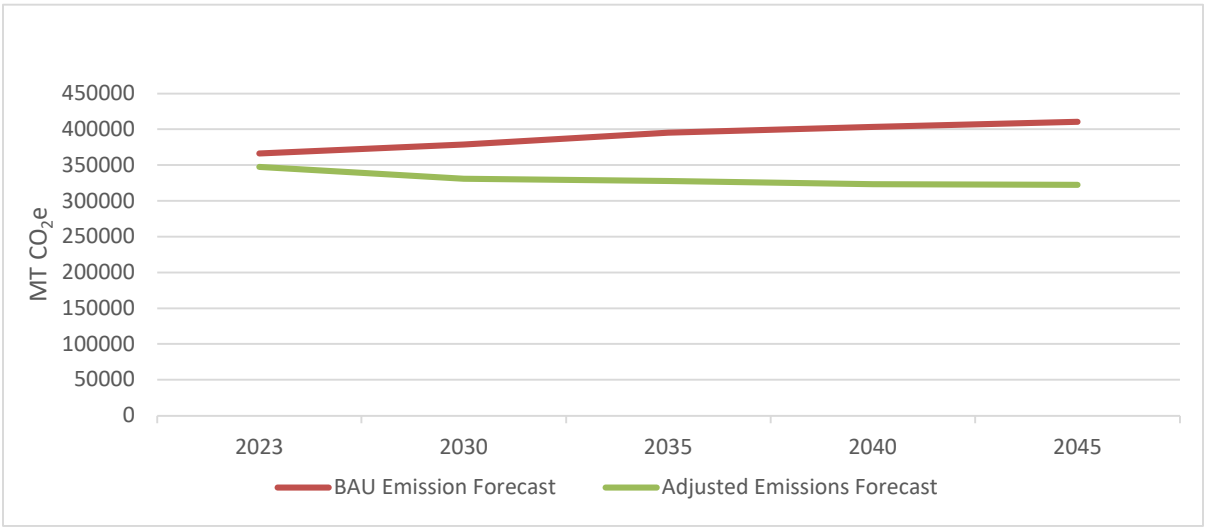


Table 12provides more detail including emissions (in MT CO_2e) by sector for milestone years from 2023 through 2045.

Table 12 Cupertino Adjusted GHG Emissions Forecast Detail

GHG Emissions Source	2023	2026	2030	2035	2040	2045
Transportation	**213,921**	**205,470**	**194,328**	**182,901**	**177,328**	**175,971**
Passenger On-Road Transportation	123,196	117,032	110,724	108,381	108,764	110,886
Commercial On-Road Transportation	74,016	70,368	64,102	54,122	47,877	44,709
Residential Electricity - EV Adjust	44	50	52	38	20	0
Commercial/Industrial Electricity - EV Adj	3	20	84	148	107	0
Off Road - Diesel	7,725	8,630	9,631	10,138	10,372	10,588
Off Road - Gasoline	5,503	5,763	5,965	6,133	6,171	5,963
Off Road - Natural Gas (LPG)	3,434	3,608	3,770	3,941	4,017	3,826
Residential	**45,527**	**45,724**	**45,757**	**54,499**	**55,975**	**56,844**
Residential Electricity - PG&E	218	198	170	124	69	0
Residential Electricity - SVCE	179	177	172	126	70	0
Residential Electricity - Direct Access	4	4	3	2	1	0
Residential Natural Gas - PG&E	43,697	43,909	43,974	52,529	54,066	55,044
Natural Gas Fugitive - Residential	1,429	1,436	1,438	1,718	1,768	1,800
Commercial/Industrial	**51,305**	**52,365**	**52,609**	**51,939**	**50,858**	**49,781**
Commercial/Industrial Electricity - PG&E	277	258	224	151	75	0
Commercial/Industrial Electricity - SVCE	236	237	234	157	78	0
Commercial/Industrial Electricity - DAO	3,314	2,990	2,468	1,655	826	0
Commercial/Industrial Electricity - DAA	0	0	0	0	0	0
Non-Residential Natural Gas - PG&E	45,583	46,940	47,719	48,003	47,908	47,814
Non-Residential Biofuel – Apple Fuel Cell	0	0	0	0	0	0
Natural Gas Fugitive - Commercial	1,894	1,938	1,964	1,973	1,970	1,967
Wastewater	**20,767**	**21,130**	**21,417**	**21,645**	**21,989**	**22,343**
Wastewater Treatment and Discharge	20,767	21,130	21,417	21,645	21,989	22,343
Solid Waste	**16,615**	**16,906**	**17,136**	**17,318**	**17,593**	**17,876**
Community Generated Solid Waste	16,615	16,906	17,136	17,318	17,593	17,876
TOTAL	**348,136**	**341,595**	**331,247**	**328,301**	**323,743**	**322,815**

Notes: Values in this table may not add up to totals due to rounding

All values are of the unit metric tons of carbon dioxide equivalent (MT CO_2e)

PG&E = Pacific Gas and Electric; SVCE = Silicon Valley Clean Energy; DAO = Direct Access Other; DAA = Direct Access Apple; kWh = kilowatt-hour.

1990 GHG Emissions Back-cast

A 1990 GHG emissions back-cast was developed based on Cupertino's 2010 inventory results.[4] Determining 1990 GHG emissions levels for a community is an important step in developing climate action targets. This is because the State currently utilizes 1990 as a reference for their GHG reduction goals. CARB has recommended that jurisdictions establish 2030 GHG emissions reduction goals

[4] Cupertino's 2010 GHG emissions inventory can be accessed at: https://www.cupertino.org/home/showpublisheddocument/14938/636524760503430000

consistent with the State's goal to reduce emissions 40 percent below 1990 levels, established by SB 32. Because Cupertino does not have reliable or sufficient activity data to develop an inventory for 1990, the 2018 inventory results were used to back-cast GHG emissions to 1990 for Los Gatos.[5] Other jurisdictions, such as the City of South Pasadena, have established a relationship between GHG emissions at the state level for their oldest inventory year (in Cupertino's case, 2010) and the state's emissions in 1990, as a way to back-case to 1990 using best available data.[6] This approach assumes that the City's GHG emissions have tracked approximately with the state's GHG emissions, when controlled for community emissions sources. While not a perfect approximation, this approach is defensible and ensures consistency with state goals. The calculation is done by using published state-wide emissions results from CARB, after removing emissions from sectors not included in the City's inventory (i.e., agricultural, industrial, and high GWP sectors). The 1990 back-cast for Cupertino is shown in Table 13.

Table 13 1990 Back-cast

2010 Statewide GHG Emissions (MMT CO_2e)	305.4
1990 Statewide GHG Emissions (MMT CO_2e)	309.6
2010 to 1990 Statewide GHG Emissions Change (%)	-1.36%
2010 Cupertino GHG Emissions (MT CO_2e)	408,176
1990 Cupertino GHG Emissions Back-cast (MT CO_2e)	**402,639**

[5] Guidance in CARB's 2008 AB 32 Scoping Plan recommends that 1990 GHG emissions are calculated as 15 percent below 2005-2008 GHG emissions levels. However, Cupertino does not have a GHG emissions inventory for 2005-2008.
6 The concept of "best available data" is referenced by the World Resources Institute's 2014 Greenhouse Gas Protocol as a guideline for inventory best practices.

Public and Stakeholder Engagement Summary

Cupertino Climate Action Plan Update

Introduction

The City of Cupertino is updating its Climate Action Plan (CAP), which was first published in 2015. This CAP Update builds on the progress from the inaugural Cupertino CAP by building a blueprint for emissions reduction for the City that demonstrates their environmental leadership, saves the City money and promotes green jobs, complies with state environmental initiatives, promotes sustainable development, and supports regional climate change efforts.

As part of this CAP Update process, the City utilized a multi-pronged approach engagement strategy to engage with Cupertino residents, businesses, organizations, and stakeholders. Key engagement objectives include:

- **Gather community perspectives and feedback** that are representative of the diverse communities of Cupertino to inform CAP development and guide decision-making.
- **Create a framework for community action** that clearly outlines how Cupertino residents and businesses can achieve CAP goals and take ownership in action implementation.
- **Educate, empower, and energize the Cupertino community** to cultivate a shared understanding around climate change and inspire action.
- **Strengthen community relationships** with the City to facilitate and coordinate CAP implementation and other priorities and activities.

To do this, the City employed multiple engagement approaches, including:

- Public workshops
- Stakeholder meetings
- CAP Update Subcommittee meetings
- Surveys
- Pop-up events

How Equity was Centered in Cupertino's CAP Update

Equity is integral in every single aspect of a CAP—and if left out, could create opportunities for unequal and inequitable impacts and benefits across and within communities. Key equity principles to assess in each step of the CAP process include:

- **Inclusivity**, or the principle of welcoming and bringing in voices and perspectives that have historically been underrepresented in public planning processes.
- **Equity**, or the principle that impacts and benefits should be distributed in a way that provides maximum benefits for communities overburdened by climate impacts and other inequitable policies.
- **Accountability**, or the notion that the plan should build in guardrails and systems to ensure that those in positions of power are accountable to the communities it serves.
- **Anti-racist**, or the idea that we are seeking to develop strategies and policies that not only prevent the exacerbation of racial disparities, but actively seeks to close racial disparities in health, economics, and environmental burden.

Equity and inclusion were central to the City's CAP engagement strategy. The City recognizes that some community groups—such as low-income households, people who speak limited English, elders, people with disabilities, and communities of color—experience disproportionate burden from climate change impacts and should be included in the planning and design of the CAP Update. We used the following approaches to ensure our engagement was inclusive:

- **Translation of materials and public surveys** for Chinese-speakers in Cupertino.
- **Stakeholder meetings** to prioritize certain groups, such as low-income households and housing advocates.
- **Stipends for community participants**, if requested, to compensate people for their time and contributions.

Engagement Events & Feedback Summary

The table below shows the key engagement events in chronological order and their associated outcomes. For full engagement summaries of each engagement event, please see Appendix A.

Engagement Event	Date of Event	Objectives	Key Outcomes
Subcommittee Meeting #1	July 1st, 2021	• Present our engagement approach. • Identify initial vision and priorities for the CAP. • Review the outreach toolkit and give feedback to staff on the best way to roll out the toolkit in the community.	• The subcommittee identified a **list of 90 stakeholders**, including include youth groups, developers, Chamber of Commerce, environmental groups, and other advocacy organizations for inclusion in workshops. • A priority was to ensure workshops focus on **reaching both underserved and priority audiences**. Priority audiences include schools, large corporations and businesses, and developers. Underserved groups typically include East End of Cupertino and Asian populations. • Identified **priorities** include sustainable food options, circular economy, diverse transportation modes, water efficiency, and net zero emissions. • Suggested **outreach tools** include lawn signs with QR codes, translated cards, SMS texting to reach people without access to smart phones or internet, and a PowerPoint template.
Stakeholder Meeting #1	July 1st, 2021	• Build early awareness of the CAP process. • Gather high-level ideas, priorities, and concerns. • Build relationships with key stakeholder groups.	• 34 participants; affiliations included local and regional government agencies, private sector, NGOs. • Participants expressed that their **vision for Cupertino** was to be: 1) carbon neutral, 2) a leader in climate action, and 3) affordable, equitable, and diverse. • Participants expressed that the CAP Update should include considerations and actions around **education and awareness, development, leadership**, and **equity**.

Public Survey #1	July 23rd - September 19th, 2021	• Assess awareness of climate change knowledge.
		• Identify community climate change priorities.
		• Identify community-supported climate change strategies.
		• Identify potential community barriers for implementing climate change strategies.
			• 111 respondents
			• A large majority (89%) of survey respondents indicated that **climate change is already impacting their family** and will continue to worsen in the next 10 years.
			• **Climate change impacts** of highest concern were: 1) drought and water supply; 2) wildfire and smoke; and 3) extreme temperatures and heat waves.
			• **Climate action strategies** that generated a lot of support include:
			  ○ Improve energy efficiency in homes and businesses.
			  ○ Transition homes and businesses from natural gas to clean electricity for space and water heating.
			  ○ Build a more walkable and bikeable city.
			  ○ Encourage rooftop solar panels and local renewable energy.
			  ○ Restore thriving natural spaces and plant trees.

<table>
<tr><th>Engagement Event</th><th>Date of Event</th><th>Objectives</th><th>Key Outcomes</th></tr>
<tr><td></td><td></td><td></td><td>

Increase accessibility to public transit.

The main climate action barriers identified include:

Cost and competing economic demands on the City and residents.
Lack of agreement on the issues or how to prioritize them.
Resistance to new mandates and requirements.
Level of education and understanding about climate change in the community.

</td></tr>
<tr><td>Public Workshop #1</td><td>July 29th, 2021</td><td>

Build early awareness of the CAP goals and process among the general public.
Gather high-level priorities, and concerns about climate action in Cupertino.
Gather initial ideas for potential actions to include in the CAP.

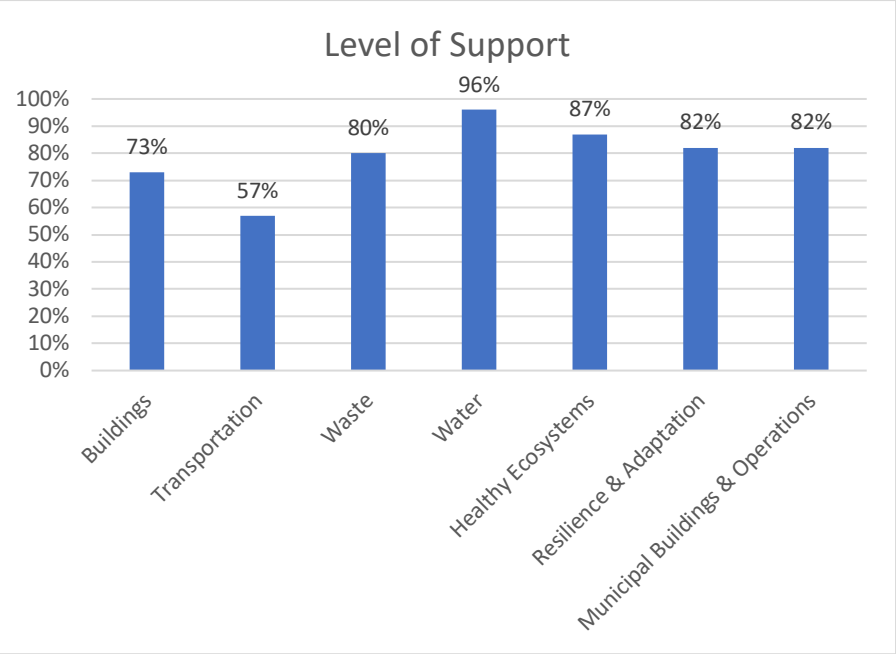
</td><td>

53 participants
Nearly two-thirds (62%) of participants who participated in poll questions said that they had noticed or experienced climate change impacts in Cupertino.
The top two identified priorities for each focus area are as follows:

<table>
<tr><th>Focus Area</th><th>Top Two Priorities and Level of Support (%)</th></tr>
<tr><td>Buildings & Energy Consumption</td><td>Retrofit older buildings to be more efficient. (39%)
Retrofit older buildings to replace gas with cleaner electric appliances. (29%)</td></tr>
<tr><td>Renewable Energy</td><td>Promote neighborhood solar or micro-grids to protect critical infrastructure and homes. (51%)
Streamline permitting and technical support for installing clean energy on my property. (24%)</td></tr>
<tr><td>Transportation & Land Use</td><td>Improve public transit access and/or infrastructure. (34%)
Increase the walkability and bikability of Cupertino. (28%)</td></tr>
<tr><td>Solid Waste</td><td>Reduce single-use plastic, such as take-out food containers and other packaging. (58%)
Encourage companies or producers to be responsible for material disposal or recycling. (21%)</td></tr>
<tr><td>Carbon Sequestration & Natural Systems</td><td>Increase the number of trees and amount of shade in Cupertino. (41%)
Update water system infrastructure and increase water conservation education and programs. (19%)</td></tr>
<tr><td>Resilient Communities</td><td>Support communities that are most affected by climate change impacts. (31%)
Improve disaster preparedness and communication. (27%)</td></tr>
</table>
</td></tr>
</table>

<table>
<tr><th>Engagement Event</th><th>Date of Event</th><th>Objectives</th><th>Key Outcomes</th></tr>
<tr><td>Subcommittee Meeting #2</td><td>August 19th, 2021</td><td>• Review draft CAP targets
• Brainstorm high impact strategies and actions to achieve draft CAP targets
• Review upcoming public engagement and options for outreach activities</td><td>• The subcommittee agreed that it is an important goal is to set aggressive reduction targets from City-owned buildings and operations and led by example.
• Subcommittee recommendations include:
○ Make policy requests or lobby for actions at the State or regional level.
○ The City should be aggressive in its measures that it has control over (e.g., issuing building permits, banning gas in buildings, utilizing CCAs to supersede renewable portfolio trajectories, or implementing ordinances for EV charging)
○ Partner with private businesses to reduce their usage of gas.
○ Partner with regional organizations, such as CalTrans, to successfully implement measures that reduce GHG emissions in Cupertino.
○ Leverage Cupertino’s existing EV infrastructure to continuously expand EV adoption from residents.</td></tr>
<tr><td>Stakeholder Meeting #2 – Housing Advocates</td><td>September 30th, 2021</td><td>• Build early awareness of the CAP process.
• Gather high-level ideas, priorities, and concerns.
• Build relationships with key stakeholder groups.
• Focus on advocates for affordable and low-income housing.</td><td>• 10 participants; represented a diversity of organizations and experiences that advocated for low-income housing, support for homeless and houseless peoples, and affordable housing.
• Expressed concerns included the ongoing water shortage and drought conditions; concern for vulnerable groups during heat waves; and wildfire, smoke, and power shut offs during wildfire season and heat waves.
• Participants were generally supportive of eliminating natural gas in buildings, requiring composting, and prioritizing multifamily homes, but suggested that the public will require more education around these topics to implement real change.
• Participants envisioned a future Cupertino that is resilient, equitable and inclusive, walkable and bikable, and has access to EVs.</td></tr>
<tr><td>Public Workshop #2</td><td>October 11th, 2021</td><td>• Provide updates about the Cupertino CAP’s emission forecasts and GHG reduction targets.
• Present the draft mitigation measures.
• Gather feedback about the draft mitigation measures.</td><td>• 40 participants
• Key themes related to proposed mitigation measures include:
<table>
<tr><th>Mitigation Measure</th><th>Feedback Themes</th></tr>
<tr><td>Half of Cupertino buildings are completely electric.</td><td>1. Prohibitive costs
2. Lack of renter agency
3. Lack of electrification resources
4. Challenges around enforcement and installation
5. Additional burden on low-income community members</td></tr>
<tr><td>Most of your everyday trips are by public transport, walking, biking, scootering, or wheelchair.</td><td>6. A congestion fee is inequitable
7. Biking, walking can be dangerous and inconvenient
8. The elderly and people who are differently abled will be most negatively impacted</td></tr>
</table></td></tr>
</table>

<table>
<tr><th>Engagement Event</th><th>Date of Event</th><th>Objectives</th><th colspan="2">Key Outcomes</th></tr>
<tr><td></td><td></td><td></td><td>Shift away from single-occupancy vehicles.</td><td>9. Need for more accessible and improved bike, pedestrian, and public transit infrastructure and education</td></tr>
<tr><td></td><td></td><td></td><td>When you drive, you use an electric vehicle.</td><td>10. Cost prohibitive
11. Range limited
12. Lack of charging infrastructure
13. Lack of personal agency to upgrade existing vehicles
14. Particularly challenging for multifamily building dwellers</td></tr>
<tr><td></td><td></td><td></td><td>You are creating less waste in the landfill.</td><td>15. Hard to avoid packaging
16. No incentives for reuse and reducing waste
17. Inefficiency of repair programs
18. Added burden to small business owners
19. City has responsibility to reduce plastic, increase public education on waste sorting, and a restructuring of collection rates could help with behavior change around waste practices</td></tr>
<tr><td>Public Survey #2</td><td>September 30th - October 25th, 2021</td><td>• Assess level of support for various focus areas' Mitigation Measures as a whole.
• Assess level of support for key mitigation measures within each focus area.</td><td colspan="2">• 50 respondents
• Overall, there was a consistent level of support for mitigation measures in each sector.</td></tr>
</table>

Engagement Event	Date of Event	Objectives	Key Outcomes
			

Stakeholder Meeting #3	May 3, 2022	• Review the draft Climate Action Plan and its associated mitigation measures and actions.
		• Gather ideas, priorities, and concerns on the proposed mitigation measures and actions.
			• 14 participants
			• Main themes include:
			  ○ Overall, stakeholders were **supportive of all the measures**.
			  ○ However, measures within the following sectors could have been **more ambitious and/or aggressive:**
			  ▪ Cleaning the Air – Renewable Energy and Electric
			  ▪ Connecting Communities – Transportation, Land Use

Public Survey #3	May 17, 2022 to July 23, 2021	• Public review of the draft CAP document and to provide input.	• 108 people responded to the draft documents. • 174 survey respondents.

Appendix A. Engagement Event Summaries

Full engagement summaries of each event are attached in the subsequent pages, in chronological order.

Cupertino Climate Action Plan (CAP) Update

CAP Subcommittee Workshop #1 Summary
July 1, 2021 | 4:00-5:00pm | Zoom

Contents

Background

The Climate Action Plan Update Subcommittee will review and discuss policy options and receive diverse stakeholder feedback related to the CAP update. The Subcommittee will be a key intermediary and liaison throughout the climate planning process—bridging the broader community with City leadership and bringing together public/stakeholder input and technical information to arrive at recommendations for Council. At upcoming stakeholder and public meetings, the subcommittee will listen, ask probing questions, bring back discoveries to the Sustainability Commission, and lead conversations at Commission meetings to form recommendations for the CAP.

This initial meeting between the subcommittee and consultant team will lay a foundation for the CAP engagement process by helping review and vet the engagement approach, identify initial priorities, and learn to apply the outreach toolkit.

Meeting Objectives

- Overview and training on our engagement approach.
- Identify initial vision and priorities for the CAP.
- Review the outreach toolkit and give feedback to staff on the best way to roll out the toolkit in the community.

Agenda Overview

Time	Item
5 min	Introduction
15 min	Review Engagement Approach and Challenges
20 min	CAP Update Vision and Priorities
15 min	CAP Update Outreach Toolkit
5 min	Conclusion

Participants

Name	Affiliation
Vignesh Swaminathan	City of Cupertino Sustainability Commissioner
Gary Latshaw	City of Cupertino Sustainability Commissioner
Victoria Morin	City of Cupertino
Brendan Norton	City of Cupertino, CivicSpark Fellow
Andre Duuvoort	City of Cupertino
Gilee Corral	City of Cupertino
Kelsey Bennett	Rincon Consultants, Inc.
Mike Chang	Cascadia Consulting
Andrea Martin	Cascadia Consulting

Review Engagement Approach and Challenges

A discussion was facilitated by Cascadia, with the project staff and subcommittee to review the CAP engagement timeline & stakeholder engagement approach. Discussion questions and key themes that emerged are below.

Question	Key Themes
Is the list of stakeholders satisfactory or should the project include more?	• There are currently about **90 stakeholders** identified by the City, the Commissioners, and consultants. These include youth groups, developers, Chamber of Commerce, environmental groups, and other advocacy organizations • First stakeholder workshop has **30-35 stakeholder participants**. • Want to ensure that future workshops focus on **bringing in underserved or priority audiences**.
What are other considerations in our engagement approach we should be aware of? For example, for the 2nd and 3rd stakeholder workshops, what key priority audiences should we tailor to?	• Cupertino's community dynamics have been changing – historically they have successfully engaged through the schools. However, current **affordability concerns** are preventing this from happening. • Priority audiences include **schools, large corporations and businesses, and developers**. • Young people want to see **workable** actions, as they are the generation that will be **affected by the work done now**. This does not have to be an easy solution; it just has to be **possible and effective.**
What other risks do you anticipate we will face in our engagement process?	• Engagement will be **more difficult during the school year**. Parents and children will be busier, with less time to spend thinking about or participating in sustainability/climate action. • Cupertino is currently working with local school districts on energy and water use but **not engaging the students**. One way to change

Question	Key Themes

	this would be to **research teacher leaders of sustainable clubs** and reach out to engage their students.
	• School district schedules to consider include:
	  ○ Cupertino Union School district – elementary/middle schools.
	  ○ Fremont Union School district – high school.
	  ○ There is also a pilot elementary schools and multiple private schools in Cupertino.

Who are key educators we could contact?	• **McClellan Ranch** • **Rotary Club** – President is Rod Sinks, a retired City Council member and Mayor. • **De Anza College** – The college does have an environmental group**.** Gary may know a good point of contact.

Who we generally prioritize?	• An important consideration is including populations from **both the East and West sides** of Cupertino. The East end is often excluded. This should be considered within CAP outreach.
	  ○ Currently, a **larger proportion of development and attractions** are on **the West side** including trails, redevelopment, and parks.
	• There is political heat on the far East side of Cupertino by the mall, as there is a **trend of elected officials coming from that district.**
	• Groups who will be involved include **youth, communities of color, interfaith groups, and non-English speaking households.**
	• Ensure that Cupertino's **Asian populations** are being included.
	  ○ Two suggestions for inclusion are the **Chinese Church of Christy** and a **Korean church**, both on the **West side** of Cupertino. These groups could be specifically invited to workshops.
	  ○ These groups both tend to have non-English speaking elders.
	  ○ **Telebu** can be used for communication purposes.
	• In the past, **the City has done translation** with headphones and microphones, with real-time translation on the side.
	  ○ Not a large population that speaks **Tagalog.**

CAP Update Vision and Priorities

The Subcommittee took part in a discussion of their vision CAP Update. Questions included: "In 2050, I want Cupertino to be _____" and "What should the goal of each focus area be?"

Q: "In 2050, I want Cupertino to be _____"	
Theme	**Notes**
Sustainability	• All residents and citizens who travel through Cupertino should have **sustainable options for day-to-day choices** such as food choice and method of transportation. • Have awareness and access to options for sustainability.
Emission Targets	• In 2050, Cupertino will hopefully be celebrating **10 years of net zero emissions.**

Q: "What should the goal of each focus area be?"	
Theme	**Notes**
Waste	• The creation of an **edible food recovery program** from grocery stores and restaurants, distributed to those in need. • Cupertino needs to focus on **room to grow** within waste management. • Promote a **circular economy** • Expand understanding of **lifecycle GHG emissions** • Reduction of **single use materials**
Water	• Use of **greywater and recycled water** should be expanded as a water conservation effort – only one large company is currently doing this. • Educate on **how much water is being wasted**, because water meters are not accurately measuring this. • Expand familiarity of how **groundwater is pumped.**

CAP Update Outreach Toolkit

The Subcommittee provided feedback on an outreach toolkit, brainstorming upcoming opportunities to implement the Outreach Toolkit and how to reach the most Cupertino residents possible, ensuring representation from all communities.

- **QR codes** are a helpful outreach tool.
- The City has found that people are responsive to **lawn signs with QR code**s in the grass. This was used during the drought.
- The City can print **stacks of cards for coffee shops and businesses**. These cards should be available in multiple languages.

- Consider **technology equity**, not everyone has access to the Internet or a smartphone that can scan a QR code. One way to solve this would be a **cell phone number** that could be texted for the same information that comes from a QR code.
- **Grocery stores** can be a good way to reach a lot of people since everyone has to frequent them.
- Make sure value difference between **East and West Cupertino**.
- Create a **PowerPoint template** that has background information and talking points on the CAP Update
- for the City and Sustainability Commissioners to ensure consistent messaging about the CAP Update.

Cupertino Climate Action Plan (CAP) Update

Stakeholder Engagement Workshop #1 Summary
July 1, 2021 | 5:30-7:00pm | Zoom

Contents

Background

To reach frontline communities and historically underserved populations, in addition to conducting broad public engagement, we will host targeted meetings with representatives of priority communities—including Black, Indigenous, and communities of color, people with limited English proficiency, unhoused and low-income people, and the elderly, among others. The aim will be to build meaningful, long-term relationships with critical perspectives (e.g., community-based organizations, marginalized communities, faith-based organizations) to create space for their voices in the process and leverage their expertise.

Meeting Objectives

- Build early awareness of CAP process.
- Gather high-level ideas, priorities, and concerns.
- Build relationships with key stakeholder groups.

Agenda Overview

Time	Item
15 min	Introduction
15 min	CAP Overview Presentation and Q&A
50 min	Breakout Group Discussions: Vision, Priorities & Initial Actions
10 min	Conclusion

Participants

Workshop Participants

Name	Affiliation
Vignesh Swaminathan	Sustainability Commissioner
Gary Latshaw	Sustainability Commissioner
Robert Brown	Cupertino Community Emergency Response Team
Graham Clark	Fremont Union High School District
Hoi Poon	Bay Area for Clean Environment, Silicon Valley Youth Climate Action, Fossil Fuel Free Building Coalition
Dashiell Leeds	Sierra Club Loma Prieta Chapter
John Zirelli	Recology
Lisa Talbott	Recology
Sujatha Venkatraman	West Valley Community Services
Emily Alvarez	StopWaste
Ben Elliott	Apple
Katy Nomura	City of Cupertino
Gwyn Azar	Silicon Valley Youth Climate Action
Kelly Tung	Youth Environmental Power Initiative (YEPI)
Lizzy Mau	Bay Area Air Quality Management District
Francois Rodigari	San Jose Water
Jakub Zielkiewicz	Bay Area Air Quality Management District
Michael Strahs	Kimco Realty Corporation
Shyam "Sean" Panchal	First Maganson Holdings, Inc
Melinda Harris	Recology South Bay
Benjamin Louie	Apple
Cam Audras	Valley Water
Ryan Kim	Sierra Club

Project Staff

Name	Affiliation
Chris Corrao	City of Cupertino
Gilee Corral	City of Cupertino
Andre Duuvoort	City of Cupertino
Victoria Morin	City of Cupertino
David Stillman	City of Cupertino
Ursula Syrova	City of Cupertino
Brendan Norton	CivicSpark Fellow, City of Cupertino
Kelsey Bennett	Rincon Consultants, Inc.
Mike Chang	Cascadia Consulting Group
Andrea Martin	Cascadia Consulting Group
Maddie Siebert	Cascadia Consulting Group
Hailey Weinberg	Cascadia Consulting Group

Introduction

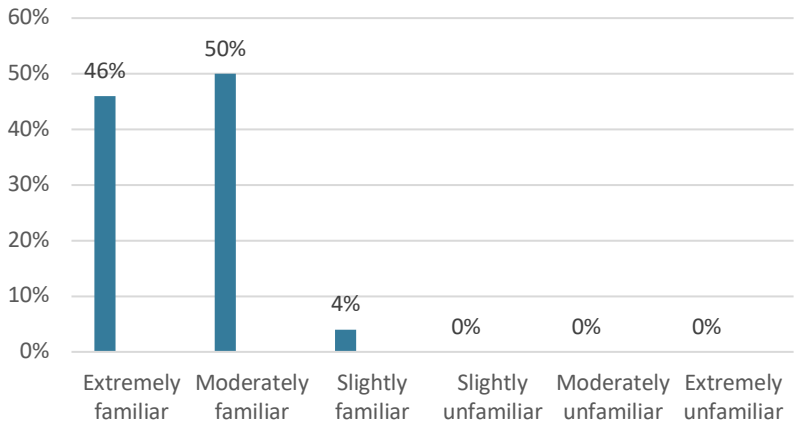
City staff and the consultant team provided a brief introduction of the CAP project team and welcomed all the participants to the stakeholder meeting. Cascadia provided an overview of Zoom tips and of the meeting's agenda.

Icebreaker

As an icebreaker near the start of the workshop, participants were asked a series of questions using PollEverywhere, including:

- What is your favorite natural feature in Cupertino?
- How familiar are you with climate change concepts – such as causes and impacts of climate change and actions needed to mitigate it?
- If you could see one thing included in this climate action plan update, what would that be?

Below are some of the answers from our icebreaker questions.

Icebreaker Question	Answers
What is your favorite natural feature in Cupertino?	• McClellan Ranch • San Antonio • Local parks and bike trails • Cupertino Memorial Park • Stevens Creek • Midpen open space district • Cherry Blossom trees • The Foothills • Blackberry Farm • The creeks • Wildlife, birds
How familiar are you with climate change concepts – such as causes and impacts of climate change and actions needed to mitigate it?	
If you could see one thing included in this climate action plan update, what would that be?	• Better Land-Use Planning • Energy self-sufficiency • Transit-oriented development balanced with electrification • Incentivizing public transit and walk/bike-ability • Net zero by 2040 • Phase out of backup diesel generators • Balance with economic considerations • Resiliency • Effective public education and community outreach

Icebreaker Question	Answers	
	• Only electric vehicles, EV infrastructure everywhere • Net positive • Energy Efficiency & Electrification to improve existing buildings/living conditions • Something bold • Economic development opportunity	• Saving energy and using more renewal sources • Existing Building electrification draft • A roadmap to decarbonize existing buildings • Incentives for private citizens • Effective mass transit to link to other cities

CAP Update Overview and Q&A

City staff presented an overview of climate change, the climate action planning process, and the City's progress so far and then answered questions from participants. The presentation showed visuals of air quality reports in the Bay Area and PG&E outages, described the sectors used in the City's first CAP, and showed Cupertino's emissions forecasts and current emission reductions so far.

Question & Answer

Question	Answer
Congrats on the achievement of GHG reductions! How does that compare to the State's goals? Or in other words, how does it compare to 1990 levels?	Emission reductions are comparable to 1990 levels. The City back-casted emissions to ensure that there was parity in how reductions were comparable to State goals.
From the GHG inventory slide, it looked like emissions from natural gas increased not insignificantly. What's driving the increase?	The staff and consulting team is currently underway with an update to the GHG emissions inventory. The team will be working towards a more detailed analysis and will have more information later in the update process.
We're currently in a water shortage right now. Does Cupertino have any plans regarding mitigating droughts right now and in the future?	The City has published a summary of current and historic drought response information at Cupertino.org/drought.
Is there any discussion about potentially incorporating into the inventory the carbon sequestered from the natural and working lands in Cupertino?	Yes, staff are looking into the potential of adding carbon sequestration accounting to our inventory work.

Vision and Priority Setting

After the initial presentation by City staff, participants were asked to use a MURAL board to give feedback about their vision for the CAP Update through guiding questions. Questions included "in 2050, I want Cupertino to be _____" and "what is important for the CAP Update to include?".

Vision for the CAP Update

Q: "In 2050, I want Cupertino to be _____"	
Theme	**Notes**
Carbon Neutrality	• Carbon neutral, or even carbon-negative • 80% GHG reduction from 1990 levels • There is hope that in 2050, Cupertino will be celebrating its 10-year anniversary of carbon neutrality by 2040 • Complete removal of natural gas and diesel usage, reduction of waste, and implementation of electric vehicle infrastructure
Leadership	• Hope that Cupertino will become a leader in sustainability • This leadership includes publishing transparent climate data and using the newest clean technology as a model for other cities
Affordable, Equitable, and Diverse	• Stakeholders hope that by 2050, Cupertino will be affordable for those of all income levels • Cupertino should be diverse in its businesses and services offered • Cupertino will be viewed as a great place to live.

Q: "What is important for the CAP Update to include?"	
Theme	**Notes**
Education and Awareness	• Include Green Education in schools • Involve the public and ensure that they are aware of the CAP Update and its goals
Development	• Ensure new development includes EV chargers, but develop with the goal of less private vehicle usage • Ensure new development does not include natural gas • Decarbonize existing buildings, implement strict energy codes
Leadership	• The CAP Update should ensure that Cupertino is working to become a leader in climate action both regionally and state-wide
Equity	• The roadmap to zero carbon must be done in an equitable way • Low income households must be considering in this plan

Breakout Group Discussion: Priorities and Initial Actions

Participants were divided into breakout rooms to do a deep dive discussion on specific focus areas. There were five breakout rooms, including:

- Energy A
- Energy B
- Transportation
- Waste
- Healthy Ecosystems, Green Infrastructure, and Water

Each breakout room discussed four (4) key questions:

1. What should the goal of this focus area be?
2. What do you think is working well for Cupertino that you want to see continue in the future?
3. What do you think are the opportunities for Cupertino to improve upon?
4. What are some other considerations, including scope of the focus area or equity considerations?

Energy A and B

Below are the general themes from Energy A and Energy B breakout rooms. The discussion focused on 4 questions:

1. What should the goal of this focus area be?
2. What do you think is working well for Cupertino that you want to see continue in the future?
3. What do you think are the opportunities for Cupertino to improve upon?
4. What are some other considerations, including scope of the focus area or equity considerations?

Focus Area Goal	Working Well	Opportunities to Improve	Considerations
Building Decarbonization	• All-electric reach code – expand to include EV infrastructure • Access to 100% renewable energy from SVCE • Energy conservation during the pandemic! • Currently Cupertino is an energy leader • Continue to streamline online building permits • Leader in building electrification • Expand cost savings further for home retrofits	• Implement strict energy codes • Infrastructure should support building and vehicle electrification • Convert homes to all-electric • Promote building electrification with a burn out ordinance or fuel cells	• Ensure that building retrofits are not burdensome on low-income households
Emphasis on Renewables		• Use incentives or replacement programs • Create a benchmarking process to measure progress • Work to reduce the energy burden for Cupertino residents • Implement community solar projects	• Provide grants, rebates, or incentives to switch to renewables • Create incentives for appliance retirement before burn out occurs

Focus Area Goal	Working Well	Opportunities to Improve	Considerations
		• Streamline interconnect requests for on-site renewables	
Metrics		• Measure appliance replacement rates, number of utility natural gas accounts terminated, % of residence with PV and battery systems • Aim for net-zero by 2035 instead of 2040	
Paths and Open Space	• Great bike and pedestrian pathways and open space access		
Electric Vehicle Infrastructure		• Include EV infrastructure for new development • Build this infrastructure with room for growth	• Understand that the transition to EV's is not an equitable solution
Education	• Expand education for community members on renewable options	• Implement education for contractors for electric options • Create and distribute resources for business owners on energy efficiency • Implement a forced energy conservation day to learn what businesses are using excessive energy • Create opportunities for contractors (especially small and medium sized contracting businesses) that include low-carbon education options	

Focus Area Goal	Working Well	Opportunities to Improve	Considerations
		• Create a Sustainable Cupertino Education Center • Educate the youth through climate curriculum in schools – they will educate their parents	
Equity			• Installation of guardrails • Ensure that climate language is simple and easy to understand

Transportation

Below are the general themes from the Transportation breakout room. The discussion focused on 4 questions:

1. What should the goal of this focus area be?
2. What do you think is working well for Cupertino that you want to see continue in the future?
3. What do you think are the opportunities for Cupertino to improve upon?
4. What are some other considerations, including scope of the focus area or equity considerations?

Focus Area Goal	Working Well	Opportunities to Improve	Considerations
Public Transit	• VIA and SR2S are working well!	• Connect Cupertino public transit to BART, Caltrain & Light Rail • Promote VIA shuttles in Cupertino • Promote less vehicle trips in cities and VMT reduction • Incorporate autonomous driving and change in car ownership into planning • Improve access to different modes of transportation other than private passenger vehicles • Cupertino should become an advocate for VTA's	
Biking and Walking	• Cupertino is doing well in bike lane implementation and safety • Transition to protected lanes is great! • Seeing positive results in increased biking to school • Seeing less stranded bikeshare bikes in the streets	• Implement biking and walking education in schools • Implement a bike or scooter share program • Certain highways are congested and dangerous, do work to improve commuter safety • Implement subsidies for bike expenses • Consider subsidies for transitioning to using alternative methods	• Consider equity and educate on equity considerations in schools • Improve lighting in De Anza VTA station and at Steven's Creek Consider ADA compliance
Education and Outreach		• Educate the public on changes being made • Improve transportation outreach	

Waste

Below are the general themes from the Waste breakout room. The discussion focused on 4 questions:

1. What should the goal of this focus area be?
2. What do you think is working well for Cupertino that you want to see continue in the future?
3. What do you think are the opportunities for Cupertino to improve upon?
4. What are some other considerations, including scope of the focus area or equity considerations?

Focus Area Goal	Working Well	Opportunities to Improve	Considerations
Waste Diversion	• Three streams available curbside • Great variety of materials accepted for recycling and composting	• Improving waste diversion rates – Cupertino has been stuck at 70% for a while • Improve upstream waste reduction and waste prevention • Improve contamination issues • Reduce construction and demolition waste • Properly deal with organics waste • Create a soil management or carbon sequestration program • Expand bulk item pickup frequency • Implement a single use plastics ordinance, discuss plastics #4-7	
Producer/Distributor Responsibility		• Hold producers accountable • Implement pilot projects for reusables for restaurant to-go containers • Formalize food rescue and recovery programs	
Metrics	• Create a consumption-based inventory to account for waste-related emissions (already in progress)	• Implement in-person auditing	• Will costs increase for residents with a more robust program? • Role of economics: cost of renewables vs. non-renewables

Focus Area Goal	Working Well	Opportunities to Improve	Considerations
Education	• Continue cart signage and brochures	• Residents (especially youth) are interested in learning, continue education • Conduct outreach to customers who need more education on composting • Educate new residents who do not come from somewhere with a composting program • Address illegal dumping for those who do not have access to proper disposal	• Waste disposal is not a priority for many right now, especially those who are busy, have kids, etc. • Consider the knowledge gaps between income levels and cultural communities, be sensitive to current practices

Water, Healthy Ecosystems, and Green Infrastructure

Below are the general themes from the Water, Healthy Ecosystems, and Green Infrastructure breakout room. The discussion focused on 4 questions:

1. What should the goal of this focus area be?
2. What do you think is working well for Cupertino that you want to see continue in the future?
3. What do you think are the opportunities for Cupertino to improve upon?
4. What are some other considerations, including scope of the focus area or equity considerations?

Focus Area Goal	Working Well	Opportunities to Improve	Considerations
Water Supply	• Garden program to address drought	• Possibility of creating brackish water/desalinization systems – drought becomes a less pressing issue	• Ensure that water supply projects do not result in gentrification/displacement of residents • Create programs for affordable relocation if necessary or create a sustainable development policy

Regional Coordination and Partnerships	• Great projects with a regional focus are already in place but need to be scaled up to a larger scale	• Implement natural solutions
		  ○ Example – mangrove use
		  ○ Example – use native plants on lawns
			• Regional solutions are what is most needed for Cupertino to implement
			• Situations need to be considered regionally, not just on a city-by-city basis

Education and Outreach		• Engage high school students as a work force and to educate others, create a tree planting program for youth • Educate residents on the benefits of solar and electrification • Create a volunteer Climate Corps	• Lack of comprehensive understanding of climate change • Youth are excited to learn! They are heavily invested in climate change and want to help • Language justice – ensure that all outreach and education is in multiple languages

Focus Area Goal	Working Well	Opportunities to Improve	Considerations
Green Infrastructure and Programs		• Implement a certification scheme where agencies could incorporate infrastructure projects as carbon offset credits • Extremely necessary, effort must be made to align the interest of utilities with what is most environmentally friendly	

Demographic Polling

1. Select all that apply: Which of the following best represents your race/ethnicity?

Race	Number of Participants	Percentage
White or Caucasian	**15/24**	**63%**
Asian or Asian American	10/24	42%
Latino, Latina, or Latinx	2/24	8%
Middle Eastern, North African, or Arab American	1/24	4%
Other	1/24	4%
Prefer not to say	1/24	4%
Black or African American	0/24	0%
Native American, American Indian, or Alaska Native	0/24	0%
Native Hawaiian or Pacific Islander	0/24	0%

2. What is your gender identity?

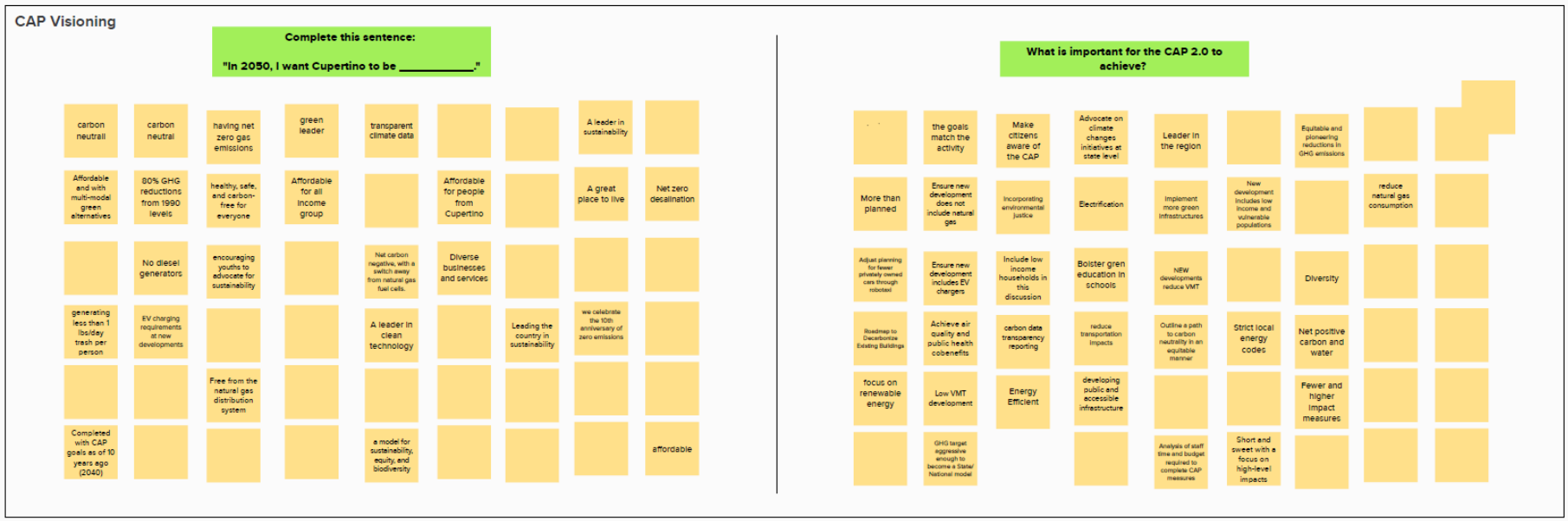
Gender Identity	Number of Participants	Percentage
Man	**16/24**	**67%**
Woman	8/24	33%
Non-binary/non-conforming	0/24	0%
Other	0/24	0%
Prefer not to say	0/24	0%

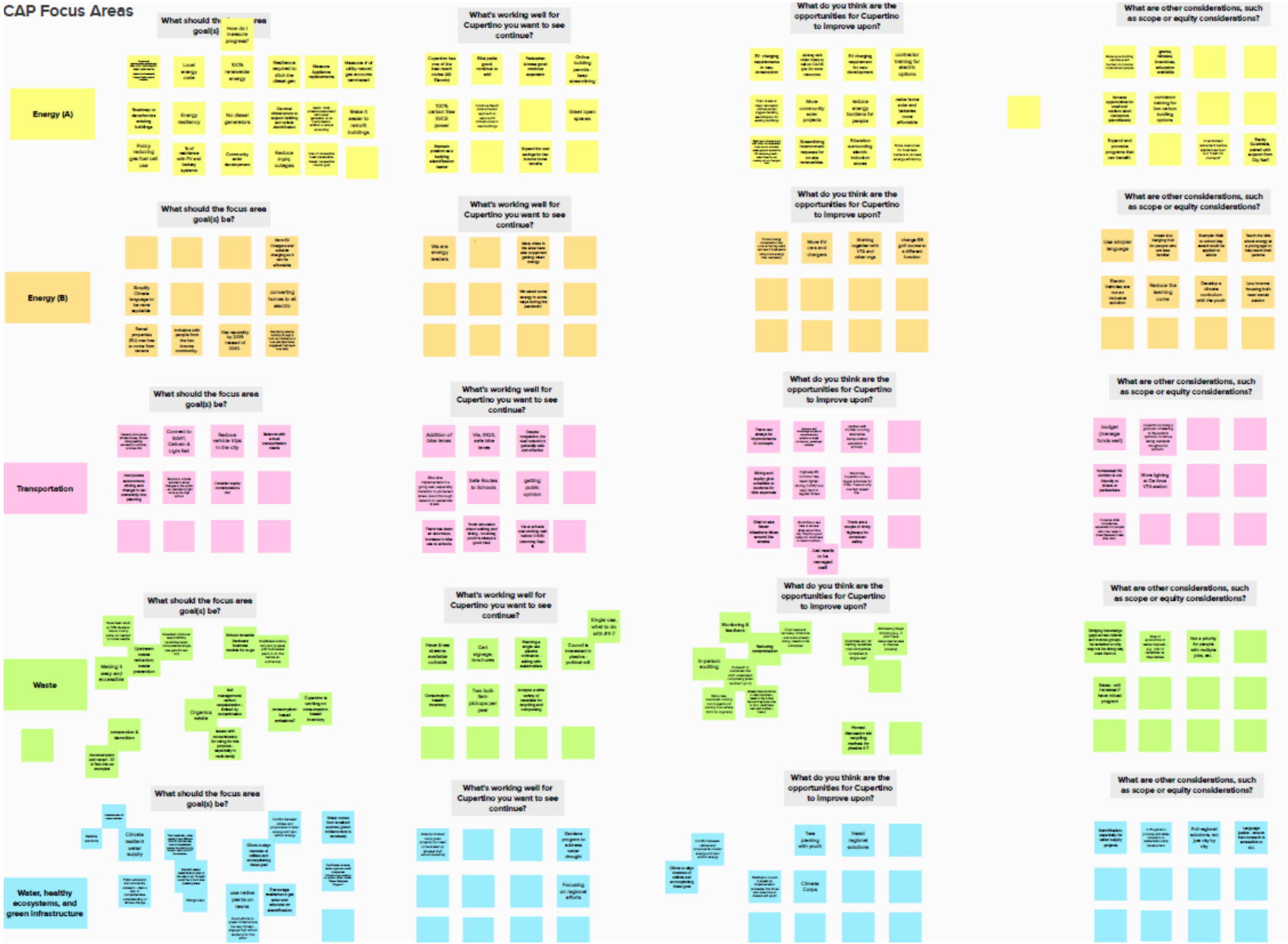
3. What is your age?

Age	Number of Participants	Percentage
Under 18	2/24	8%
18-24	4/24	17%
25-34	**6/24**	**25%**
35-44	4/24	17%
45-54	4/24	17%
55-64	2/24	8%
65-74	0/24	0%
75+	2/24	8%
Prefer not to say	0/24	0%

Appendix A: Full MURAL Board

For a text version of these MURAL results, please see the excel attachment, “MURAL Results_Stakeholder Meeting 1.xlsx”.




CAP Focus Areas
Energy (A)
What should th rea goal(s)
How do I measure progress?
What's working well for Cupertino you want to see continue?
What do you think are the opportunities for Cupertino to improve upon?
What are other considerations, such as scope or equity considerations?
Energy (B)
What should the focus area goal(s) be?
What's working well for Cupertino you want to see continue?
What do you think are the opportunities for Cupertino to improve upon?
What are other considerations, such as scope or equity considerations?
Transportation
What should the focus area goal(s) be?
What's working well for Cupertino you want to see continue?
What do you think are the opportunities for Cupertino to improve upon?
What are other considerations, such as scope or equity considerations?
Waste
What should the focus area goal(s) be?
What's working well for Cupertino you want to see continue?
What do you think are the opportunities for Cupertino to improve upon?
What are other considerations, such as scope or equity considerations?
Water, healthy ecosystems, and green infrastructure
What should the focus area goal(s) be?
What's working well for Cupertino you want to see continue?
What do you think are the opportunities for Cupertino to improve upon?
What are other considerations, such as scope or equity considerations?

Cupertino Climate Action Plan

Results from the Community Survey #1

The Cupertino Climate Action Plan (CAP) provides a roadmap for the City of Cupertino and its citizens to reduce greenhouse gas emissions and achieve their climate goals with community solutions and individual actions.

The City of Cupertino is updating the CAP to better meet the needs and goals of the community. As part of this process, we asked Cupertino's' residents to complete a survey to identify visions, priorities and barriers to the CAP process.

This survey was open from July 23rd to September 19th, 2021.

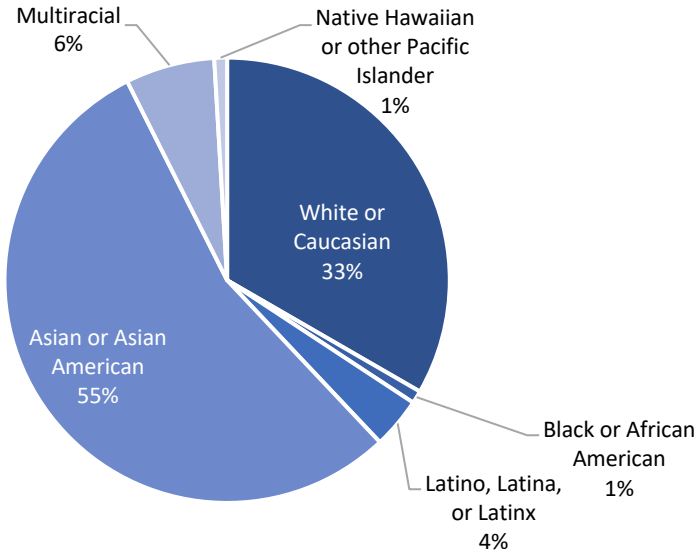
Summary

In total, we received a total of **111 responses**. We received 107 English responses, 1 Spanish, and 3 Chinese. Some additional demographic information about the survey responses are below:

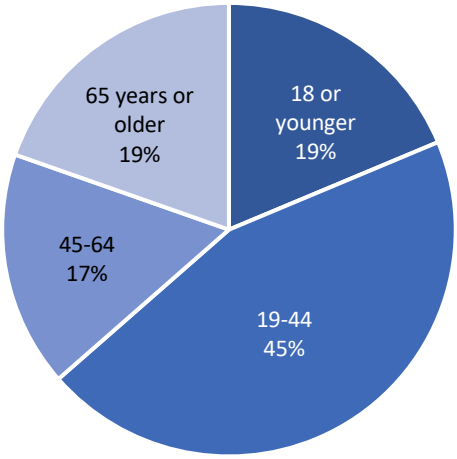
- Most respondents live in Cupertino (80 people, 72%)
- Majority of respondents have received an advanced degree (52 people, 47%)
- Majority of respondent do not work for a Cupertino based company (87 people, 78%)
- 62% of respondents own their home

Demographic Results

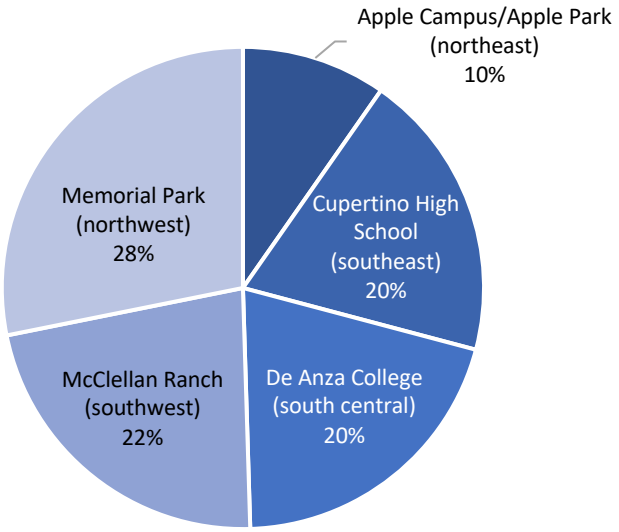
Race and Ethnicity (n = 108)	
White or Caucasian	36
Black or African American	1
Latino, Latina, or Latinx	4
Asian or Asian American	59
Multiracial	7
Native Hawaiian or other Pacific Islander	1



Age (n = 107)	
18 or younger	20
19-44	48
45-64	18
65 years or older	21



Area you spend most of your time around (n = 103)	
Apple Campus/Apple Park (northeast)	10
Cupertino High School (southeast)	20
De Anza College (south central)	21
McClellan Ranch (southwest)	23
Memorial Park (northwest)	29



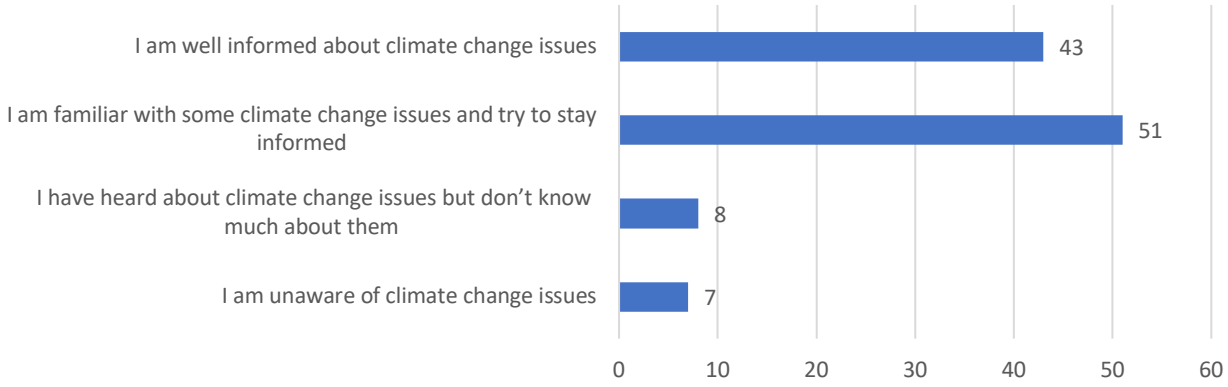
Survey Results

The tables below highlight the results of the survey. They do not provide an interpretation of the results. Key or significant results are highlighted in blue cells.

Climate change awareness

Respondents were asked "How would you best describe your awareness and understanding of climate change issues?" **Majority of respondents are familiar with some climate change issues and try to stay informed.**

Level of Awareness	# of Responses (n=109)
I am unaware of climate change issues	7
I have heard about climate change issues but don't know much about them	8
I am familiar with some climate change issues and try to stay informed	51
I am well informed about climate change issues	43

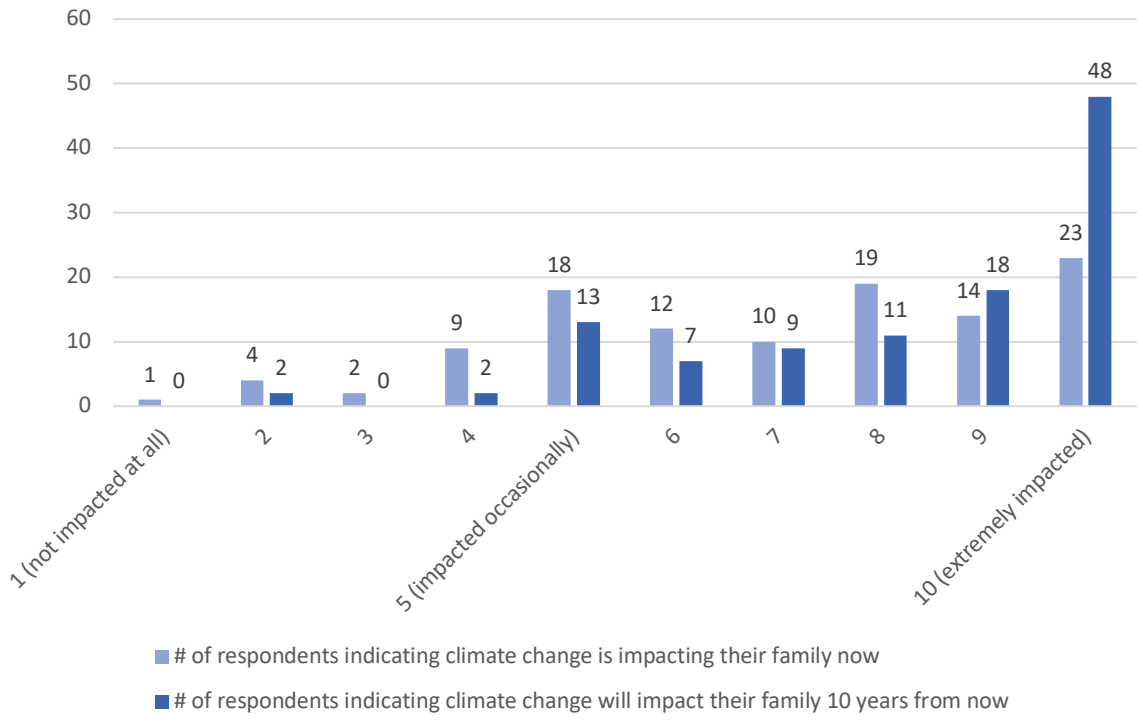


Concern about climate change

Regional climate impacts

Respondents were asked "How much do you think climate change will impact you and your family's personal wellbeing and safety **10 years from now**?" and "How much do you think climate change impacts you and your family's personal wellbeing and safety **today**?". **Majority of respondents indicate climate change is already impacting their family and will continue to worsen in the next 10 years.**

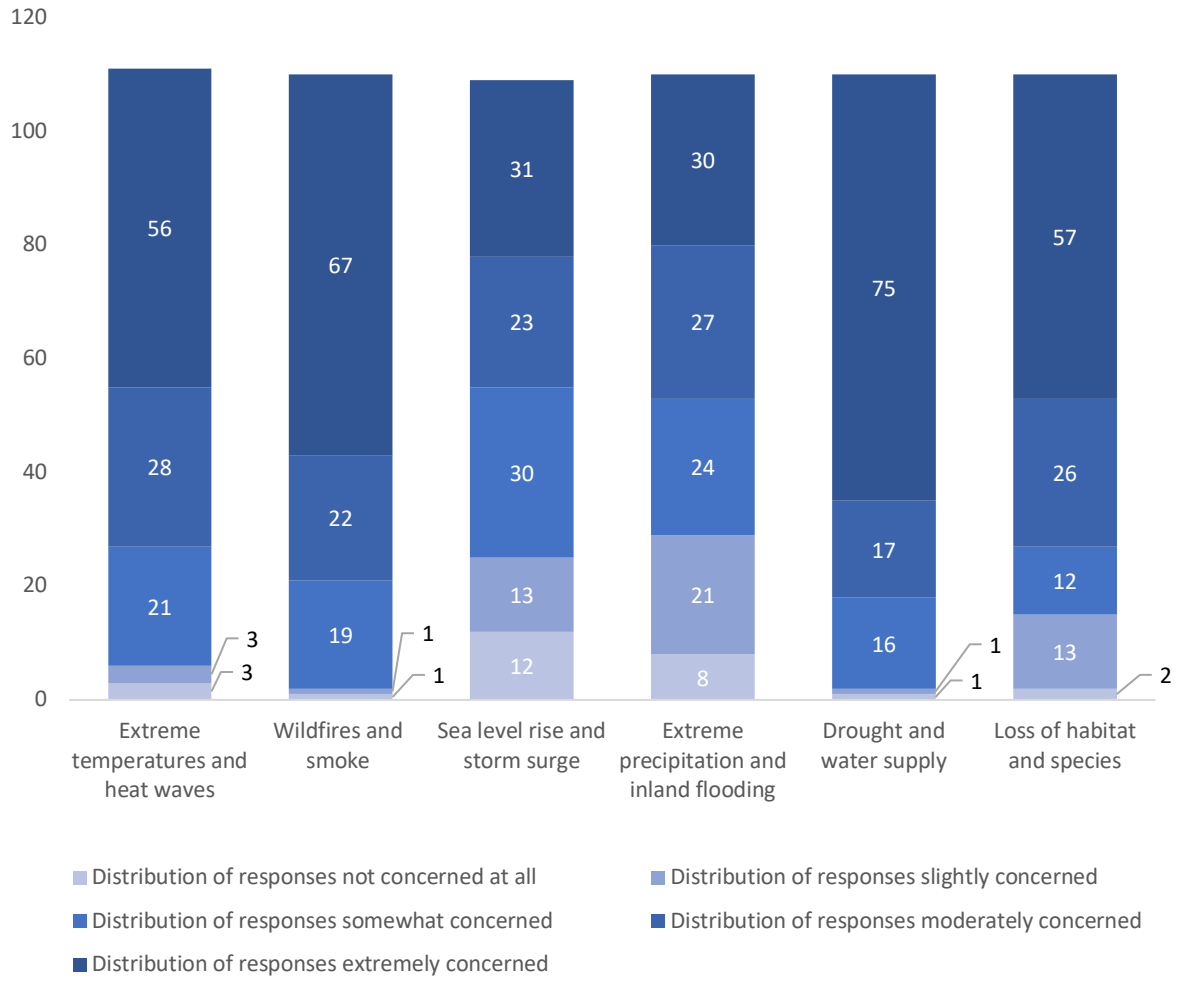
Level of Awareness	# of respondents (n = 108)	
	Now	10 years from now
1 (not impacted at all)	1	0
2	4	2
3	2	0
4	9	2
5 (impacted occasionally)	18	13
6	12	7
7	10	9
8	19	11
9	14	18
10 (extremely impacted)	23	48



Local climate impacts

Respondents were asked "How concerned are you about the following events taking place in Cupertino?". **Respondents are extremely concerned about drought and water supply**, wildfires and smoke, and loss of habitat and species.

Local Climate Impact	Distribution of Responses				
	Not concerned at all	Slightly concerned	Somewhat concerned	Moderately concerned	Extremely concerned
Extreme temperatures and heat waves **(n = 111)**	3	3	21	28	56
Wildfires and smoke **(n = 110)**	1	1	19	22	67
Sea level rise and storm surge **(n = 109)**	12	13	30	23	31
Extreme precipitation and inland flooding **(n = 110)**	8	21	24	27	30
Drought and water supply **(n = 110)**	1	1	16	17	75
Loss of habitat and species **(n = 110)**	2	13	12	26	57



Climate action priorities

Respondents were asked "Climate action has many benefits beyond reducing greenhouse gas emissions. Which of the following are most important to you? Select your top three (3) priorities." Respondents indicate that **ensuring a high quality of living for future generations is the most important co-benefit**, followed closely by improving air quality and preserving natural spaces, and habitats.

Climate action benefits	# of responses (n = 111)
Ensuring a high quality of living for future generations	52
Improving air quality	49
Preserving natural spaces, and habitats	42
Increasing green space and tree canopy cover	33
Improving water quality	25
Building strong communities that are prepared for natural disasters	24
Improving human health and lowering medical costs	21
Creating a more compact and walkable/bikeable community	20
Reducing traffic congestion	20
Reducing utility bills	18
Attracting new businesses and creating jobs	10

CAP strategy priorities

Respondents were asked "Which strategies do you think are most needed to reduce greenhouse gas emissions in Cupertino? Please rank from most needed (#1) to least needed (#9)." Majority of respondents want to **improve energy efficiency in homes and businesses**, followed by transitioning homes and businesses from natural gas to clean electricity and building a more walkable and bikeable city. Respondents who answered to this question through the Chinese or Spanish translated survey totaled 4 people (3 Chinese, 1 Spanish). Thus, while the distribution of responses is varied among language, the overall weighting of priorities is indicated above. The top 3 responses for each survey type are highlighted in blue below.

Local Climate Impact	Distribution of Responses (n = 107)		
	English	Chinese	Spanish
Improve energy efficiency in homes and businesses	4.32	5.33	6
Transition homes and businesses from natural gas to clean electricity for space/water heating	4.47	6.67	4
Building a more walkable and bikeable city	4.52	3.67	2
Create rules that curb pollution and limit polluting activities	4.82	5	9
Encouraging use of electric vehicles and electric vehicle infrastructure	4.88	7	8
Encourage rooftop solar panels and local renewable energy	4.95	4	3
Restore thriving natural spaces and plant trees	4.99	3	5
Increasing accessibility to public transit	5.17	4.67	1
Provide access to composting and encouraging mindful purchasing habits	5.71	5.67	7

Climate action barriers

Respondents were asked "What do you foresee as the most significant barriers to taking climate action in Cupertino? Select the top three (3) barriers?" Respondents indicate **cost and competing economic demands on the City and residents,** and **lack of agreement on the issues or how to prioritize them** as the biggest barriers to climate action.

Local Climate Impact	# of Responses (n = 108)
Cost and competing economic demands on the City and residents	52
Lack of agreement on the issues or how to prioritize them	44
Resistance to new mandates and requirements	42
Level of education and understanding about climate change in the community	39
Lack of local government leadership	31
Level of care or interest in the community	27
Equitable systemic climate change is difficult to implement at a local level	22
Level of local versus regional control	16
Uncertainty about climate risk	16
Technology has not been developed yet	10

Open ended questions

Respondents were asked, "**Please describe in one to two sentences what a climate-friendly Cupertino would look like to you**." **(n = 76)** Below are some key findings:

- ✓ Prioritize pedestrian and bike friendly behaviors and infrastructure
- ✓ Invest in better and more accessible public transit
- ✓ Prioritize EVs and build charging infrastructure around the City
- ✓ Reduce lawns and artificial turf
- ✓ Increase tree cover and drought tolerant plants around City
- ✓ Adhere to sustainable design standard
- ✓ Be a Zero Waste, Circular Economy
- ✓ Strive for carbon neutrality
- ✓ Provide affordable EVs and home electrification options
- ✓ Ban fossil fuels and transition to renewable energy
- ✓ Prioritize solar panel installation on residential and commercial properties
- ✓ Strive to be a national leader on climate actions
- ✓ Houses highly informed, educated and engaged citizens
- ✓ Prioritize equitability and inclusivity
- ✓ Collaborate with other governments
- ✓ Preserve parks and natural areas and promote biodiverse green spaces
- ✓ Promote green jobs
- ✓ Conserve valuable resources (eg. water)
- ✓ Encourage grassroots political action
- ✓ Prioritize density housing located near jobs, transit, and amenities
- ✓ Build affordable housing

Respondents were asked, "**What specific strategies or actions do you feel would most help the Cupertino community reduce greenhouse gas emission that are not listed above?"**. **(n = 64)** Below are some key findings:

- ✓ Plant more trees around City
- ✓ Provide more climate education
- ✓ Incentivize solar panels to homeowners
- ✓ Prioritize education and outreach
- ✓ Ban plastic bags
- ✓ Protect water and reduce water usage
- ✓ Include more adaptation actions
- ✓ Include actions to address reducing energy usage in existing homes
- ✓ Prioritize vulnerable communities
- ✓ Encourage use of public transit
- ✓ Hold largest emitters responsible (Stevens Creek Quarry and Kaiser Cement Plants)
- ✓ Consider local tax on carbon
- ✓ Subsidize electricity
- ✓ Reduce consumerism
- ✓ Encourage reduced meat diet

Respondents were asked, "**Are there any additional barriers you would consider significant to taking climate action in Cupertino?"**. **(n = 35)** Below are some key findings:

- ✓ Lack of responsibility, education, and personal action in the part of citizens
- ✓ Societal resistance to change
- ✓ Cost
- ✓ Fear
- ✓ Inconvenience
- ✓ Zoning requirements
- ✓ Competing priorities in local government
- ✓ Consensus building
- ✓ Lack of volunteers

Cupertino Climate Action Plan (CAP) Update
Public Workshop #1 Summary

Introduction

This document summarizes participation, activities, and feedback from the Cupertino CAP Public Workshop #1.

Workshop Objectives

By hosting the workshop, the CAP team aimed to:

- Build early awareness of the CAP goals and process among the general public.
- Gather high-level priorities, and concerns about climate action in Cupertino.
- Gather initial ideas for potential actions to include in the CAP.

Workshop Overview

Date & Time	Thursday, July 29th, 2021 5:30-7:00pm
Location	Online – Zoom Webinar
# of Registrants	79
# of Participants	53
# of Questions Submitted	43
# of Comments	32
Audience	Members of the general public attended. The following organization affiliations were indicated during registration: ▪ Cupertino City Council ▪ Rotary Club ▪ City of Sunnyvale ▪ The Forum ▪ Citizens' Climate Lobby ▪ Rite-Aid Corporation ▪ Cupertino Chamber of Commerce ▪ Cupertino for All ▪ Cupertino Sustainability Commissioner ▪ First Maganson Holdings ▪ Apple, Inc. ▪ Silicon Valley Youth Climate Action

Demographic Summary

27 (51%) of 53 participants responded to the demographic survey. See Participant Demographics section for more detail.

Age	**Most common age range was under 18** (22% under 18, 8% 18-24, 19% 25-34, 11% 35-44, 7% 45-54, 15% 55-64, 11% 65-74, 7% 75 or over)
Race/Ethnicity	**Majority Asian or Asian American** (52% Asian or Asian American, 48% White or Caucasian)
Gender	**Equal numbers of men and women** (48% men, 48% women, 4% non-binary or non-conforming)

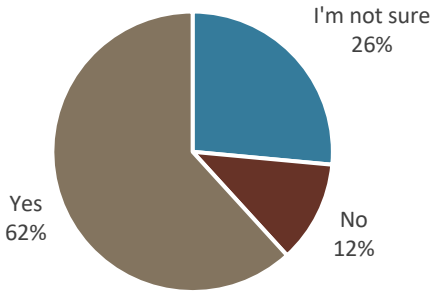
Workshop Agenda

Timing	Activity
15 min	**Introduction & Polls** ▪ Andre Duurvoort (City of Cupertino) welcomed participants to the workshop. ▪ Andrea Martin (Cascadia) facilitated a brief overview of poll questions using Zoom's polling and chat box features.
20 min	**CAP Overview Presentation and Q&A** ▪ Andre Duurvoort and Andrea Martin provided an overview of anticipated climate impacts in Cupertino, emissions sources, the CAP, and the CAP development process. ▪ Participants completed an open-ended poll question: "Complete the sentence with one word: 'In 2050, I want Cupertino to be _____.'" ▪ Gilee Corral (City of Cupertino) moderated the question & answer session at the end of the presentation.
45 min	**Vision, Priorities & Initial Actions** ▪ Andre Duurvoort and Andrea Martin gave a brief overview of each of the six potential CAP sectors: Buildings and Energy Consumption, Renewable Energy, Transportation and Land Use, Solid Waste, Carbon Sequestration and Natural Systems, and Resilient Communities. ▪ Poll questions, by sector, were asked to gauge participants' highest priorities and attendees were asked to share additional thoughts or ideas.
10 min	**Conclusion** ▪ Andre Duurvoort and Andrea Martin presented next steps, including future engagement opportunities.

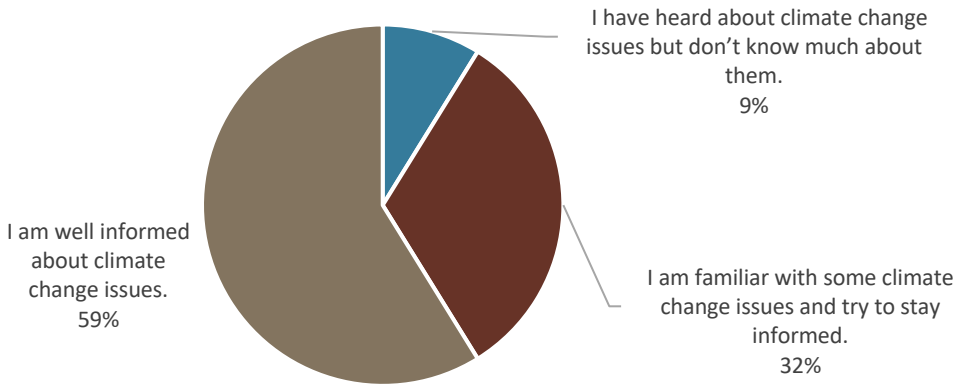
Workshop Outcomes

Introductory Polls

Question #1: Have you noticed or experienced any changes in the environment since you started living or working in Cupertino? (34 responses)



Question #2: How familiar are you with climate change concepts, such as the causes and impacts of climate change and actions needed to slow or stop it? (34 responses)



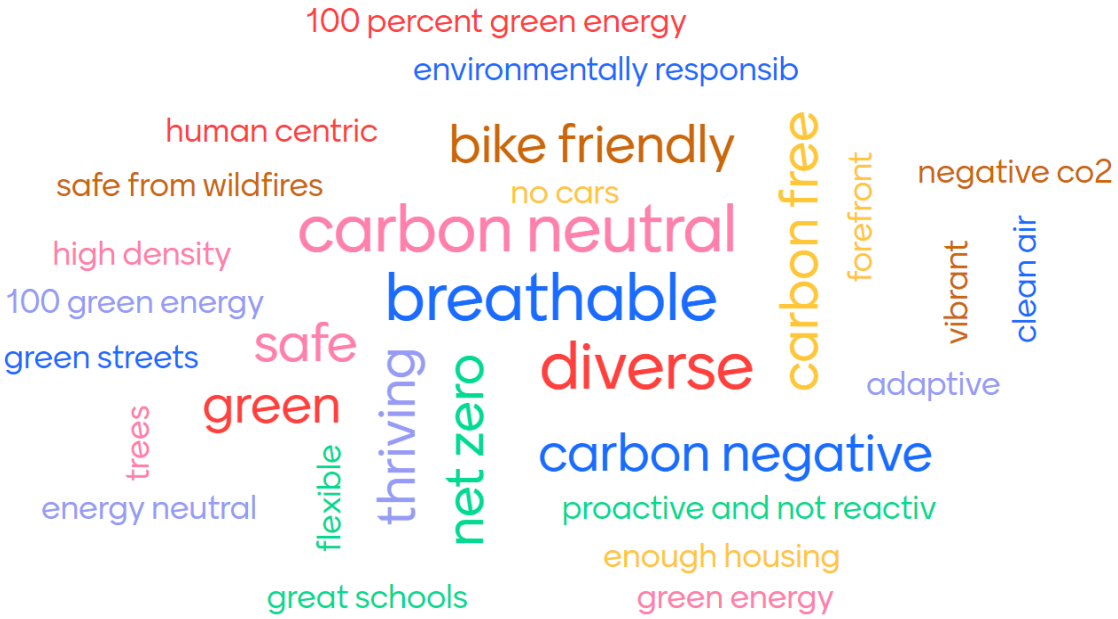
Question #3: Why did you decide to attend the workshop today?

Attendees wrote the following replies into the webinar chat box:

- *Excited to hear the housing and transportation aspects of Climate Action!*
- *Wanted to know the initiatives that Cupertino is taking*
- *I want to learn more about how everyday people can help create a bigger impact on climate change*
- *Interested in how city land-use policies can be changed*
- *I'm a recent college graduate, and I know that myself and others my age are completely screwed as is. I know that Cupertino is not doing very much on housing or transportation, which are the biggest ways that cities can reduce emissions.*
- *I am a climate activist and long term resident of Cupertino. I want to share my ideas and find out what the City's plan is*

Visioning Poll Question

During the CAP Overview presentation, attendees were asked: **"Complete the sentence with one word: 'In 2050, I want Cupertino to be _____.'"** Repeated responses included the terms "climate neutral," "breathable," and "diverse."



Questions & Answers

Throughout the presentations, attendees were encouraged to submit their questions into the Q&A box on the Zoom platform. City staff provided written answers to some questions and verbal questions to others during designated Q&A sessions. There were 43 questions submitted during the workshop by attendees. Staff answered three questions verbally and responded to 21 in writing. Staff did not answer 19 of the submitted questions. Questions and comments answered verbally during designated Q&A sessions:

- **Would the city consider moving the GHG emissions reduction goal sooner than the current draft goal of 2040? What would be the reasons to keep it at 2040 versus adopting a more ambitious goal.**

  What we presented today are draft goals. Today, our aim is to get a sense of what your appetite is as a community to be more or less aggressive. One thing to keep in mind is that more aggressive targets mean more aggressive measures, or things we are going to have to do as a community. Some of the cities in our area that have recently updated their CAPs have set goals at where the state wants them to be, and some of them are more aggressive. We can decide this as a community. If we set a more ambitious goal we will have to think bigger and consider things like funding availability, what is practical to do, and what is going to create co-benefits. We want to look not just at what will avoid economic disruption, but at what will create value. Those are what we are encouraging you to think about in this goals conversation. The City Council would like to look at being more ambitious than what the state is doing. At the same time, the state is considering more ambitious targets – recent news out of the Governor's Office is that they are considering a 2035 date for carbon neutrality. We are keeping track of these things as we create the plan. We are here to collect your feedback; if you would like us to be more aggressive, we will put that together into a proposed

roadmap. In our second and third public workshops, we will have more detail about that roadmap so you can see what those actions will look like in your everyday life.

- **It is not clear to me if you're asking for all citizens to work towards drawing down our emissions, etc. of only the City Staff and services. Please clarify.**

  This is an important question, which gets at something we are asked all the time: "What can I do personally?" Climate change will take both municipal action and community action. We must act together, in concert. The City has a set of specific responsibilities for researching policies and complying with state law. We also need to make sure we receive feedback from you and from Council, make sure actions are distributed across City divisions, and get incorporated across planning documents and operational documents, like the work program. This really is a group effort that will take the whole village to address these issues. Some examples of programs that we support in the community are the Cupertino Climate Challenge, which is a website we set up that enables people to create their own personal climate action plan. You can find that at CupertinoClimateChallenge.org. That has a whole host of lifestyle changes you can do in your home, neighborhood, school, or community to really make a difference over time.

- **I noticed in the chart that our draft goal for 2030 is less steep than our current progress in reducing emissions. Is it because it is more difficult to cut emissions now, or is it because of something else?**

  Yes – we have achieved a lot of the low-hanging fruit when it comes to reducing carbon emissions, and the next steps will become more and more difficult as we move towards net zero emissions. There are also many uncertainties about new strategies that might be available to us. There are evolutions daily in the innovation space around clean tech. But mostly, we took a look at what the state is telling us to do, chose to be slightly more ambitious than that and see how that feels, and then we'll have a more informed conversation in the next couple of workshops about what it will really take to get there.

Questions and comments answered in writing throughout the webinar:

Climate Action Plan process

- **Will the CAP be CEQA qualified?**

  We are looking into this option. The first CAP was CEQA qualified.

- **How is the natural gas inventory going (discussed in July 1 stakeholder meeting)?**

  We will have a better understanding as we update our GHG inventory, still underway.

Greenhouse gas emissions and the Climate Action Plan targets

- **What are the City GHG targets going to be?**

  This will be decided as part of this CAP update progress.

- **When you say 38% of our emissions are related to natural gas. Does that include methane leakage?**
  Yes, fugitive emissions from natural gas leakage are included in our GHG inventory accounting.

- **Does the 38% include the cement factory?**

  Hi Dan, no, the plant emissions are not considered within Cupertino boundaries. Emissions from the plant would be accounted for in the Santa Clara County emissions inventory.

- **To help with reducing transportation energy release, I've noticed that many roads near my house lack sidewalks and bike lanes and are not safe for pedestrians and cyclists. Would it be possible to build more of those to reduce the numbers of cars on the road?**

  The city adopted Bike and Pedestrian Plans that are currently being implemented - here is the site on the plans: https://www.cupertino.org/our-city/departments/public-works/transportation-mobility/bicycle-and-pedestrian-travel

  You can follow the Bike Plan implementation here and also sign up for eNotifications on progress: https://www.cupertino.org/our-city/departments/public-works/transportation-mobility/bicycle-and-pedestrian-travel/bicycle-transportation-plan-implementation"

- **Is water not included in the CAP?**

  Emissions from the treatment of Cupertino's wastewater and energy used to pump water in Cupertino are accounted for in the inventory.

- **How does wastewater contribute to emissions?**

  Our 2015 GHG report reviews the methodology of accounting for wastewater emissions, on page 9: https://www.cupertino.org/home/showpublisheddocument/14938/636524760503430000

- **Are you taking about the emissions and targets of the City of Cupertino or for all of Cupertino?**

  The community emissions and targets are for the entire city, including residential, commercial, institutional, etc. (municipal operations are included within the total for the community)

- **What is GHG?**

  Greenhouse gas

- **If Cupertino has a sister city in China, reach out to get that city to deal with climate.**

  That's a great idea! Thanks for sharing

- **What does "transportation" include. Is it the total transportation citizens use, or is it transportation within the cities' borders? For example, if I drive from my home to San Francisco and back, is my total voyage included in "transportation".**

  Transportation includes on-road and off-road emissions within the city borders. We use the "origin destination model," which includes half of trips that originate or end in Cupertino as well. You can read more about how this is calculated in our 2015 report: https://www.cupertino.org/home/showpublisheddocument/14938/636524760503430000

Sectors and potential CAP strategies

- **Eliminate the use of natural gas at quinlan, blackberry farm, city hall, the library and community hall**

  Thank you for the feedback!

- **Will the city work and support and team with sun run to electrify and decarbonize nonprofits and low-income households?**

  Hi, is there a specific program or initiative you had in mind re Sun Run?

- **Does the city have plans for drought management? For example, Stevens Creek and the reservoir are drying up fast resulting in loss of biodiversity in the surroundings.**

Yes, we do. We have a new site dedicated to the response to the recent drought and emergency water shortage: Cupertino drought response / resources: Cupertino.org/drought

- **Does the city have plans for creating/expanding current carbon sinks?**

  Yes, we will incorporate this type of action as part of the CAP update.

- **We have installed solar panels and also drive an electric car. Can you suggest other measures we can undertake at a personal level?**

  https://cupertinoclimatechallenge.org/ is a great resource which has dozens of actions for residents and learn about local programs, rebates, and resources for each action.

- **In the Transportation and Land Use sector, does land use include our parks?**

  Transportation & land use refers mostly towards density land use planning but Natural Spaces is where most of the parks actions are listed.

- **Please consider banning plastic in takeout containers.**

  We are currently creating a single use plastics ordinance that follows Santa Clara County's framework. This is a 2021 City Work Program project. New website on this topic is coming soon...

- **Please inform businesses to not use "compostable' clamshells. According to Recology they are neither compostable NOR recyclable.**

  We are currently working on a single-use plastics ordinance that targets take out containers. This is going before City Council this year.

- ***Any regulations for single* use plastic containers or packaging in supermarkets?**

  Yes, the City is working on a local code to address single-use plastic food ware.

Questions not answered during the webinar:

Climate Action Plan process

- How do you reach the 30% who have no concern or awareness of the climate crisis?
- Is there any consideration to coordinating the Climate Action Plan with the city's 6th Cycle RHNA Housing Element process? According to UC Berkeley's CoolClimate project, Cupertino's highest opportunities for reducing its carbon footprint are in electrification, reducing VMT, and infill development. Building new, energy-efficient, denser housing near transit and jobs would hit all three of those opportunities and the legally mandatory Housing Element process provides a unique chance to act on those opportunities.
- Those of us here are the choir pretty much. How are we thinking about getting both education and action from the whole congregation?
- Does the public have access to Via statistics?

Greenhouse gas emissions and targets

- I notice that natural gas went up, I know this is due to Apple's bloom energy facility, what is the plan to stop this?

- I would like the plan to include a plan to eliminate the use of fossil fuels for transportation of city owned and operated assets well before 2035.
- Can you give more details is included in mitigation, i.e. conserving H2O, draw down CO2? If so, then how will you measure these at the neighborhood level?
- How might Earth's atmosphere, land, and ocean systems respond to changes in carbon dioxide over time?

Sectors and potential CAP strategies

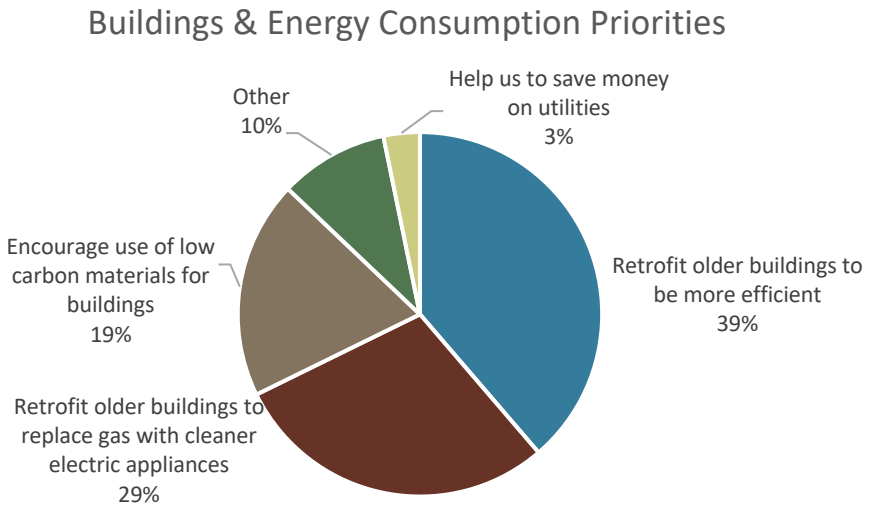
- What is the city's number one priorities in the short term (next 5 years) and the long term (next 10-30 years) for GHG reduction?
- What can we, as residents of Cupertino, do to help improve the climate? (We are doing the bike challenge and enjoying it!)
- In 2010 we had low hanging fruit available to grab, in the form of the Silicon Valley Clean Energy. Is there similar low hanging fruit now? Andre said that we're looking for big impact actions. Do you have any in mind?
- How will you enforce any recommendations for mitigation with private citizens?
- So, what is happening with Lehigh? Can we close it down?
- How could the city influence reducing single use plastic use in schools?
- Can the City support and run a textile recycling program? https://www.roadrunnerwm.com/blog/textile-waste-environmental-crisis
- Is it true that 40% of all food produced in the US is thrown away?
- Tell me about Bloom energy, I suggest we ban this technology.
- My understanding is that municipalities across the US are struggling on solid waste storage / dumping, especially given larger supply chain events around recycling - how does Cupertino stand on waste? Are we constrained in our capacity or our contractor's capacity to handle our waste?

Sector Priorities

In the *Vision, Priorities & Initial Actions* section of the workshop, the City presented an overview of each sector and potential actions. Cascadia then facilitated a brief multiple-choice poll asking, "What is your top priority for the City to accomplish in this focus area?" Next, participants were invited to add any other ideas, thoughts, or considerations for the City into the chat box. Results from these activities are summarized below.

Buildings & Energy Consumption

The top two priority focus areas that respondents indicated were: to **retrofit older buildings to be more efficient** (39%, 12 responses) and to **retrofit older buildings to replace gas with cleaner electric appliances** (29%, 9 responses). There were 31 total responses to the poll question.



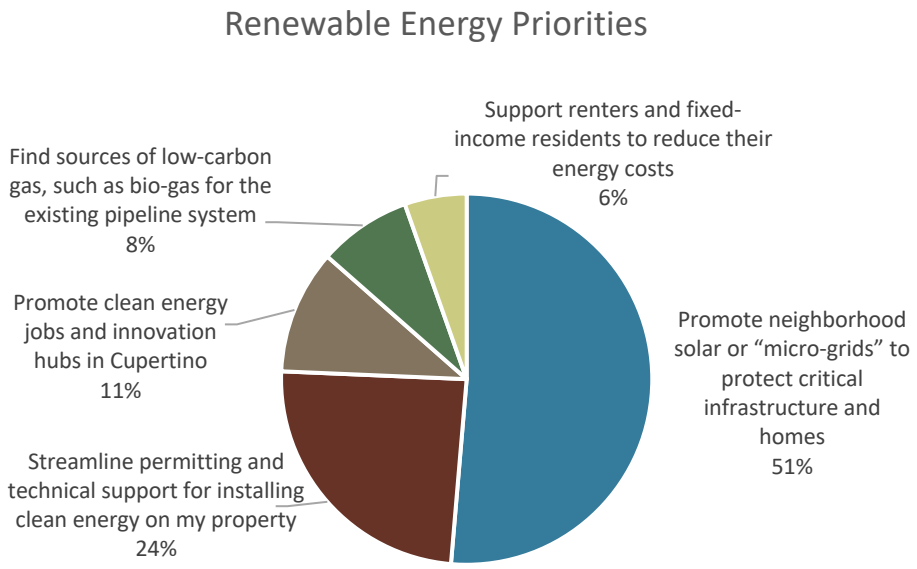
Comments submitted indicated some **support for a transition away from natural gas in new and existing buildings** and **interest in resources to assist appliance replacements**.

Comments

- *I would like the city to **eliminate natural gas usage in all city buildings***
- ***Tying goals to increased density** or specifying tangible targets related to TOD housing units*
- *I would like to **ban any permits for fuel cells***
- *A **burnout ordinance***
- ***Resources for residential appliance replacements** (water heaters, stoves, etc.)*
- *The city council actually has to **approve new buildings** if new energy standards are going to matter.*
- *To **eliminate the use of natural gas in buildings** and **make insulation more efficient***
- *Looking into the possibility of a **natural gas ban***
- ***Resources in the form of databases for contractors familiar with this work, perhaps subsidies or assistance** for lower income residents to help with the capital cost of appliance replacements*
- ***Ban the sale of natural gas appliances** in Cupertino*
- *If **wood can be substituted for concrete or steel**, please do it.*

Renewable Energy

The majority of respondents listed "**Promote neighborhood solar or 'micro-grids' to protect critical infrastructure and homes**" as their top priority focus area (51%, 19 responses). There were 37 total responses to the poll question.



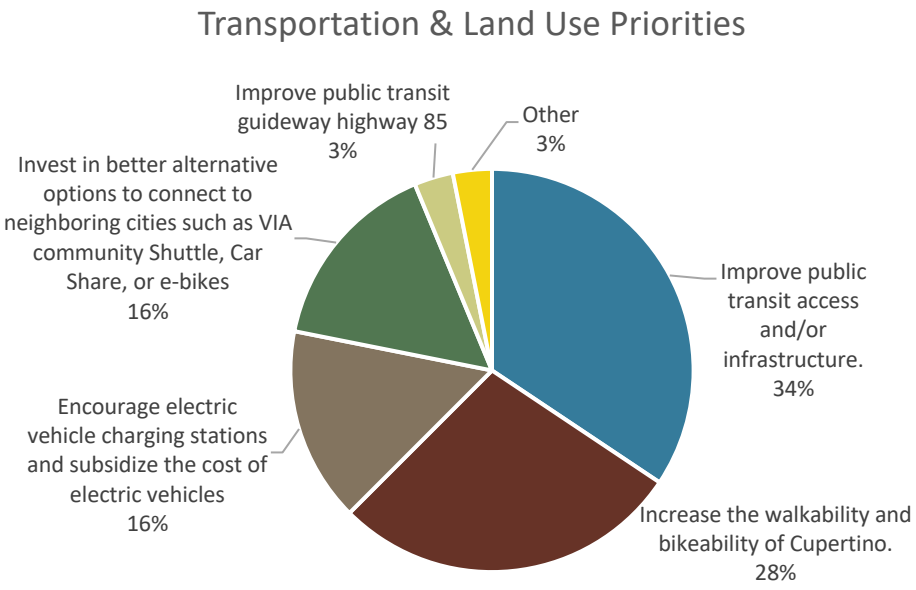
Comments submitted indicated **support for solar, micro-grids, and a transition away from natural gas in new and existing buildings,** and **interest in resources and information about eliminating natural gas**.

Comments

- *I am an owner and landlord,* ***would like to see tax rebates to eliminate natural gas usage in my rental homes***
- *Concierge service to* ***help me understand savings associated with eliminating natural gas.*** *I would like to see an* ***incentive program to install batteries on my home and rentals***
- ***Will the City support sun run?***
- *Not to be too negative but* ***I would personally be disappointed to see the City investing in "cleaner" natural gas sources,*** *I don't think energy and resources are best served by investment there when state policies may eliminate or shift usage of those sources anyways - better to focus on new development standards and reduce opportunities for net new consumers of natural gas.*
- *I agree with Sean; it would be* ***better to phase out the old gas pipelines for new and existing buildings*** *and move towards full electrification*
- ***Solar must be a huge part of any development going forward.***
- ***In addition to solar, battery backup is critical.***

Transportation and Land Use

The top two priority focus areas for Transportation and Land use are to "**Improve public transit access and/or infrastructure**" (34%, 11 responses) and "**Increase the walkability and bikeability of Cupertino** (28%; 9 responses). There were 32 total responses to the poll question.



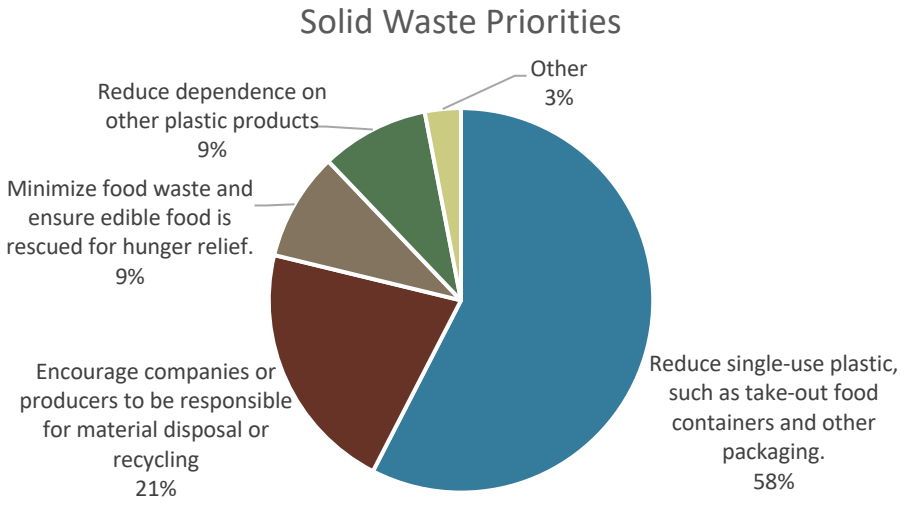
Comments submitted indicated **support for housing density, especially near transit**. One commenter noted that permits for duplex houses in single house lots will support equity.

Comments

- *I would love to see a tie between **enabling more high-density housing development, to make the cost/benefit for transit projects more attractive***
- *To reduce personal car ownership, we need to **build more densely, in coordination with the housing element***
- ***Creating more permits for duplex houses in single house lots would be extremely beneficial and also help with social equity***

Solid Waste

The majority of respondents listed "**Reduce single-use plastic, such as take-out food containers and other packaging**" as their top priority focus area (58%, 19 responses). There were 33 total responses to the poll question.



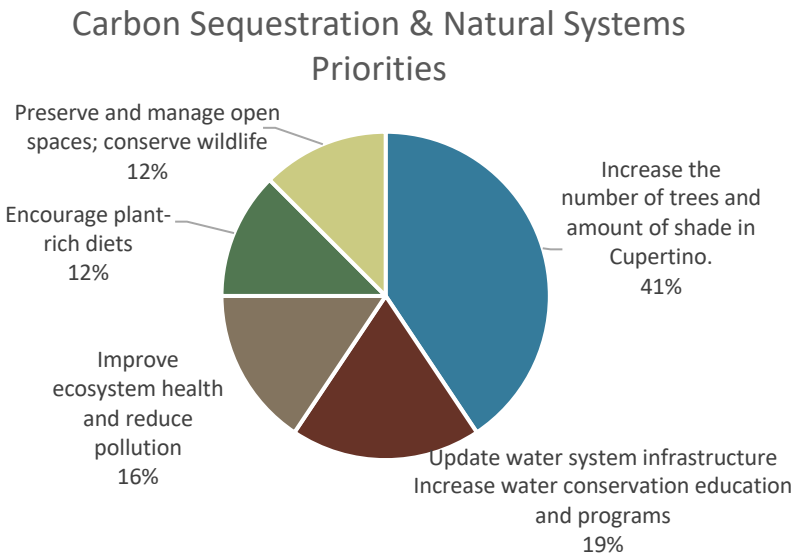
Comments from participants indicated **support for residential composting** and **concern about compostable clamshell containers.**

Comments

- *All of the above*
- *Encourage **compost for apartments** and townhouses*
- *Please inform businesses to not use **"compostable' clamshells**. According to Recology they are neither compostable NOR recyclable*

Carbon Sequestration & Natural Systems

The highest number of respondents indicated that their top priority focus area for Carbon Sequestration & Natural Systems is to "**Increase the number of trees and amount of shade in Cupertino**" (41%, 13 responses). There were 32 total responses to the poll question.



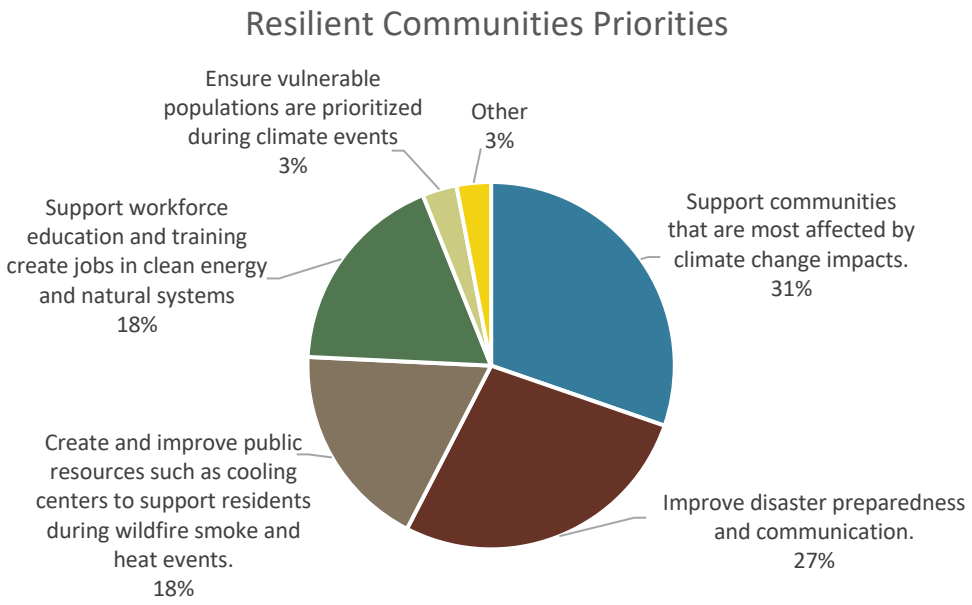
Comments

One comment was submitted in **support of increasing biodiversity at residences**:

- *The City of Santa Monica has a "Cash for Grass" program where they pay residents to take out grass and put in biodiverse plants. Something to consider https://www.smgov.net/Departments/OSE/categories/water.aspx*

Resilient Communities

The top two priority focus areas for Resilient Communities are to "**Support communities that are most affected by climate change impacts**" (31%, 10 responses) and "**Improve disaster preparedness and communication"** (27%; 9 responses). There were 33 total responses to the poll question.



Comments

There was one comment submitted questioning how success will be measured for Resilient Communities actions:

- *This is understandably hard to do, but **will there be tangible goals associated with community resiliency** and goals around helping impacted communities?*

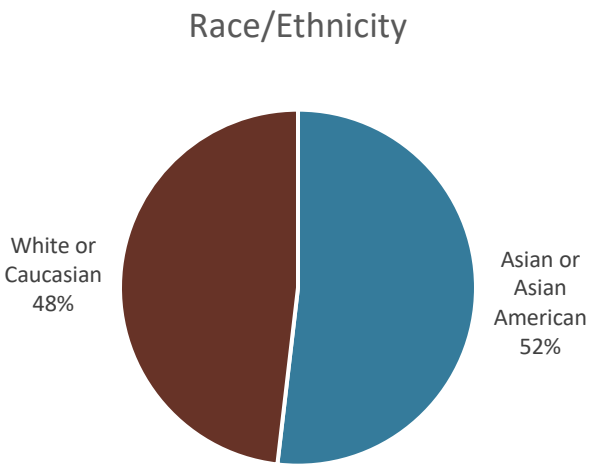
Participant Demographics

27 (51%) of 53 participants responded to the demographic survey questions.

Race/Ethnicity

Most respondents (52%) were Asian or Asian American; the remaining 48% were White or Caucasian.

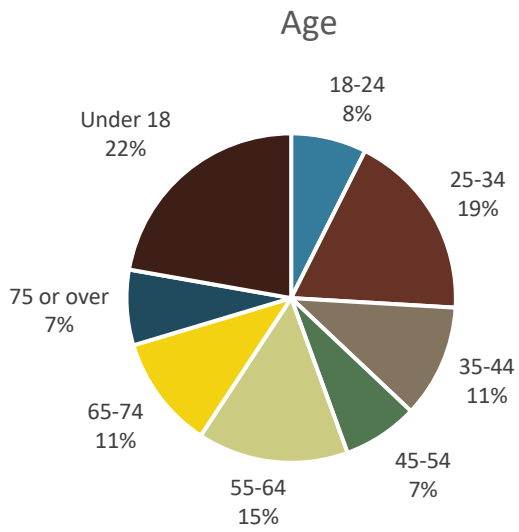
Race/Ethnicity	#	%
Asian or Asian American	14	52
White or Caucasian	13	48



Age

The highest percentage of respondents (22%) were under 18 years old.

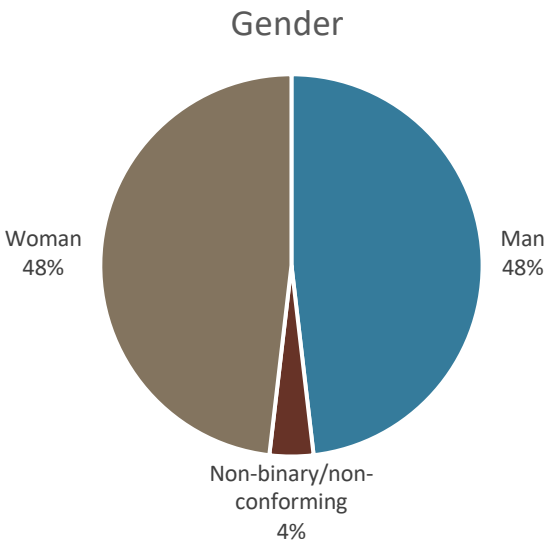
Age	#	%
Under 18	6	22%
18-24	2	8%
25-34	5	19%
35-44	3	11%
45-54	2	7%
65-74	3	11%
75 +	2	7%



Gender

There were equal numbers of respondents who identified as men (48%) and women (48%), and one non-binary participant.

Gender	#	%
Woman	13	48%
Man	13	48%
Non-binary or non-conforming	1	4%



Cupertino Climate Action Plan (CAP) Update

Subcommittee Meeting #2 | August 19, 2021 | 4:00 – 5:00PM | Zoom

Table of Contents

Background

The Climate Action Plan Update Subcommittee will review and discuss policy options and receive diverse stakeholder feedback related to the CAP update. The Subcommittee will be a key intermediary and liaison throughout the climate planning process—bridging the broader community with City leadership and bringing together public/stakeholder input and technical information to arrive at recommendations for Council. At upcoming stakeholder and public meetings, the subcommittee will listen, ask probing questions, bring back discoveries to the Sustainability Commission, and lead conversations at Commission meetings to form recommendations for the CAP.

The second meeting between the Subcommittee and Cascadia team will focus on gathering strategic Subcommittee feedback on the: 1) goals and targets for Cupertino's CAP update, 2) strategies and actions, and 3) upcoming public engagement opportunities.

Meeting Objectives

- Review draft CAP targets
- Brainstorm high impact strategies and actions to achieve draft CAP targets
- Review upcoming public engagement and options for outreach activities

Agenda Overview

Total meeting length: 60 minutes

Time	Item
5 min	Introduction
30 min	Discuss targets
20 min	Additional outreach considerations
5 min	Conclusion

Meeting Summary

Participants

Name	Affiliation
Vignesh Swaminathan	City of Cupertino Sustainability Commissioner
Gary Latshaw	City of Cupertino Sustainability Commissioner
Victoria Morin	City of Cupertino
Andre Duuvoort	City of Cupertino
Kelsey Bennett	Rincon Consultants, Inc.
Ryan Gardner	Rincon Consultants, Inc.
Mike Chang	Cascadia Consulting

Discussion

Discussion Topic	Key Themes

CAP Targets and Measures	• Cupertino's CAP targets are **aligned with the Paris Climate Accords**, which is considered the "gold standard" of GHG reduction. These targets are **more aggressive** than the state emission reduction targets.
	  ○ Reduce 60.7% by 2030
	  ○ Net Zero by 2040
	• Meeting the minimum state standards – which the Cupertino CAP Update will do – will help **streamline projects under CEQA**.
	• The CAP Subcommittee would like to see **aggressive reductions from City-owned buildings and operations** since the City has control over their own facilities. They want the City to be an example to the rest of the community.
	• Rincon is building a **scenario planning tool** to inform the CAP measures.
	• The CAP Subcommittee recommends:
	  ○ If the City can't pass ambitious and aggressive actions at the community-level, the City can **make policy requests or lobby for actions at the State or regional level** (e.g., Governor's office).
	  ○ **The City should be aggressive in its measures that it has control over** – for example, issuing building permits, banning gas in buildings, utilizing CCAs to supersede renewable portfolio trajectories, or implementing ordinances for EV charging.
	  ○ Utilize **Rincon's scenario planning tool to identify feasible pathways** to reach aggressive targets. For example:
	  ▪ Identify the # of parking spaces that are EV capable.
	  ▪ Natural gas reduction opportunities.
	  ▪ VMT reduction – although notoriously difficult based on best available science.
	  ▪ Electrification impacts to the energy grid.
	  ○ **Partner with private businesses** – such as construction companies or gardeners – to reduce their usage of gas.
	  ○ **Partner with regional organizations** – such as CalTrans – to successfully implement measures that reduce GHG emissions in Cupertino.
	  ○ Leverage Cupertino's existing EV infrastructure – which is about 6% adoption, approximately twice the rate as comparable jurisdictions – **to continuously expand EV adoption from residents**.

Discussion Topic	Key Themes

	• There is a new website: Cupertino.org/climateaction. The City is seeing visitation and engagement peaks aligning with public outreach efforts.
	• Survey currently has 48 responses – 47 in English and 1 in Spanish.
	• Some initial survey results:
	  ○ 3 top priorities for the CAP are:
	  ▪ Ensuring high quality of life for future generations
	  ▪ Improving air quality
	  ▪ Preserving natural spaces and habitats
	  ○ Biggest concerns are:
	  ▪ Smoke/fires
	  ▪ Drought and water supply
	  ○ Demographics:
	  ▪ Primarily Cupertino residents.
	  ▪ Need more Black and Indigenous people to take the survey to have it be more representative of Cupertino.

Public Outreach & Engagement	• Upcoming public engagement includes:
	  ○ **Fall Festival tabling**, September 11 from 10 a.m. to 8 p.m.
	  ○ **Stakeholder workshop #2** (targeted affordable housing), September 30 from 5:30 to 7 p.m.
	  ○ **Public workshop #2 (virtual)**, October - Date TBD
	  ○ **Subcommittee Meeting #3**, October – Date TBD
	  ○ **Stakeholder workshop #3**, *Tent*- October 27
	  ○ **Public workshop #3**, December 2021
	  ○ **Stakeholder workshop #4**, January 2022
	• Key considerations from the Subcommittee include:
	  ○ **Utilize the networks of Subcommittee Members to amplify survey**. For example, Gary can share the survey and website with Rotary Club members.
	  ○ Would like to see **more flyers and postcards in grocery stores and public right of ways**, such as sidewalks.
	  ○ There should **be intentional outreach to schools and educational institutions**, especially with high schools and De Anza College. Should get the survey out to them as well.

Action Items

- Rincon will:
  - Send the CAP Subcommittee the six pillars for the CAP measures.
- CAP Subcommittee will:
  - Email Rincon and Cupertino City staff with other questions and ideas about CAP Measures.
  - Gary will distribute survey to Rotary Club members.
  - Gary and Vignesh will email dates they aren't available for public workshop #2.
  - Subcommittee will let the City know if they need any materials and the City can print them off.

Cupertino Climate Action Plan (CAP) Update

Stakeholder Engagement Workshop #2 Summary
September 30, 2021 | 5:30-7:00pm | Zoom

Contents

Background

To reach frontline communities and historically underserved populations, the City plans to host targeted meetings with representatives of priority communities—including Black, Indigenous, and communities of color, people with limited English proficiency, unhoused and low-income people, and the elderly, among others. The aim will be to build meaningful, long-term relationships with critical perspectives (e.g., community-based organizations, marginalized communities, faith-based organizations) to create space for their voices in the process and leverage their expertise. The second stakeholder workshop focused on advocates for affordable and low-income housing.

Meeting Objectives

- Build early awareness of the CAP process.
- Gather high-level ideas, priorities, and concerns.
- Build relationships with key stakeholder groups.

Agenda Overview

Time	Item
15 min	Introduction
25 min	CAP Overview Presentation and Q&A
40 min	Discussion on CAP Priorities and Strategies
10 min	Conclusion and Next Steps

Participants

Workshop Participants

Name	Affiliation
Rachel Hart	LEAB
Mair Dundon	N/A
Eun Young Kim	N/A
Zixuan Tian	N/A
Micki S.	N/A
Kathi Chew	N/A
Rebecca Smith	St. Jude's Episcopal Church
Ricky Parsaoran	N/A
Hui Tian	N/A
Hong Jiang	N/A

Project Staff

Name	Affiliation
Gilee Corral	City of Cupertino
Andre Duuvoort	City of Cupertino
Victoria Morin	City of Cupertino
Gabriel Borden	City of Cupertino
Karen Chen	City of Cupertino
Mike Chang	Cascadia Consulting Group

Introduction

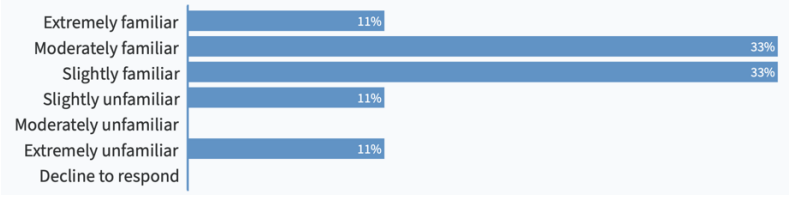
City staff and the consultant team provided a brief introduction of the CAP project team and welcomed all the participants to the stakeholder meeting. Cascadia provided an overview of Zoom tips and of the meeting's agenda.

Icebreaker

As an icebreaker near the start of the workshop, participants were asked a series of questions using PollEverywhere, including:

- What is your favorite natural feature in and around Cupertino?
- How familiar are you with climate change concepts – such as causes and impacts of climate change and actions needed to mitigate it?
- What is one thing you've noticed changing in our region and environment?

Below are the answers from our icebreaker questions.

Icebreaker Question	Answers
What is your favorite natural feature in Cupertino?	• Midpeninsula open space • Blackberry farm • Stevens Creek at Blackberry Farm • The library
How familiar are you with climate change concepts – such as causes and impacts of climate change and actions needed to mitigate it?	
If you could see one thing included in this climate action plan update, what would that be?	• Housing continues to be a massive challenge • More people are aware of the environment and our impact • All of the fires • More fires nearby • Vallco Mall lot is barren • Lots of traffic • Wildfire smoke • Fire danger

CAP Update Overview and Discussion

City staff presented an overview of climate change, the climate action planning process, and the City's progress so far and then answered questions from participants. Following this presentation, participants were divided into two breakout groups to discuss more about the CAP, its goals, and its measures.

Discussion Highlights and Themes

Discussion Question	Highlights and Themes
***Vision*: In 2050, I want to see Cupertino be _____.**	• Multicultural • Resilient • Truly inclusive and interconnected community • Universal basic income • Green initiatives that integrate traditionally disenfranchised communities • Accessible public transportation • Economically diverse that is powered by local residents who work and live here • Access to home ownership • Convenient charging stations for EVs • More bike-friendly and walkable city that is safe for residents • Knowledgeable about how to sell and recycle gas-powered cars

How will **eliminating natural gas in buildings** affect housing and affordability?	• **Actions to consider:**
	  ○ Support the transition to electric heaters.
	  ○ Cupertino needs to incentivize or subsidize air purifiers or swamp coolers.
	  ○ Have backup emergency generators to for housing complexes, especially for senior residents.
	  ○ Education efforts to teach residents to prepare for extreme climate-related events.

Discussion Question	Highlights and Themes
	○ Educate the public to wear a mask around leaf blowers. • **Additional considerations:** ○ Don't like gas stoves because of fear that it will cause fires. ○ Need to consider the disability community – keeping cool, water shortages, and wildfires affect this community and their ability to respond. ○ Rely less on PG&E, especially considering that there is conflict of interest being a privately-owned public utility. ○ Clean energy transition should lead to affordability co-benefits.
How will **converting all vehicles to electric** affect housing and affordability?	• **Actions to consider:** ○ N/A • **Additional considerations:** ○ While gas is expensive, electricity can also be expensive and drive up energy costs. ○ Gas cars still may be preferable because they have a longer driving range. However, EVs are improving this aspect.
How will **requiring compost at all homes** affect housing and affordability?	• **Actions to consider:** ○ Support actions that make it easier for people to compost. • **Additional considerations:** ○ Support for composting newspaper and cardboard, though unsure about whether should compost food scraps. ○ Composting can be difficult in a multi-family unit since this will require cooperation from all units.
How will **prioritizing multifamily homes in zoning & land use** affect housing and affordability?	• **Actions to consider:** ○ Limit dust and other airborne particulates for new construction to improve air quality for nearby residences. ○ Education to not conflate the different types of multi-family housing options and communicate the importance of this to reach climate action goals and support housing affordability. ○ Build more affordable housing to allow people to have access to services and amenities. This can help increase community resiliency and creativity for new climate solutions. • **Additional considerations:** ○ General support of this, while acknowledging that there will be pushback from others (e.g., affluent homeowners, NIMBYs).
What is top of mind in your life and experience when you think about these issues?	• **Wildfire smoke and poor air quality** ○ Actions to consider: ▪ Distribute N-95 masks during wildfire smoke days at key community centers, such as the City library. ○ Additional considerations ▪ Concern for children because they will be most impacted. ▪ Hard for the elderly.

Discussion Question	Highlights and Themes
	▪ If people have to stay indoors, there may be other associated impacts (e.g., lack of physical activity, mental health considerations). ▪ Increased insurance costs. • **Water shortage and drought** o Actions to consider: ▪ Encourage personal behavior change to conserve water, such as taking shorter showers and stop watering lawns during droughts. ▪ Tap into alternative water sources. o Additional considerations: ▪ Concerns about California population growth. ▪ Concerns about rising water bills with more restricted supply. • **Keeping cool during more frequent heat waves** o Concern for children and the elderly. • **Power shutoffs from wildfire season and very hot days** o Actions to consider: ▪ City should loan out generators for low-income households. o Additional considerations: ▪ Concern that refrigerated food will go bad. ▪ Affordability and access concerns – for example, purchasing an electric generator isn't a viable option for everyone, especially those who may need it (e.g., for medical reasons, such as reliant on ventilators or other devices). ▪ If you have an electric generator, can also plug it into your car if outage is long.

Demographic Polling

1. Select all that apply: Which of the following best represents your race/ethnicity?

Race	Number of Participants	Percentage
White or Caucasian	**2/10**	**20%**
Asian or Asian American	**1/10**	**10%**
Latino, Latina, or Latinx	0/10	0%
Middle Eastern, North African, or Arab American	0/10	0%
Other	0/10	0%
Prefer not to say	6/10	60%
Black or African American	**1/10**	**10%**
Native American, American Indian, or Alaska Native	0/10	0%
Native Hawaiian or Pacific Islander	0/10	0%

2. What is your gender identity?

Gender Identity	Number of Participants	Percentage
Man	0/10	0%
Woman	**3/10**	**30%**
Non-binary/non-conforming	**1/10**	**10%**
Other	0/10	0%
Prefer not to say	6/10	60%

3. What is your age?

Age	Number of Participants	Percentage
Under 18	0/10	0%
18-24	0/10	0%
25-34	0/10	0%
35-44	0/10	0%
45-54	**1/10**	**10%**
55-64	**2/10**	**20%**
65-74	**1/10**	**10%**
75+	0/10	0%
Prefer not to say	6/10	60%

Cupertino Climate Action Plan (CAP) Update
Public Workshop #2 Summary

Introduction

This document summarizes participation, activities, and feedback from the Cupertino CAP Public Workshop #2.

Workshop Objectives

By hosting the workshop, the CAP team aimed to:

- Provide updates about the Cupertino CAP's emission forecasts and GHG reduction targets.
- Present the draft Mitigation Measures.
- Gather feedback about the draft Mitigation Measures.

Workshop Overview

Date & Time	Monday, October 11th, 2021, 5:30-7:00pm
Location	Online – Zoom Webinar
# of Registrants	77
# of Participants	40
# of Panelists	7
# of Responses Submitted	238
# of Questions Submitted	47
Audience	Members of the general public attended. The following organization affiliations were indicated during registration: ▪ City of Cupertino ▪ The Forum at Rancho San Antonio ▪ Cupertino Village Shopping Center / Kimco Realty ▪ Cupertino City Council ▪ Santa Clara Audubon Society ▪ Silicon Valley Youth Climate Action ▪ Silicon Valley Clean Energy ▪ San Jose Water Company ▪ CYCAC ▪ First Maganson Holdings ▪ Utkal University ▪ Bay Area Regional Collaborative ▪ Apple Inc. ▪ Santa Clara University ▪ Sierra Club Loma Prieta Chapter

Demographic Summary

20 (50%) of 40 participants responded to the demographic survey. See

Participant Demographics section for more detail.

Age	**Most common age range was 25-34 or 75 or over** ▶ 10% under 18 ▶ 20% in 25-34 ▶ 5% in 35-44 ▶ 10% in 45-54 ▶ 15% in 55-64 ▶ 15% in 65-74 ▶ 20% in 75 or over ▶ 5% Prefer not to say
Race/Ethnicity	**Majority White or Caucasian** ▶ 50% White or Caucasian ▶ 35% Asian or Asian American ▶ 5% Prefer not to say ▶ 10% Multiracial (5% Asian or Asian American and Latino, Latina, or Latinx; and 5% White or Caucasian and Asian or Asian American)
Gender	**Majority men** ▶ 50% men ▶ 45% women ▶ 5% Prefer not to say

Workshop Agenda

Time	Item
15 min **5:30-5:45**	**Introduction** ▪ Andre Duurvoort (City of Cupertino) welcome participants to the workshop and provided an overview of workshop objectives and goals. ▪ Mike Chang (Cascadia) provided an overview of Zoom webinar functions and facilitated a series of icebreaker questions.
20 min **5:45-6:05**	**CAP Presentation: Emissions Forecast and Targets** ▪ Andre Duurvoort provided an overview of anticipated climate impacts, emission forecast and largest GHG emissions sources, actions taken to date, emission reduction targets, and what it means for life for Cupertino residents in 2030. ▪ Gilee Corral (City of Cupertino) and Victoria Morin (City of Cupertino) answered questions from the Q&A chat box. ▪ Gilee Corral moderated a Q&A session after the presentation.
50 min **6:05-6:55**	**Discussion: Mitigation Measures and Actions** ▪ Mike Chang facilitated a discussion around the following measures and goals: 1) half of Cupertino buildings are completely electric; 2) most of your everyday trips are by public transport, walking, biking, scootering, or wheelchair and we shift away from single-occupancy vehicles; 3) when you do drive, you use an electric vehicle; and 4) you are creating less waste in the landfill. ▪ For each measure and goal, Mike Chang facilitated gathering feedback around the following three questions: - What challenges or barriers do you see for yourself that will prevent you from making this change? For your family? For your neighbors? - What would be needed for you to make this change? - What are the equity considerations? Who would benefit? Who would be harmed? ▪ After going through each of the measures, Mike Chang provided an overview of what life in 2030 would

Time	Item
	look like for Cupertino residents. Mike then facilitated gathering feedback on the following questions: - What do you think of this life for yourself? Do you see barriers? - What else is missing (e.g., adaptation, community resilience, etc.)?
5 min **6:55-7:00**	**Conclusion & Next Steps** ▪ Andre Duurvoort wrapped up the workshop by providing some other engagement opportunities and contact information. Mike Chang facilitated a Zoom poll to gather demographic data from participants.

Workshop Outcomes

Introductory Polls

Question #1: What is one thing you want to see the City do or change in this Climate Action Plan? (15 responses)

- Go zero waste
- I do not want natural gas appliances banned
- How will Cupertino go net zero?
- I would like to see the city be a bit more aggressive/ambitious with it's GHG reduction goals
- Be a leader for other California cities on reducing GHGs
- Less use of water in public spaces (don't water the grass as much), encourage more sustainable (e.g. plant-based) food alternatives
- Significant reduction in greenhouse gas emissions from power plants
- I would like the city to prioritize the environment more, and be more aggressive in plans
- Encourage more non-vehicle transportation such as walking or biking to school/work. It seems like a small thing, but it makes a BIG difference
- Incentivize upgrades to homes, especially those being rented out
- Set a goal to eliminate natural gas distribution in Cupertino
- Stronger support for walking/biking infrastructure
- Eliminate gas operated city vehicles
- I want to see the city asking the State and Federal representatives to support actions that will reduce our footprint
- I would like to see the City use the Pareto principle in choosing what to do

Question #2: What is one thing you want to do or change to reduce your carbon footprint? (20 responses)

- Drive less
- Electric car and solar panel installation
- Would like to use more public transport
- Increase the insulation in my house in preparation for heat pump
- Install solar panels, use only the electricity I generate
- Plant trees for carbon offset!!! (I think that's how it works…)
- Move out of a standalone house into a small apartment
- Use my bike more to go on errands
- Use less plastic
- Bike more on safe roads
- Upgrade my home's windows and insulation
- Replace gas with electrical appliance
- Use less fossil fuels
- Reduce waste => compost more and plastic recycling
- Install a heat pump furnace
- Replace our gas furnace with a heat pump.
- Install a heat pump water heater and furnace in my rental buildings
- Replace my hybrid with an electric car.
- Wear smaller shoes

- Reduce automobile use—requires a bike/pedestrian friendly city

Question #3: Why did you decide to attend the workshop today? (17 responses)

- To support effective measures to decarbonize Cupertino
- To learn more about future plans
- I'm an environmental activist and hope to learn more about Cupertino's plan!
- To see how aggressive the climate goals are for the city.
- Opportunities like these are not too common, and people need to speak up if we hope to survive climate change.
- Recently moved back to Cupertino and want to see what the City is up to
- would like to be involved with Cupertino's climate plan, in order to best facilitate environmental progress.
- To make sure the youth voice was present and because I've found a lot of value in the past workshops :)
- Because I feel that acting locally is important.
- To better understand the interaction between individual actions and government policy
- I'm here as senior from CHS and I wanted to hear more about how students can get involved and how we can be supported by the city Learn about programs available to residents
- I am concerned that the plans for changes do not consider the cost to our lower income residents and renters.
- Would like to do something to fight climate change rather than feel helpless.
- Learn what I can do to help myself and Cupertino be more sustainable
- Interested in reducing climate change by acting
- Because I feel that the climate action plan is not focused on the highest payback actions
- Supporting walk/bike to school especially (since I am a student) and make a sizeable change in our carbon footprint

CAP Emissions Forecast and Targets Presentation

Questions from Chat (5 questions)

- How does the 24% reduction (assuming that is Cupertino) compared to the rest of the state. If that is the state number, how do you measure Cupertino's individual reduction?
- Follow up: It was a simple question: What has the state done during the same period? It would be helpful to not be redirected off into the internet vs staying focused and engaged on this meeting.
- I can see natural gas increased because of APPLE`s Bloom Energy Fuel Cells
- Is there a reason why Natural Gas usage has increased over the years? Is it an electricity replacement?
- But they went up between 2019 and 2020 due to APPLE.

CAP Mitigation Measures and Actions Polls

For each of the following measures, we asked the following questions:

1. What challenges or barriers do you see for yourself that will prevent you from making this change? For your family? For your neighbors?

2. What would be needed for you to make this change?
3. What are the equity considerations? Who would benefit? Who would be harmed?

Measure 1. Half of Cupertino buildings are completely electric

What challenges or barriers do you see for yourself that will prevent you from making this change? For your family? For your neighbors? (24 responses)

Theme: Costs to retrofit are too expensive which creates equity issues.

- Upfront cost of heat pump system and installation
- High cost of retrofitting older home to be energy efficient, especially considering with high cost of electricity associated with operation of heat pump
- Cost is intimidating and possibly prohibitive
- The overall costs of making such changes
- It is way to expensive to run all-electric compared to gas. Electricity is very expensive in CA. The current electric grid is not robust enough for this change (brownouts, blackouts, etc.) This would be a regressive "tax"
- Gas is economical. Electric is a monopoly and a risk to put all eggs in one basket
- Reasonable cost for solar power storage systems
- Costs of retrofit. Inability to increase insulation to adequate level in 1060 house. Being stiffed by contractors. Operating costs will be 2-5 times higher than gas
- For my family, largely monetary, as well as out home isn't well equipped (what my parents say, it's an older home) as well as perceptions that gas appliances are better/more reliable
- We had to replace our gas water heater last year, it was cheaper to replace it with a gas one. We did not have the power outlets set up for an electric water heater, and it would have costed more to operate
- Home is all electric, no gas. The equity concern I see is that electricity is more expensive than gas, which I'm okay with because I plan to install solar soon. I think it will be a challenge for my family/neighbors to redo their heating and kitchens to accommodate

Theme: Renters have limited agency to transition to electric.

- For me, I'm a renter so I don't have too much to say on this; for my family: Finding contractors with experience and expertise in electrification work, trust that this is a worthy ROI; for neighbors 0 finance issues, even with heat pump waivers, we should provide or partner with orgs to provide financing mechanisms / tools
- Incentivize landlords to install electric appliances
- 40% are owned by landlords, need to incentivize landlords. no return on rental units I own

Theme: Need for better education on electrification and list of resources.

- When asked to make changes, it would be good to have recommendations on what to change to. Right now, it seems you must do a lot of research and then there is always a cost factor
- The City should streamline the permitting process since. Lack of education of relatives who don't know about electrification could also be a barrier to adoption
- I don't understand how much more I'll be paying to heat my house with a heat pump as compared to natural gas.

	Theme: Installation and enforcement of building electrification is a challenge. ▪ Can't get anyone to install it ▪ It'll be hard to enforce this **Other comments** ▪ A mandate for appliance electrification when appliances fail is an essential measure to reduce GHGs. Menlo Park and Half Moon Bay are useful examples for equity programs that are paired with these programs (both cities are exploring these programs). ▪ I think that instead of 50% all electric we should be targeting 95% on Heat Pumps. This is because gas furnaces are the primary users of natural gas. ▪ Love everything about this, though I wish the goal was 100%! ▪ How can we encourage more residents to start using solar energy - any incentives or schemes to make solar installations attractive?
What would be needed for you to make this change? (15 responses)	**Theme: Need for better education and a list of resources/City approved list of contractors.** ▪ City-approved list of contractors and set pricing for the changes that need to be made (i.e., converting gas range to electric) ▪ A variety of resources and / or a city or local gov't program I can direct my landlord to in order to make this change happen ▪ List of reputable contractors who can retrofit homes/rebates ▪ City to provide education for folks to determine how to make a 1960 house up to date for all electric at reasonable cost ▪ City partnering with companies, step by step instructions/options to make the change ▪ Knowing what appliances are reliable and whose installation rates are fair **Theme: Desire for lower costs, financial incentives and streamlined permitting processes.** ▪ Monetary incentives, consultations, streamlines resources/information ▪ We need electricity to be cheaper than gas, and we need incentives to replace our gas water heater and gas stove. Our gas stove is still working well, and we don't feel the need to replace it ▪ Streamlined City permitting process. Effective rebates and cost assistance for low-income renters. (Consider a fully funded low-income program for folks on bill assistance). Education for contractors and residents. Ensuring that pricing Is fair. Partnerships with other jurisdictions and organizations involved in electrification. Clear communication to City residents that Cupertino will be transitioning away from gas ▪ Ongoing financial payments to cover the extra cost of running these appliances, plus improvements to the current electrical grid. I don't know how Cupertino would fix the grid ▪ Reducing cost by the city contracting with vendors for bargain lower pricing

	▪ Increasing electrical service (increased panel size, etc.) to cover electric appliances, furnace, etc., can be very expensive. How will you pay for that and not force the property owner to pay for something they don't want or want to pay for? Have you done any studies on those costs for homeowners who are 'maxed out' on their panel? PG&E will tell you a five-digit number in a lot of cases. **Other themes** ▪ Plant more trees, cities with trees are much cooler as compared with ones with less trees ▪ My circuit breaker panel is maxed out. It has to be replaced. ▪ Data about a set of homes that made the change, and what the costs and benefits were.
What are the equity considerations? Who would benefit? Who would be harmed? (15 responses)	**Theme: Transition to electric introduces a huge cost burden, particularly to low-income community members.** ▪ Renters are typically lower income; they will be helped if they pay lower electric bill when solar is installed on a rental building ▪ Upfront costs and time costs of renovations. Outreach and education around the benefits, particularly for health ▪ Lower-income folks might not be able to afford retrofits, and renters might not be able to convince their landlords ▪ Equity for low-income residents to implement such all electric housing ▪ These changes would be a huge burden on lower-income residents and renters in Cupertino (renters have no choice in what landlords choose for appliances). Running all-electric is much more expensive. The benefits would largely accrue to wealthy long-term homeowners ▪ City can provide grants or provide loans/installment plants for low-income homeowners ▪ Electricity is more expensive and less reliable than gas (especially during brownout times). However, if less people are using gas, will PG&E be on the ▪ Increasing the cost to electrically retrofit a house or apartment adds costs passed onto the consumer. You are going to increase the cost for housing for tenants and owners. Who is going to pay for that when a senior homeowner can't afford that, and a new resident must pay the extra cost to live in Cupertino? ▪ Landlord will have to increase rents – how to we offset that? How can we focus out State to get serious about reducing the delivery cost of electricity? ▪ Hook to maintain gas lines. It would be a tragedy if half of Cupertino is all electric, but San Bruno-type event happens anyways ▪ Grants, loans ▪ Equity for low-income renters to implement such electric housing Offset increased rents by landlords **Theme: Many will benefit from climate action.** ▪ Everyone will benefit when global warming stops increasing

	▪ Lower income residents will greatly benefit from improved indoor air quality. Low-income homeowners could potentially be harmed if there are no equity programs to support them (both financially and with education) **Theme: Corporations should take responsibility.** ▪ Corporations should take such projects ▪ Corps should take on such projects **Other themes** ▪ Consultation about the highest impact change I can make.

Measure 2. Most of your everyday trips are by public transport, walking, biking, scootering, or wheelchair. Shift away from single-occupancy passenger vehicles

What challenges or barriers do you see for yourself that will prevent you from making this change? For your family? For your neighbors? (11 responses)	**Theme: Congestion fee is inequitable for commuters.** ▪ Can't control when we get off work. it will be during peak hours and that is not equitable ▪ For those who commute in, there are negative equity implications with a congestion fee ▪ Charging a fee for vehicles during peak congestion seems hard to implement. ▪ Negative connotations around fee for congestion – can't control work hours; seems inequitable. **Theme: Biking and walking can be dangerous and inconvenient.** ▪ Difficult to safely walk and bike in the business areas of Cupertino ▪ Safety and access to bicycle and pedestrian corridors ▪ The reason I don't use my bike more is that I can't carry shopping bags on my bike. ▪ Safety around biking in business areas **Other themes** ▪ None ▪ Already have made this change and have eliminated gasoline automobile ▪ In Copenhagen they have 3 lanes: one for cars, one for buses, and one for bikes. Because there is only one lane for cars it is very slow, so everyone bikes or uses the bus.
What would be needed for you to make this change? (7 responses)	**Theme: Desire for more accessible and improved bike, pedestrian, and public transit infrastructure and education.** ▪ Higher frequency for public transit services ▪ We would need much better bike/ped infrastructure than we have right now to bike more. Off-street trails and paths are desperately needed ▪ Having longer operating hours for flexible public transit like the Via Shuttle ▪ Education for kids and teens on rules of the road, higher frequency public transit, safer roads for biking

	▪ Shaded bus stops would be nice to **Other themes** ▪ Why doesn't Cupertino conform to the state's standards so you can compare and be accountable? ▪ Less traffic on streets where there is biking activities
What are the equity considerations? Who would benefit? Who would be harmed? (13 responses)	**Theme: Older, disabled and those without access to cars will be negatively impacted.** ▪ Reducing SOV would harm older populations or those that are disabled. I know many older people in Cupertino who care about the environment but would not be able to replace driving with biking ▪ Those without a car are disproportionately affected by public transit route closures or reductions **Theme: A congestion fee will negatively impact commuters, particularly those who are low-income.** ▪ Equity consideration- people who must drive home at a certain hour can't miss peak congestion ▪ Everyone would benefit from improved bike/ped infrastructure to increase biking and walking (health benefits, increased neighbor interaction, and reduction in GHG). A congestion charge wouldn't really help anyone. There has to be the ability to bike and walk safely and easily first before we can mandate anything. ▪ Congestion taxes will proportionally hurt those with lower incomes who rely on a car for multiple jobs, or just commuting into Cupertino for work or school unless they are given stipends or alternative options ▪ Yes! Let's remove parking requirements! I have worries about the equity implications of congestion fees, though I support them in theory and for myself and residents. If you are considering that fee as a policy, would you include any policy exceptions or dividends for those who commute into our city for work; particularly services workers, or even students going to DeAnza? ▪ Everyone would benefit from improved bike/ped infrastructure to increase biking and walking (health benefits, increased neighbor interaction, and reduction in GHG). A congestion charge wouldn't really help anyone. There has to be the ability to bike and walk safely and easily first before we can mandate anything ▪ I am athletic enough to bike 20-30 miles and potentially more on electric bikes. The hard part for me is that If I really wanted to be safe, I would have to stop at every red light which could be up to 3 minutes and stay within 14 miles per hour. Under certain conditions, I can easily get to 25 mph, but the roads are just not safe enough to bike that fast at many places. Additionally, the thieves are very creative, and they find ways to steal bicycles with $100 locks, or they just remove the wheel or other parts.

	Other themes ▪ Paying for parking would not impact low-income people if all the parking fees were distributed to low-income people. ▪ The answer to this question depends on how the solution is designed, paid for, and implemented. ▪ Frankly I see many low-income folks already biking around. Charging for parking would really affect them ▪ Those who believe in efforts would benefits. Those who don't will be inconvenienced ▪ Everyone who breathes will benefit

Measure 3. When you do drive, you use an electric vehicle.

What challenges or barriers do you see for yourself that will prevent you from making this change? For your family? For your neighbors? (18 responses)	**Theme: Electric vehicles are expensive, and range limited.** ▪ Can't afford it. Need a car that will travel 600 miles on one charge. ▪ Cost is the largest barrier, in terms of vehicle ownership. I do not think outreach is sufficient – the federal or state programs need to be improved, or else we'll never drive down costs to a <30k amount ▪ Current vehicle runs reliably, so there is no pressing need to switch ▪ Current electric vehicles do not have the range for longer-distance trips, and the US doesn't have the infrastructure yet for this. Switching will be expensive vs. buying a used car. I'm also not sold yet that the batteries—which go to a landfill—aren't more a negative hit to the environment than gas ▪ Can't afford it – cost largest barriers ▪ I have an EV, but I am scared to take it on road trips ▪ Some people have to drive long distances and the feeling of "getting stuck" in areas that don't have charging stations available ▪ None, own and EV car and EV bike already. For many, the cost just has to come down for the cars and PGE rates need to come down—too high compared to rest of country **Theme: Anxiety over lack of charging infrastructure.** ▪ Charging anxiety ▪ Not enough EV charging stations and also people who hog whatever available charging stations for long periods of time ▪ Not enough charging stations **Theme: No personal urgency to upgrade to EV.** ▪ I just bought a hybrid vehicle in 2019 and don't see a need to upgrade/replace for many years. We do NOT need more chargers in shopping centers taking up parking spaces, people can charge at home.

	▪ Current car is good, don't need to upgrade **Other themes** ▪ What is the cost to the city for charging stations? (Such as the one at the library) ▪ Outreach is not sufficient ▪ Aren't the batteries that go to landfills negative for environment? ▪ No problem for me, a single-family homeowner. The city needs to provide more EV charging for apartment dwellers. Range is NOT a problem for local use. We need to realize that ALL need to change our cars if we are going to save the planet for us. THINK AHEAD! ▪ Cost benefits for low user of vehicles
What would be needed for you to make this change? (16 responses)	**Theme: Desire for more charging stations around the City.** ▪ Having more charging stations that work for all EVs, not just for one brand ▪ More EV charging in multi-tenant complexes. Cheaper and more reliable electricity ▪ Require all gas stations to have EV chargers **Theme: Support for more reliable and cost friendly EVs.** ▪ An EV charger at my complex, a longer-range vehicle, and it to be cost effective ▪ Longer range batteries ▪ A plug-in hybrid with 100 miles range on battery would be great ▪ Lower costs ▪ Longer-range vehicles. More infrastructure for charging (and quicker charging). Batteries that can be recycled. Lower cost electric vehicles. ▪ Batteries that can be recycled **Theme: Want for convenient car sharing programs.** ▪ Convenient care share program ▪ I don't want to own a car, so a convenient car sharing program, alongside infrastructure and public transit improvements **Other themes** ▪ Possible trade in incentives ▪ I've had an EV for years and believe they meet the needs for most Bay Area residents. ▪ Gas stations in gas stations and MFDs ▪ Nothing—already there ▪ Already comply with small EV for local use. From other answers we see people are just not understanding the danger we are in
What are the equity considerations? Who would	**Theme: Challenge for apartment dwellers to charge EVs.** ▪ We would all benefit from improved air quality ▪ Easy for people in single family homes to install chargers but not for apartment dwellers

benefit? Who would be harmed? (13 responses)	▪ Lower income people could benefit with subsidized charging ▪ Need to better inform low-income folks about the current help and incentives for EV vehicles. We need an ongoing public education program, maybe on city channel ▪ Electric vehicles are more expensive than gas, especially compared to used vehicles. They do not last as long, as batteries need replacing after 10 years—this is very expensive to change. This would a large burden on many families and lower-income residents, especially if they need a larger vehicle. Renters have trouble getting charging spots. Benefits are for homeowners. ▪ Outside of cost, we are harmed by continuing to invest in car-centric infrastructure, albeit cleaner cars. This still doesn't help safety concerns from accidents, and just alternatives to owning a car entirely ▪ Need tiny one to two people electronic vehicle ▪ Improve air quality would benefit all ▪ An alternative to electric cars is high speed trains like Europe. This would be better for low-income people. ▪ Not easy for MFD to install chargers ▪ Subsidized charging – would benefit low-income folks ▪ I personally would enjoy driving piston engine manual transmission cars. A solution to this is alternative fuels like hydrogen methanol and ethanol. Additionally, if we share cars, it would be unclear who would be responsible for cleaning or maintenance. Our country has not standardized EV charger plugs and there are 4 types of plugs and not all work with every car. A promising solution for range and charging time is the Solid State Battery that is being developed by some manufactures including Toyota. If this is successful, cost would be the only problem left to solve to adopt Electric vehicles. Car sharing would benefit people who cannot afford to take on the full cost of operating a car, or do not need a car every day. For people who drive frequently, having their own car will be easier. ▪ If there was a price on carbon, and the fees collected were distributed to all citizens, then poor people would come out ahead because they don't use much carbon

Measure 4. You are creating less waste in the landfill.

What challenges or barriers do you see for yourself that will prevent you from making this change? For your family? For your neighbors? (17 responses)	**Theme: It's hard to avoid packaged materials.** ▪ So challenging to purchase our favorite snacks in bulk. Everything is packaged in single servings. With the pandemic, we can't bring our own drink containers to purchase our drink in ▪ Hard to avoid single use plastics ▪ Biggest problem is the wide use of plastic in consumer goods—hard to avoid ▪ Overpackaged groceries

	Theme: There are limited incentives to use reusable products and waste less. ▪ There is no personal incentive to switch to a reusable product ▪ There are no incentives for anyone to produce less waste ▪ No incentives to produce less waste **Theme: Repair programs can be time inefficient.** ▪ Someone might not be able to wait for a repair clinic event to fix a phone ▪ Might not be able to wait for repair clinic to use a phone **Other themes** ▪ Need to know what can be recycled versus not ▪ These ideas seem pretty doable for most residents, using our current waste collection system. They are also all 'encouragement' ideas, instead of negative (taking something away, or charging more) ▪ As long as the city communicates these programs well, and provides guidance on waste disposal, I don't see an issue with many of these programs. If it is not already a requirement, we could just consider a ban on single-use plastics for business (since it is harder to coerce private behavior) ▪ These are all good ideas. Has anyone taken a look at up cycling items taken out of the waste stream, repairing them and selling them to help defer then ▪ This is the elephant in the room, we all do our part and then large companies burn fossil or biofuels on a continuous basis wiping out all our reductions then they claim they are carbon neutral and hide behind privacy. This does not make sense, I would like to know when ▪ Upcycling and taking items out of the waste stream ▪ I'm sorry but it is very difficult to find anyone capable, and interested in, repairing stuff ▪ None
What would be needed for you to make this change? (11 responses)	**Theme: City action to reduce plastic packaging.** ▪ City action to prevent single use plastics at our city restaurants and shops ▪ Packaging is an issue—everything comes in plastic containers or bags! ▪ City action to prevent single use plastics **Theme: Better education on the waste stream and what is / isn't recyclable.** ▪ It seems impossible to educate everyone about proper sorting when there are so many different products out there. Start with more education ▪ More education on what can be recycled and how the items are recycles. Education should start at elementary schools so that the children can teach their parents ▪ Ensuring consistent and proper waste receptacles for residents, requirements for businesses (compostable requirements), education for residents ▪ Seems impossible to educate everyone about proper sorting

	Theme: Restructure collection rates to be based on household waste generation. ▪ Charge households based on the amount of waste they create. Mandate diaper collection services like Earthbaby for new parents and provide incentives. More composting classes and discounts on composters. ▪ Charge households based on amount of waste they create **Other themes** ▪ Require restaurants to use paper or aluminum clam shells only, compostable clamshells are not compostable ▪ Products are not currently designed to be repairable. They used to be. We would have to insist that products are repairable.
What are the equity considerations? Who would benefit? Who would be harmed? (11 responses)	**Theme: Small restaurants and businesses that rely on single use material will experience higher costs and challenges.** ▪ Small restaurant owners, food trucks, etc. that rely on plastic takeout containers to provide their food to consumers likely to incur a higher cost when plastics are banned. Consumers should be understanding of this! ▪ Small restaurants and food trucks that rely on plastics **Theme: Residents who share waste bins will be punished if waste is sorted incorrectly.** ▪ People who share waste bins would be harmed if others sorted incorrectly. People who can't afford higher trash bills would be harmed if prices increased ▪ Those who share waste bins could be harmed if things are sorted incorrectly **Other themes** ▪ None ▪ Everyone benefits from creating less waste. Always good to learn to purchase what you need and will use to create less waste ▪ This seems a net good. I can only think that maybe it would take a bit longer for people to sort more effectively and fix things themselves ▪ I see overuse of large, bottled water containers by day workers. They think our tap water is not sate – if isn't in their home country. Could we encourage the use of large water thermos jugs for contractors for employers? ▪ If there are increased service fees due to these changes, then there would be issues for lower-income residents. But better wase management benefits the rest of the world, especially for areas like Indonesia (where much of our poor recycling and wase goes to be burned today)! ▪ If disposing of stuff is too hard, people will throw it out the window. ▪ Seems like a net good

2030 Vision

After discussing each of the four climate mitigation measures, the City reminded participants about what life will be like in 2030. Following this, we asked the following two questions to the participants.

Think about the vision for "what does 2030 look like for Cupertino", what are the barriers you see as a whole for this type of collective transition? (8 responses)	▪ Tech is not affordable enough ▪ Aim to provide less waste not just divert ▪ I don't see barriers. I think it would be a different lifestyle, but better. ▪ Too expensive to operate all electric ▪ like the vision just need more guidance and accessibility to resources ▪ Perceived in convenience of lifestyle shift ▪ Highly unlikely to happen for us as renters ▪ Biking is easy and quick. It is very easy to go somewhere within a 50-mile radius without a car. There are no creative thieves stealing our bicycles. There are industry standards for everything making spare parts and repairs easy. Technology works in unison with us to improve our lives. Destinations in the city are easily accessible.
What is missing/what other ideas do you have? (5 responses)	▪ Maximize water resources ▪ Cupertino needs to pressure State and Fed govt representatives to help us make this change. ▪ Alt fuel sources; banning Fuel Cell ▪ We need to focus on the biggest contributors to global warming first. ▪ One thing that is missing is that the city should be a place where we enjoy being outside. Whenever I visit places like the Collins Elementary School Garden, I wish that the entire city was just as beautiful. Many cities are just covered in lawn and pavement, and it does not feel welcoming.

Questions and Answers throughout the webinar

Questions and answers have been edited for clarity and grammar.

Question	Answer
Apple`s Bloom Energy Fuel Cells increased our GHG usage significantly, are we considering not permitting new natural gas fuel cell permits?	Hi Dino, this is an important consideration. We're working with Apple to make sure the emissions from those fuel cells are being accounted for correctly. They source the gas used from a biogenic source (landfill) that is considered carbon-neutral in their Sustainability report. Hi Dino, right now our building code allows for gas used for generators and fuel cells, and for research and development or other uses with no electric alternative.
You mention more bike Lanes— where would the funding come from?	A lot of actions implemented with Bike Pedestrian Plan; looking for alternative funding sources if we want to accelerate that master plan. Some of these ways are looking at fees for road use, different

Question	Answer
	road improvements. We also have the gas tax; looking at more actions like that. If we want to propose a particular action, a study and coordination is required; important to get those actions into the CAP to help determine priority of action and how to implement (coordinate, conduct study, etc).
Electricity demand: How does the City/large utilities plan to meet that demand?	All electric proposed has been proposed statewide; easier to decarbonize at the big utility scale, but we'll need to look at the consumer level too. There are issues of electric grid reliability but meeting needs/capacity is not an issue currently. One of the best solutions is a combination of big scale solar, thermal, and wind and combine that with big battery storage actions. Also focusing on more home energy actions – need both (large scale and at home) to be more resilient. We need all the above.
Waste: What is the most common type of waste in the landfill? And how can we reduce single use plastics?	Food waste. There is an active study in the city to help reduce plastic use. Can direct folks to that. The number one item that could be diverted from the landfill is food waste. Cupertino residents, businesses, and apartments all have access to a green curbside waste bin. This material gets composted and reduces methane gas in the atmosphere.
How can we encourage more biking/walking/public transit?	Bike Pedestrian Plan has a lot of great ideas for improving and increasing these alternative options. We'll talk more about that shortly.
Do you have an estimate of the cost of the electricity I will have to buy in 2030? 30cents per KWh is just too high!	Hi John, we can acknowledge that energy prices are probably going to see increased volatility in the near future as our utilities adjust to a new mix of fuels, and as we deal with improving resiliency. Gas will not be immune to this volatility either, as we are seeing today in Europe. I will say looking to the past, Californians may have higher rates but also lower bills overall due to a good building energy code. That trend may indicate some solutions to this difficult challenge. Also, good news is that more renewables promise to lower this volatility over time as the fuel becomes "free."
Our REACH codes only affect new construction - are there any actions to incentive the adoption of heat pumps, electrification generally in housing turnover (like re-sales, renovations, etc.)? Similarly, are there programs aimed at landlords in order to serve renters interested in electrification for public safety / climate reasons?	This is an important consideration. We would consider actions such as requiring retrofits at re-sale or major renovation. Addressing the landlord-tenant relationship is going to need some creative solutions and perhaps incentives for the property owner.
How can we encourage more residents to start using solar energy - any incentives or schemes to make solar installations attractive?	Yes, we are working with Silicon Valley Clean Energy to promote and support their programs to promote solar energy and battery storage. Check out their website: https://www.svcleanenergy.org/clean-electricity/#solar-battery.

Question	Answer
What can we do to encourage more "reuse" among residents - like more frequent events like the garage sale OR some new type of events where people can exchange goods that can be reused	Great question! We will talk about waste in just a minute. two big changes we are looking at include hosting fix it clinics/repair clinics to reuse electronics and appliances and reusable diapers. We are already working on reusable food ware ordinance.
Again, there is NO bike/ped plan as keeps being stated. There are separate bike and ped plans, of which the bike plan has expired.	Thanks for that clarification. Yes, they are separate plans and can be found here: https://www.cupertino.org/our-city/departments/public-works/transportation-mobility/bicycle-and-pedestrian-travel.
Our lowest income and fixed income residents cannot afford to switch to all electric vehicles, electric appliances, etc. How do you plan to help those folks who are most impacted financially by these changes?	Thank you for raising this, Mark. Part of the Climate Action Plan update process will be creating actions to support low-income and vulnerable populations to make the switch.
This was not answered in the previous workshop, but is there any consideration to tie some of the CAP goals to tangible goals around housing (say, a definitive number of unit additions), in particular higher density and more affordable housing? This seems particularly relevant for reducing VMT, driving electrification, and other sustainability goals (esp. considering multi-family housing on average has the lowest emissions of any housing type, reducing indoor air pollution, etc.)	Hi Sean, indeed dense infill housing has been shown to be particularly effective to reduce VMT. The Housing Element update is just kicking off and these CAP measures will be shared with that process.
Increasing electrical service (increased panel size, etc.) to cover electric appliances, furnace, etc., can be very expensive. How will you pay for that and not force the property owner to pay for something they don't want or want to pay for? Have you done any studies on those costs for homeowners who are 'maxed out' on their panel? PG&E will tell you a five-digit number in a lot of cases.	Hi Mark, this is an important comment. We have studies locally looking at the challenges to cost as well as the current shortage of labor that makes this a difficult project for most homeowners today. What we've found is that in new construction, there is cost savings. But for retrofitting older homes, there needs to be more incentives, workforce training, and other things to stimulate the market. We've also seen ways that a typical 100A service can accommodate all-electric, but not every electrician is well-versed in the technology to do so.
Increasing the cost to electrically retrofit a house or apartment adds costs passed onto the consumer. You are going to increase the cost for housing for tenants and owners. Who is going to pay for that when a senior homeowner can't afford that, and a new resident has to pay the extra cost to live in Cupertino?	Hi Mark, thank you for this comment. We want to promote policies that are cost-effective and lower the energy burden for tenants.
The initial cost of solar takes years to break even. Who pays for that to benefit lower income utility users?	Hi Mark, this is an important equity consideration. We like to promote some of the existing efforts from groups like Grid Alternatives, which uses donor money and volunteer labor to install solar and batteries for income-qualified customers.

Question	Answer
Why do you need 'sticks' to implement your plan. It should be entirely voluntary and agreed to by most taxpayers/homeowners/property owners.	Hi Mark, the Cupertino City Council would like us to bring them a plan that considers all options to reach a more aggressive target than the State of California has set.
Yes! Let's remove parking requirements! I have worries about the equity implications of congestion fees, though I support them in theory and for myself and residents. If you are considering that fee as a policy, would you include any policy exceptions or dividends for those who commute into our city for work; particularly services workers, or even students going to DeAnza?	Hi Sean, any policy exceptions to a congestion fee would be explored via a public process, as well as looking at other cities' best practices. Thank you for these examples to consider!
Be specific about the 'donor money.' Where does that come from? Money isn't free. The same for volunteer labor. Who are the 'volunteers.?	Hi Mark, in general we would like to encourage programs that benefit economic activity locally, show that our programs have a positive ROI, as well as seeking out grants from foundations, non-profits, and the federal and State government to offset any general funds needed.
Unanswered questions	▪ What prices are you expecting EV car purchasers to voluntarily pay for a new car and to discard their old vehicle? ▪ Where does Cupertino have large events that would require an additional event wase management company? ▪ Phones for Seniors can be $30 or less. A new microwave is $99 on Amazon. How would he staff time, location, and cost be comparable? ▪ Has the city (in conjunction with other ABAG cities) done any studies on the grid load now versus doubling electric vehicles and all electric heating systems? ▪ OK I will also call them! Can I count on you to follow through?
Additional comments	▪ Eliminate gas operated city vehicles ▪ I don't think it is right to require all new cars to be electric when there is a possibility that there will be cars powered by carbon neutral fuels like Hydrogen, Ethanol, or Methanol ▪ Incentivize landlords to install non natural gas appliances ▪ Stop issuing permits for Bloom Energy Fuel Cells ▪ There should be walk only zones like in Sunnyvale and Mountain View, starting with City center ▪ Give specific repairable electronics.

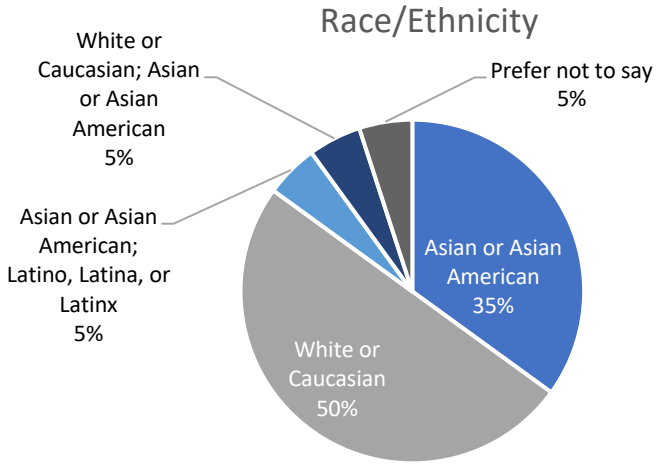
Participant Demographics

20 (50%) of 40 participants responded to the demographic survey questions.

Race/Ethnicity

Most respondents (50%) were White or Caucasian.

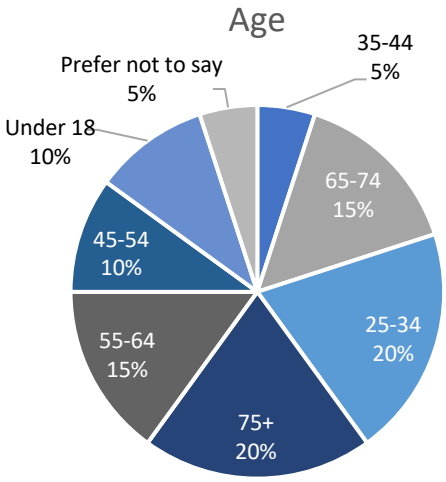
Race/Ethnicity	#	%
Asian or Asian American	7	35%
White or Caucasian	10	50%
Asian of Asian American; Latino, Latina, or Latinx	1	5%
White or Caucasian; Asian or Asian American	1	5%
Prefer not to say	1	5%



Age

Majority of respondents (40%) were either 25-35 or over 75 years old.

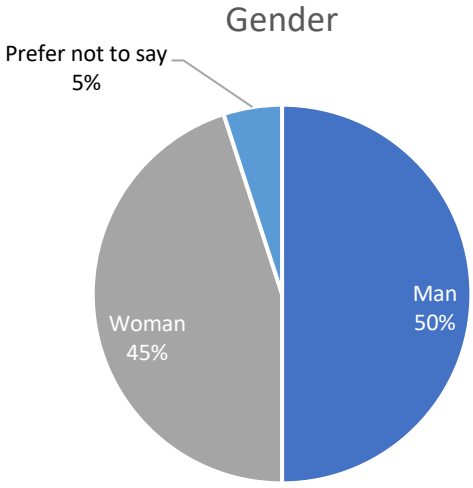
Age	#	%
Under 18	2	10%
25-34	4	20%
35-44	1	5%
45-54	2	10%
55-64	3	15%
65-74	3	15%
75+	4	20%
Prefer not to say	1	5%



Gender

Majority of respondents were men (50%).

Gender	#	%
Woman	9	45%
Man	10	50%
Prefer not to say	1	5%



Cupertino Climate Action Plan

Results from the Community Survey #2

The Cupertino Climate Action Plan (CAP) Update provides a roadmap for the City of Cupertino and its citizens to reduce greenhouse gas emissions and achieve their climate goals with community solutions and individual actions.

The City of Cupertino is updating the CAP Update to better meet the needs and goals of the community. As part of this process, we asked Cupertino's community to complete a survey to identify concerns and support for different measures and actions of the CAP Update.

This survey was open from September 30th to October 25th, 2021. The survey was offered in English and Traditional Chinese. Anyone could take the survey on cupertino.org/climateaction webpage.

Contents

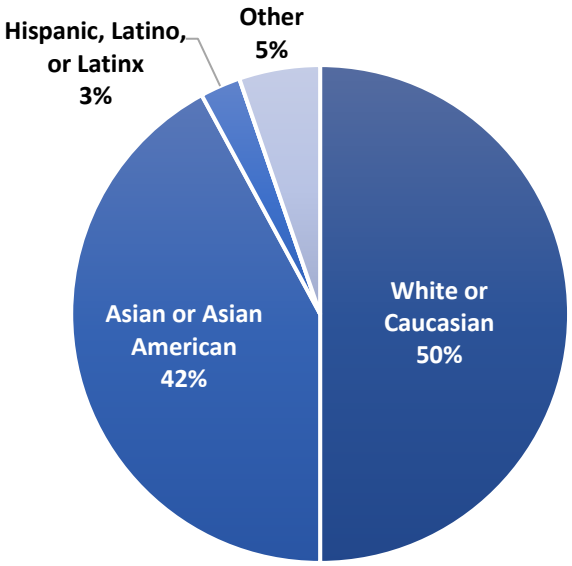
Summary

In total, we received **50 responses**. Some additional demographic information about the survey respondents is provided below:

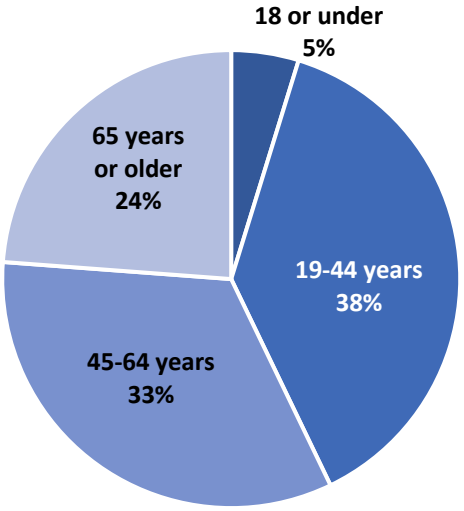
- Majority of respondents own their home (28 of 42 responses, 67%)
- Half of respondents are White/Caucasian, and 42% of respondents are Asian or Asian American
- Most respondents (88%) would like to be involved in the Cupertino CAP planning process (35 of 40 responses)

Demographic Results

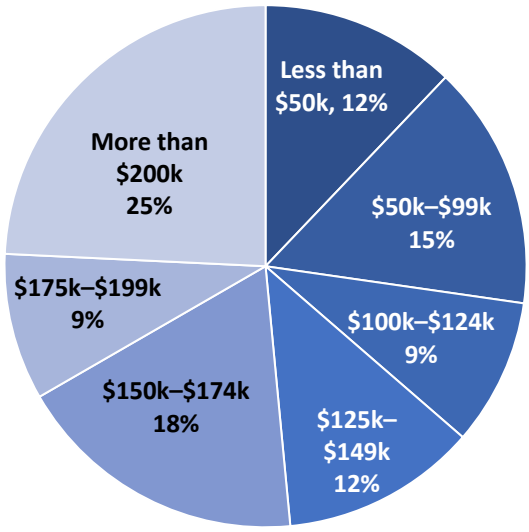
Race and Ethnicity (n = 38)	
White or Caucasian	19
Asian or Asian American	16
Asian – Indian	3
Asian – Chinese	11
Asian – Other	2
Hispanic, Latino, or Latinx	1
Black or African American	0
Other	2



Age (n = 42)	
18 or under	2
19-44	16
45-64	14
65 years or older	10



Estimated Household Income (n = 33)	
Less than $50,000	4
$50,000 to $99,999	5
$100,000 to $124,999	3
$125,000 to $149,999	4
$150,000 to $174,999	6
$175,000 to $199,999	3
More than $200,000	8

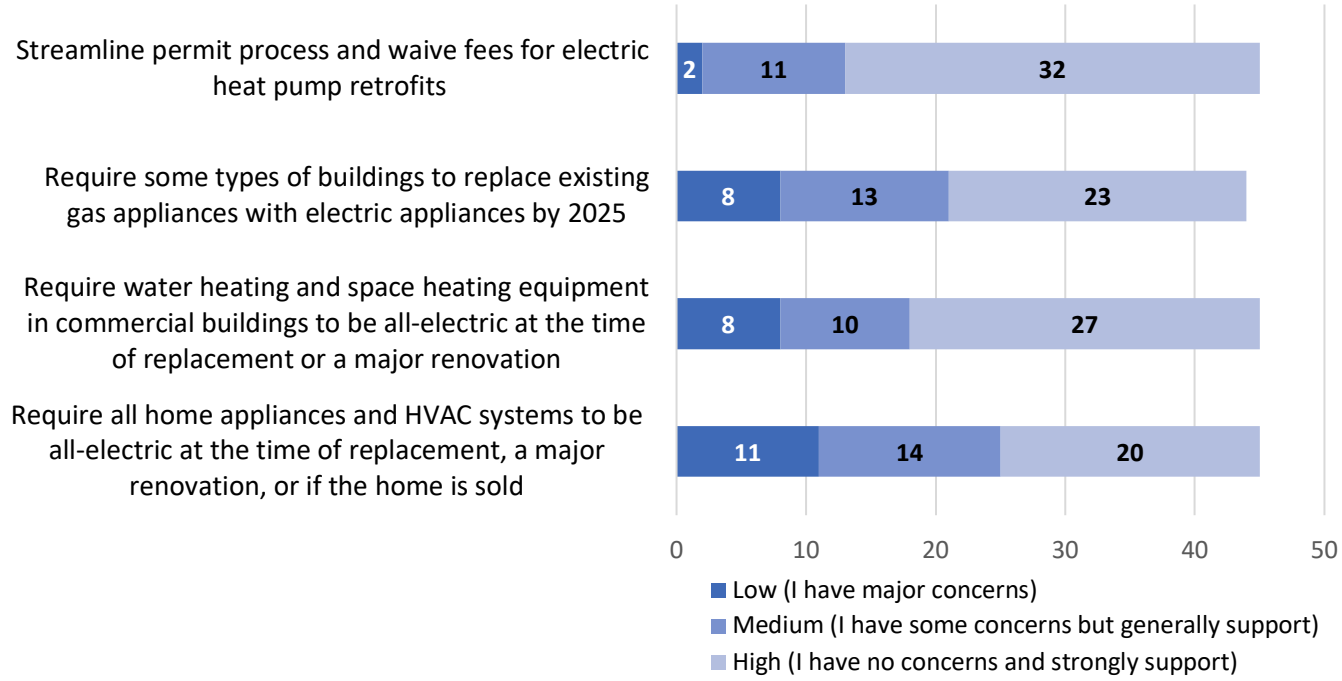


Survey Results

The figures below highlight the overall support or opposition for measures and actions asked about in the survey. In each section, we also summarize open-ended responses. The figures and summaries do not include an interpretation of the results.

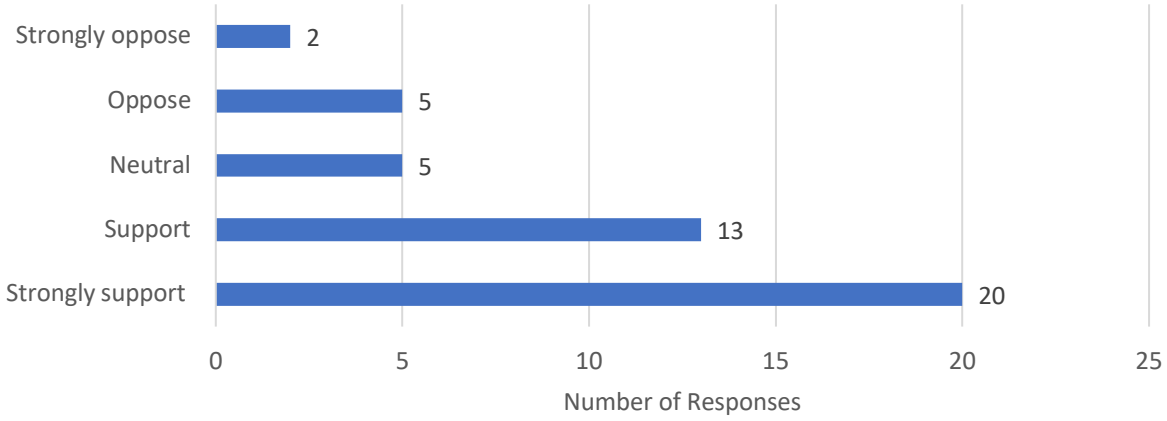
Buildings

We asked respondents to indicate their level of support for four specific actions related to buildings.



Of the four actions, **"streamline permit process and waive fees for electric heat pump retrofits" had the highest level of support** (71% of respondents indicated a high level of support, and 96% indicated high or medium levels of support).

Respondents were then asked, "In general, what is your level of support for these measures and actions?" Overall, the **majority of respondents (73%) support these measures and actions**.



We asked respondents, "**Why do you support or oppose the above actions?**" **(n = 35).** Below are some key findings and themes:

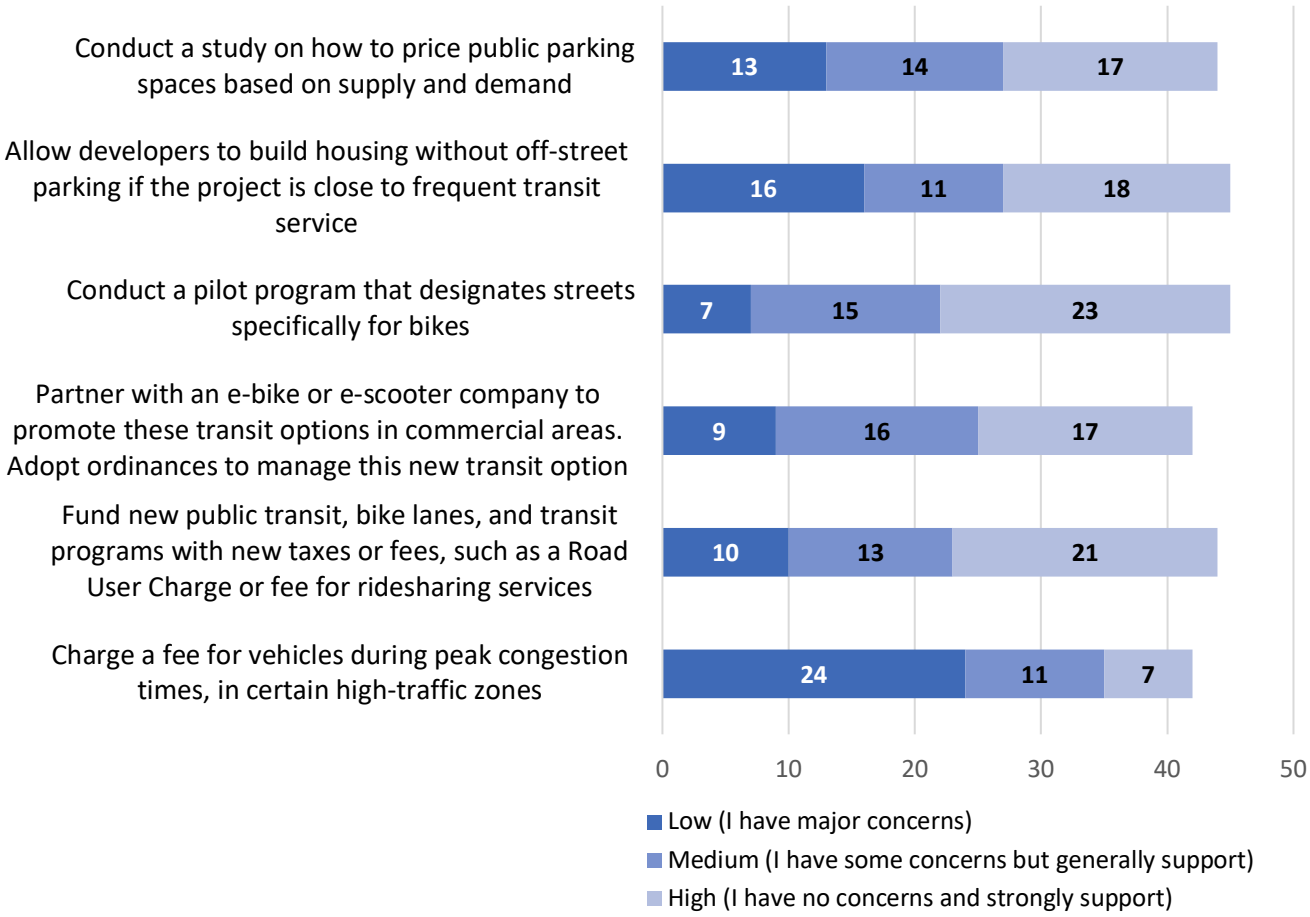
- ✓ Cupertino can be a leader in climate action
- ✓ Support for aggressive action now
- ✓ Concern about costs
- ✓ Concern that the electrical grid cannot handle more electric appliances
- ✓ Concern about inability to cook during power outages with electric stoves
- ✓ Preference for functionality of gas appliances

We also asked respondents, "**Are there any additional actions not listed here that you recommend adding related to buildings and energy?**" **(n = 24).** We summarized the main recommendations below:

- ✓ Include equity protections for appliance replacement mandates
- ✓ Incentivize homeowners to switch to electric appliances (via rebates or subsidies)
- ✓ Do not allow gas installation for restaurants and laundromats
- ✓ Install solar on all buildings
- ✓ Educate homeowners about retrofitting
- ✓ Install heat pump water heaters in all City buildings
- ✓ Require EV charging stations at all new residential buildings
- ✓ Reduce urban heat island effect by painting roofs white and installing skylights

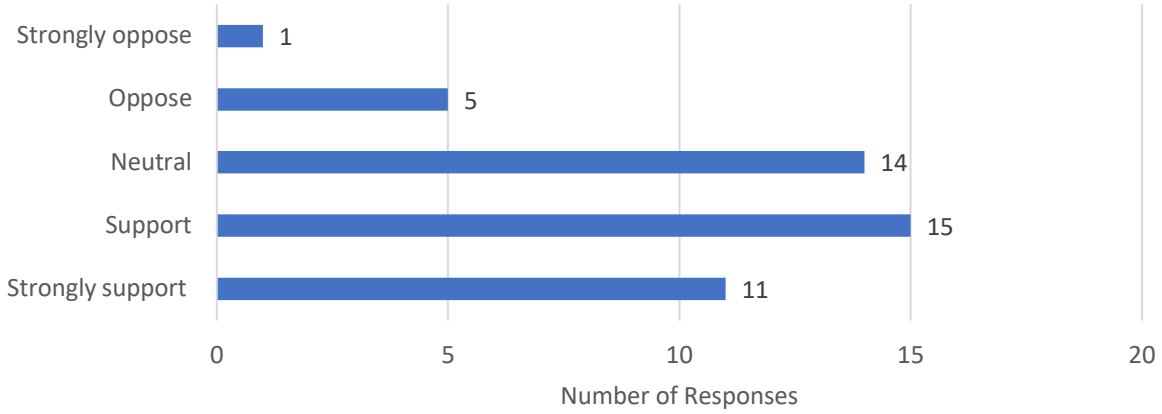
Transportation

Respondents were asked about their level of support for six specific actions related to transportation.



The first action, **charging a fee for vehicles during peak congestion times, received the least support** (57% of respondents indicated their support was "low"). **Conducting a pilot program that designated streets specifically for bikes received the most support** (84% of respondents indicated their support level as "medium" or "high").

We then asked respondents, "In general, what is your level of support for these measures and actions?" **57% of respondents support these measures and actions, and 30% indicated a "neutral" level of support.**



We asked respondents, "**Why do you support or oppose the above actions?**" **(n = 32).** Below are some key findings and themes:

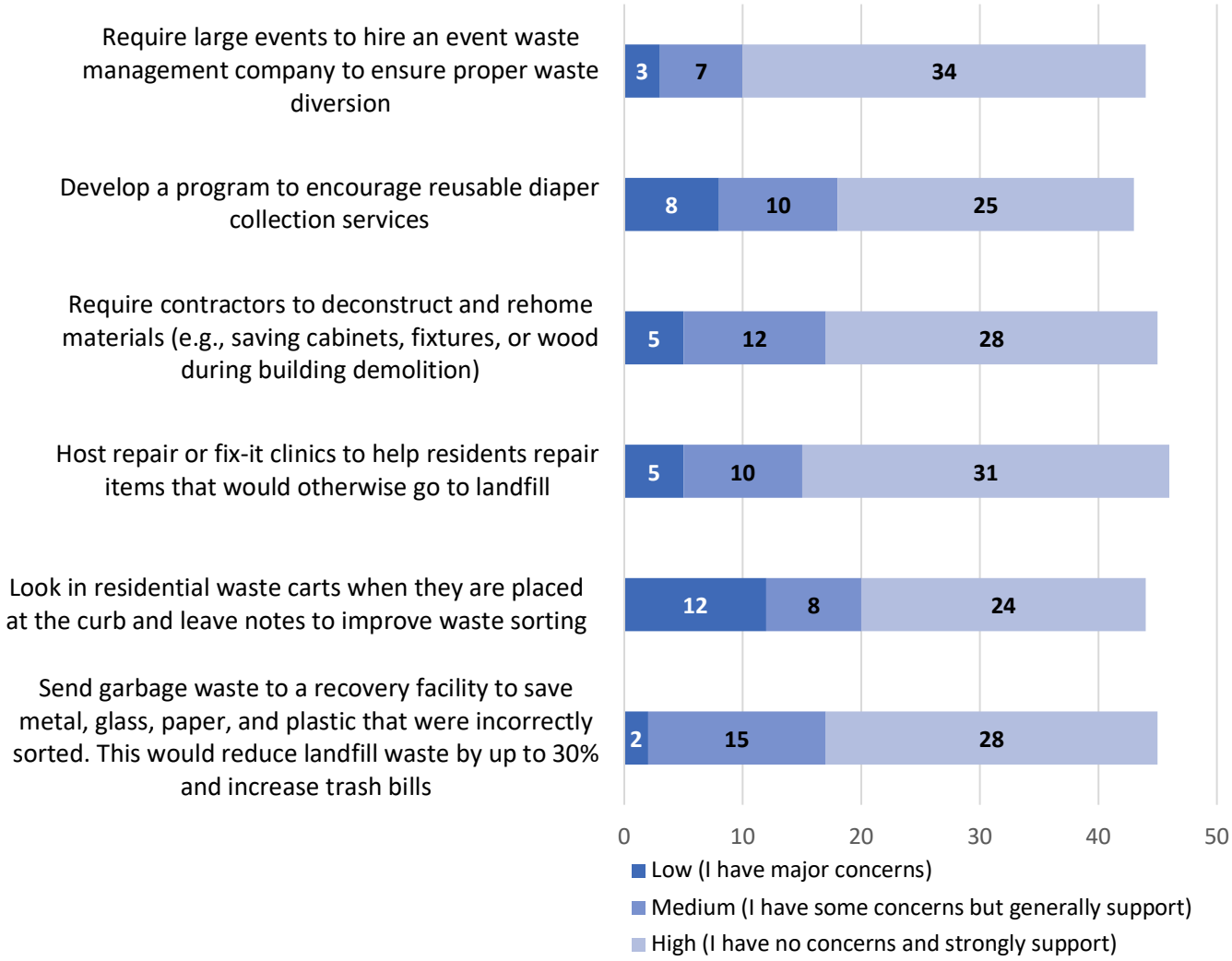
- ✓ Support for safely walkable and bikeable communities for climate, community wellbeing, pollution, and noise
- ✓ Support for carpooling and public transportation incentives
- ✓ Support for more bike infrastructure (protected bike lanes)
- ✓ Concern about public transit safety during COVID-19
- ✓ Concern about impact on low-income households
- ✓ Concern about cost and feasibility of actions
- ✓ Concern about congestion tax being regressive
- ✓ Concern about punitive actions (support for incentives instead)
- ✓ Concern about safety of biking
- ✓ Concern about e-bikes and e-scooters

We also asked respondents, "**Are there any additional actions not listed here that you recommend adding related to transportation?**" **(n = 21).** We summarized the main recommendations below:

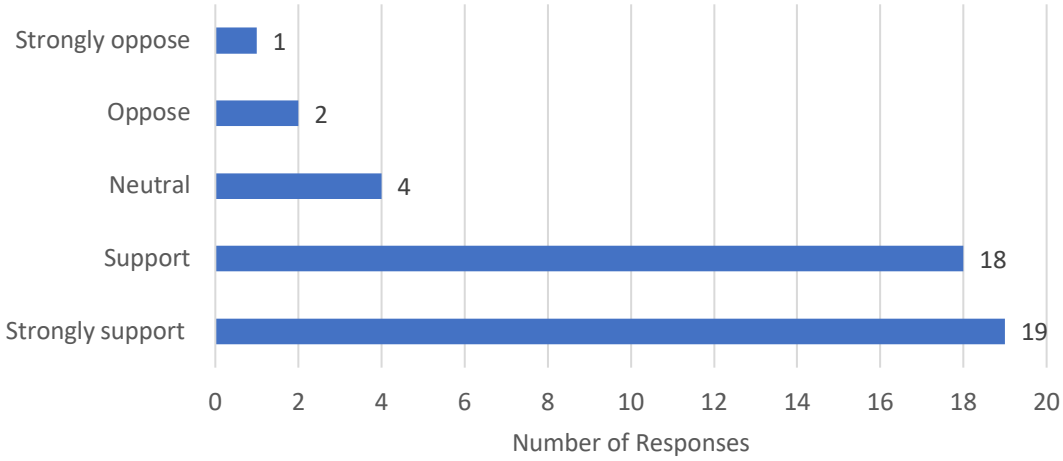
- ✓ Incentivize public transportation (employers)
- ✓ Improve public transportation access in neighborhoods and make it free for children and elderly
- ✓ Support pollinator/native plant corridors along bike/pedestrian corridors
- ✓ Support safer walking and biking to school
- ✓ Reduce and enforce speed limits (for safer walking)
- ✓ Provide EV charging stations at all buildings
- ✓ Convert all City vehicles to EV

Waste

We asked respondents about their level of support for six specific actions related to waste management.



We then asked respondents, "In general, what is your level of support for these measures and actions?"
Most respondents (80%) support these measures and actions.



We asked respondents, "**Why do you support or oppose the above actions?**" **(n = 23).** We summarized some main findings and themes below:

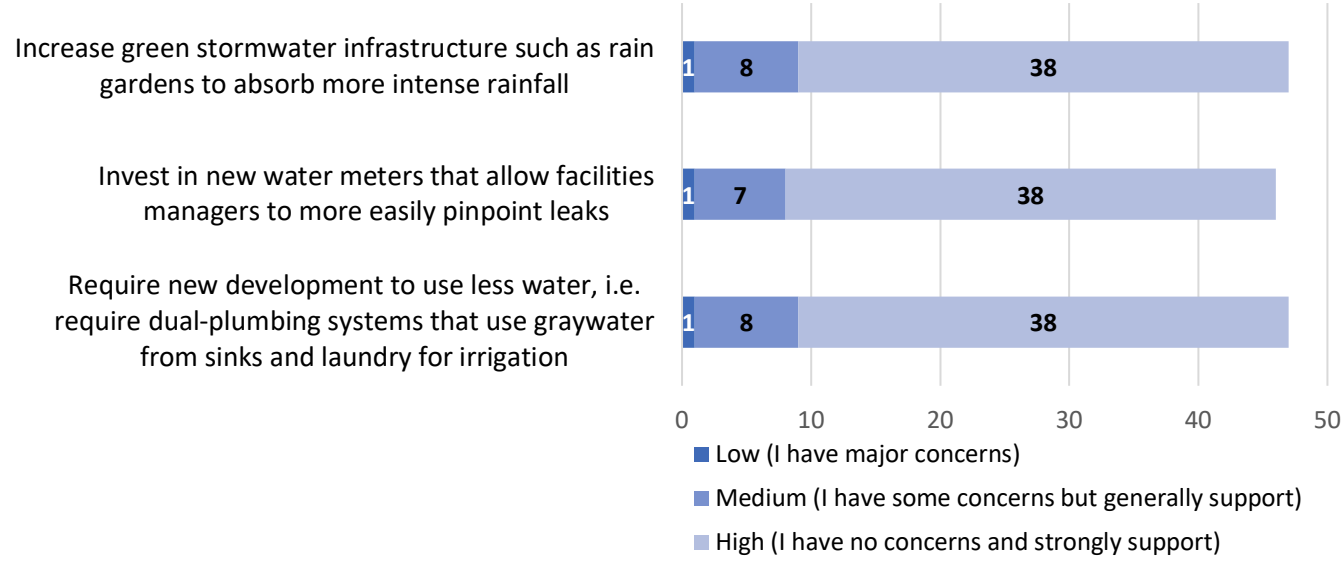
- ✓ Waste reduction benefits community
- ✓ Support for education and competition among neighborhoods
- ✓ Support for awareness about overconsumption
- ✓ Not a top priority for climate action
- ✓ Concern about sufficient community participation, privacy, and cost
- ✓ Concern about recycled items not actually being recycled

We asked respondents, "**Are there any additional actions not listed here that you recommend adding related to waste reduction or reuse?**" **(n = 17).** Some key recommendations are summarized below:

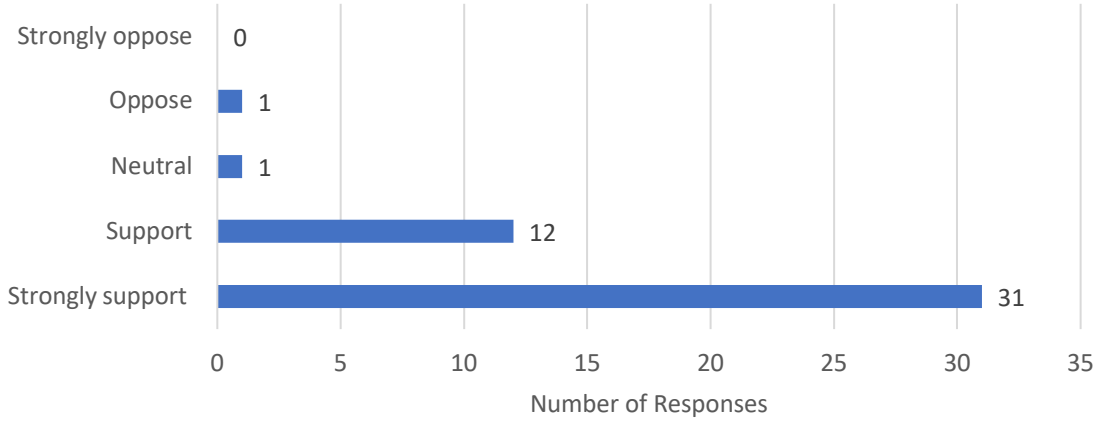
- ✓ Educate the public on recycling guidelines
- ✓ Ban plastic bags, plastic utensils, and straws in businesses and restaurants
- ✓ Ban single-use plastic bottles at large events
- ✓ Monitor compost and recycling bins at large events
- ✓ Consider creation of upcycle/resell shop (job creation and waste diversion)
- ✓ Penalize businesses and individuals that produce more waste
- ✓ Require materials recycling for building renovations
- ✓ Focus on food waste and composting solutions

Water

We asked respondents about their level of support for three specific actions related to water.



All three actions received high levels of support from respondents. We then asked, "In general, what is your level of support for these measures and actions?" **Almost all respondents (96%) support these measures and actions.**



We asked respondents, "**Why do you support or oppose the above actions?**" **(n = 23)** and summarized key findings and themes below:

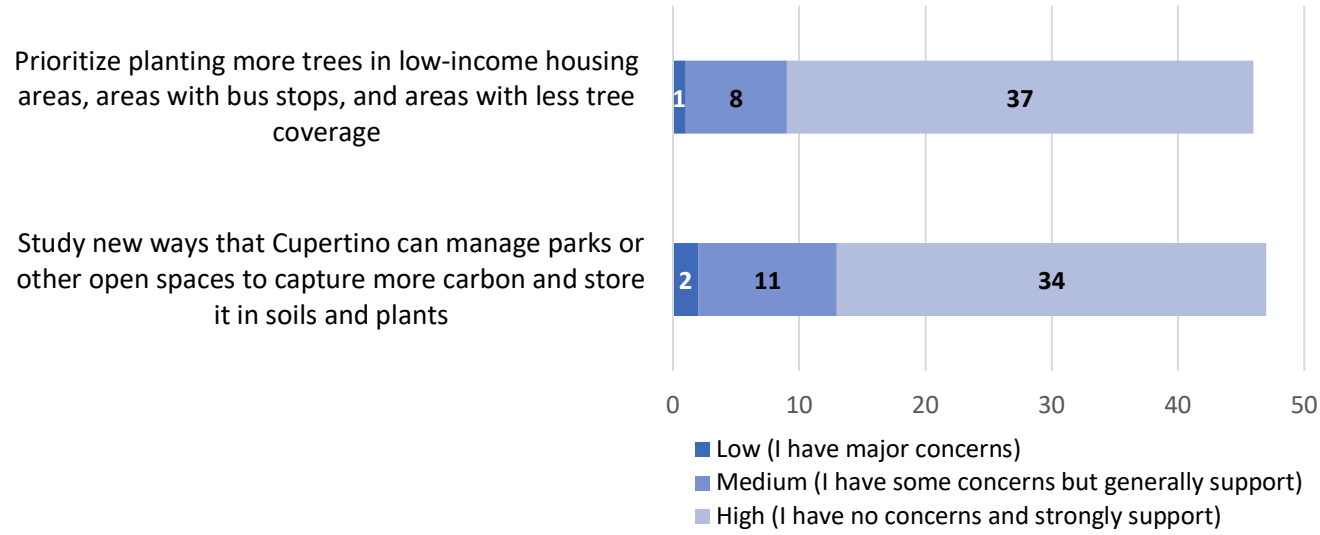
- ✓ Support for water conservation and associated energy savings
- ✓ Support for water conservation because of climate-induced drought
- ✓ Concern about landscape watering
- ✓ Concern about building unnecessary infrastructure

We also asked respondents, "**Are there any additional actions not listed here that you recommend adding related to water?**" **(n = 18).** Some of the main recommendations are summarized below:

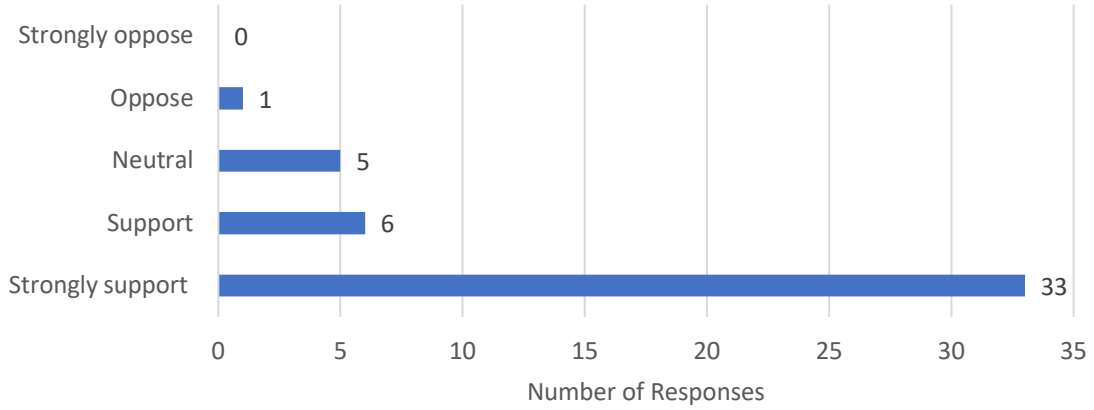
- ✓ Remove lawns from all City, commercial, and residential buildings
- ✓ Encourage drought-tolerant and native plant landscaping
- ✓ Provide information on rain gardens, design and installation, and rain barrels
- ✓ Encourage and incentivize low-flow fixtures, rainwater storage, covering swimming pools, etc.
- ✓ Penalize companies and homeowners that use more water
- ✓ Provide Wi-Fi-connected meters that citizens can check on phones and computers

Healthy Ecosystems

We asked respondents about their level of support for two specific actions related parks, green spaces, and healthy ecosystems.



We then asked respondents, "In general, what is your level of support for these measures and actions?" **Most respondents (87%) support these measures and actions.**



We asked respondents, "**Why do you support or oppose the above actions?**" **(n = 24).** Below are some summarized findings and themes:

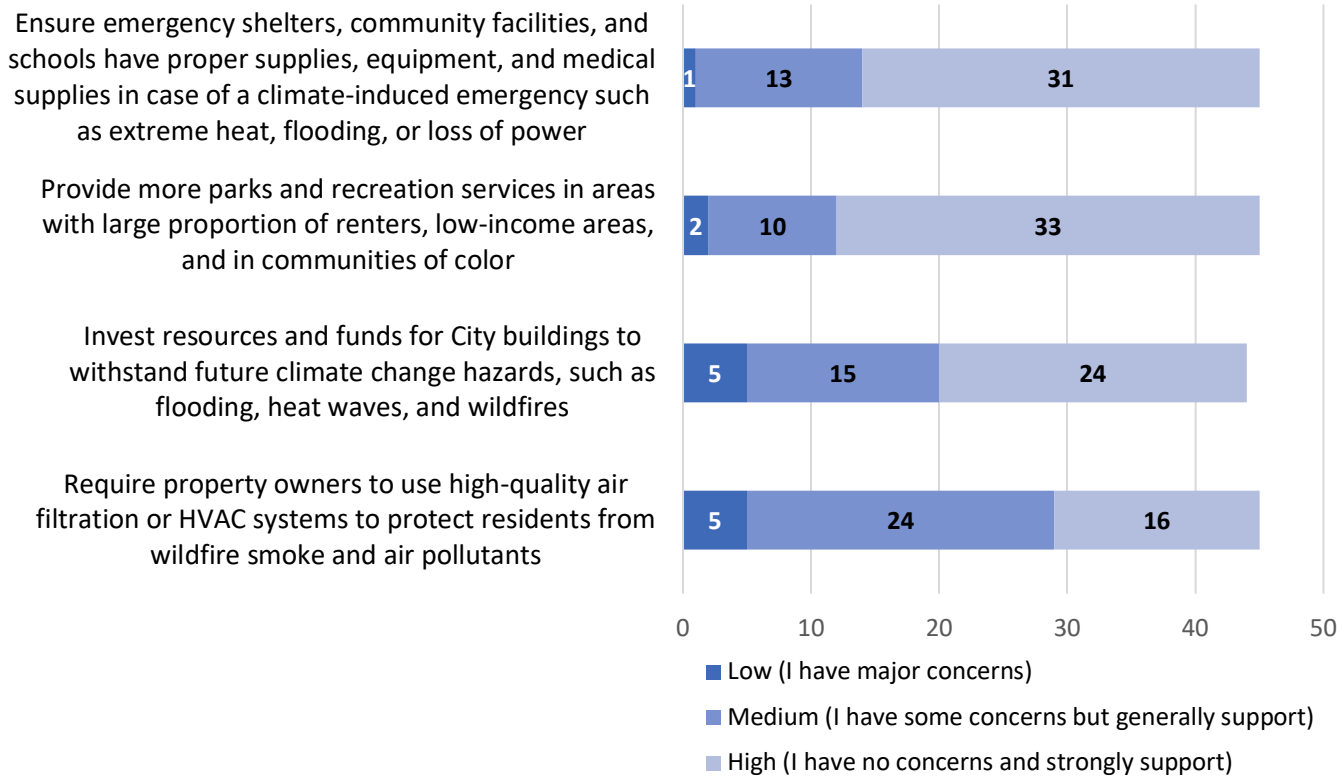
- ✓ Support for prioritizing low-income communities
- ✓ Support for green space for community health and wellbeing
- ✓ Support for protecting biodiversity and enhancing ecosystems
- ✓ Support for planting trees in parking strips
- ✓ Concern that impact is too low; priority needs to be emissions reduction

We asked respondents, "**Are there any additional actions not listed here that you recommend adding related to healthy ecosystems?**" **(n = 17).** We summarized some of the main recommendations below:

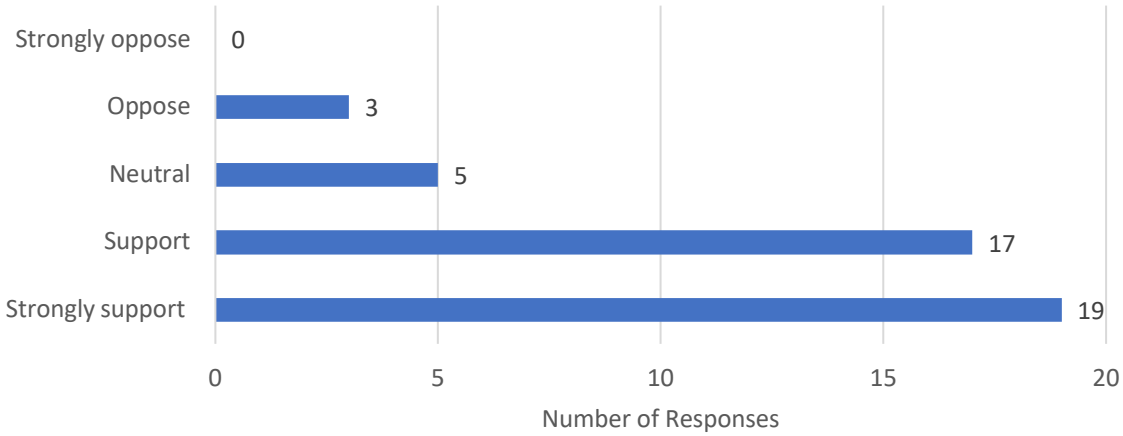
- ✓ Replace certain tree species with drought-tolerant and native trees
- ✓ Plant trees in parking strips
- ✓ Create a community garden
- ✓ Protect pollinators (remove bee traps, plant monarch habitat)
- ✓ Provide free arborist services to community
- ✓ Remove lawns at City buildings
- ✓ Set goal in CAP for 80% native species of new planted trees

Resilience & Adaptation

We asked respondents about their level of support for four specific actions related to climate adaptation and resilience.



We then asked respondents, "In general, what is your level of support for these measures and actions?" **Most respondents (82%) support these measures and actions.**



We asked respondents, "**Why do you support or oppose the above actions?**" **(n = 22)** and summarized the key findings and themes below:

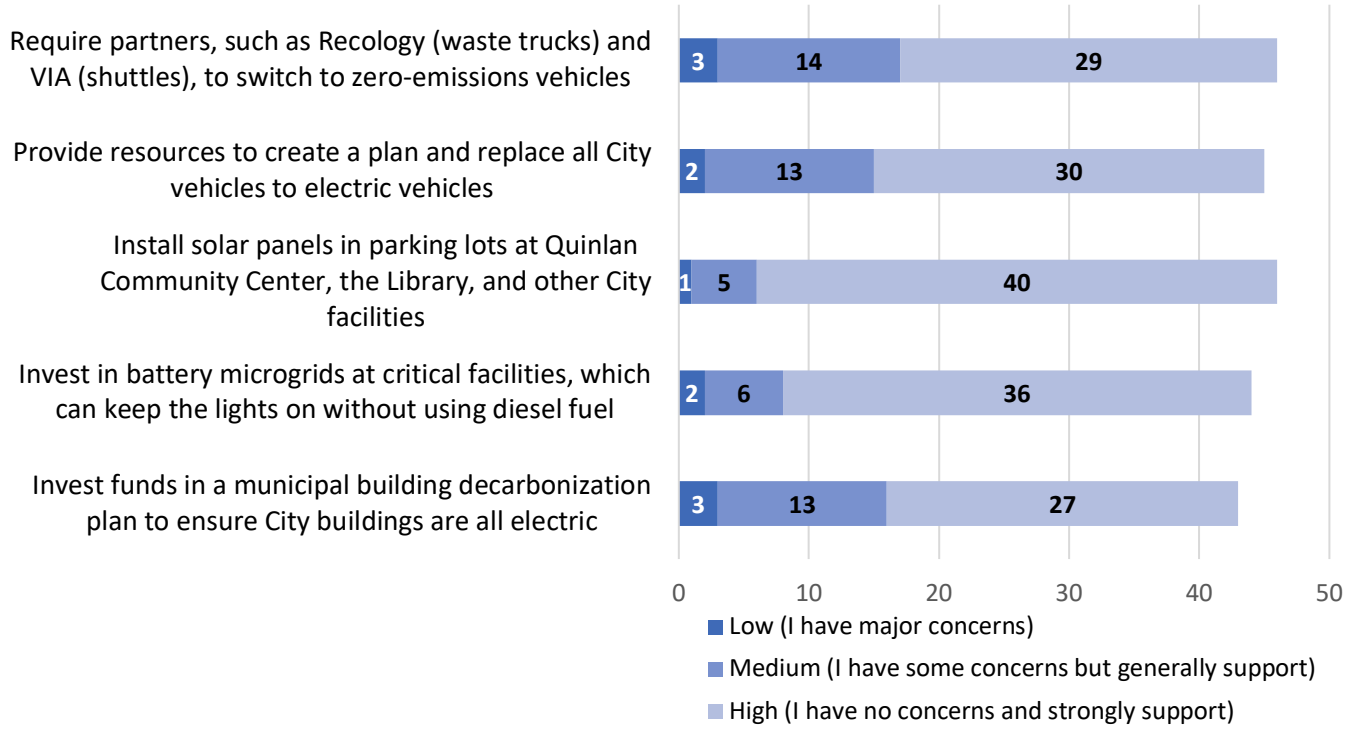
- ✓ Support for keeping people safe
- ✓ Support for community preparedness
- ✓ Efforts should be concentrated on emissions reduction
- ✓ Concern about cost

We also asked respondents, "**Are there any additional actions not listed here that you recommend adding related to adaptation and resiliency?**" **(n = 9).** Some recommendations are summarized below:

- ✓ Provide cooling centers during extreme heat
- ✓ Give subsidies for home air filtration
- ✓ Implement nature-based solutions
- ✓ Create green spaces and plant trees on all City property
- ✓ Incentivize and build solar panels
- ✓ Establish accurate and accessible air quality monitors throughout the city

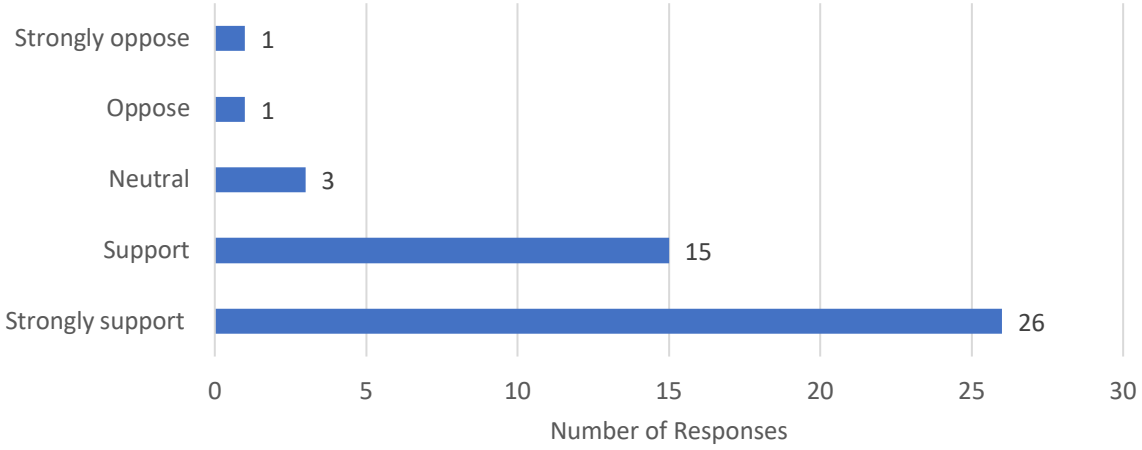
Municipal Buildings & Operations

We asked respondents about their level of support for five specific actions related to municipal buildings and operations.



Installing solar panels in parking lots at City facilities received the highest support, with 98% of respondents indicating medium or high levels of support.

We then asked respondents, "In general, what is your level of support for these measures and actions?" **Most respondents (89%) support these measures and actions.**



We asked respondents, "**Why do you support or oppose the above actions?**" **(n = 25).** Some key findings and themes are summarized below:

- ✓ Support for City leadership and example setting in municipal decarbonization
- ✓ Support for solar energy
- ✓ Support for microgrids
- ✓ Concern about cost
- ✓ Concern about capacity of the electrical grid

We also asked respondents, "**Are there any additional actions not listed here that you recommend adding related to municipal buildings or operations?**" **(n = 13).** We have summarized some of the main recommendations below:

- ✓ Install solar panels in open paved spaces (parking lots)
- ✓ Incentivize solar installation
- ✓ Use vehicles until end of life before switching to EVs
- ✓ Provide EV charging stations at City buildings
- ✓ Discourage City cars and trucks idling when parked
- ✓ Provide City shuttle for neighborhood transportation

Cupertino Climate Action Plan (CAP) 2.0

Stakeholder Engagement Workshop #3 Summary
May 3, 2022 | 3:00 – 5:00 pm | Zoom

Contents

Background

Cupertino is currently near the end of its Climate Action Plan update planning process. To date, the City has conducted a greenhouse gas (GHG) analysis, identified ambitious climate action goals, and engaged with community and stakeholder groups to help develop and refine mitigation measures and actions. The purpose of this meeting is to continue fostering and nurturing relationships with key partners and stakeholders—especially those who provide critical perspectives (e.g., community-based organizations,

marginalized communities, faith-based organizations)—and to create space for their voices in the process and leverage their expertise.

Meeting Objectives

- Review the draft Climate Action Plan and its associated mitigation measures and actions.
- Gather ideas, priorities, and concerns on the proposed mitigation measures and actions.

Agenda Overview

Time	Item
15 min	Introduction
15 min	CAP Overview Presentation and Q&A
75 min	Discussion of CAP Mitigation Measures and Actions
10 min	Conclusion and Next Steps

Participants

Workshop Participants

Name	Affiliation
Lisa Talbott	Waste Zero Specialist for Cupertino
Michael Strahs	Kimco Realty/Cupertino Village Shopping Center
Shyam "Sean" Panchal	First Maganson Holdings, Inc.
Ursula Syrova	Ursula Syrova
Amy Dao	BAAQMD
Dashiell Leeds	
Jennifer Shearin	Resident of Cupertino, Walk-Bike Cupertino Board Member
Emily Alvarez	Program Manager for StopWaste
Micqi Scott	Future Cupertino resident
Rick Kitson	Cupertino Chamber of Commerce
Rebecca Tolentino	
Hoi Poon	
Gwyn Azar	Student
Priya Vytla	

Project Staff

Name	Affiliation
Andre Duuvoort	City of Cupertino
Victoria Morin	City of Cupertino
Rina Horie	City of Cupertino
Karen Chen	City of Cupertino
Mike Chang	Cascadia Consulting Group

Introduction

City staff and the consultant team provided a brief introduction of the CAP project team and welcomed all the participants to the stakeholder meeting. City staff provided an overview of the meeting's agenda and goals.

As an icebreaker at the beginning of the workshop, participants were asked to share their name, organization, and favorite summer activity in the Zoom chat. Below are the answers to the favorite summer activity icebreaker question.

- Open water swimming
- Family trip to Montana
- Sitting on our back porch with the fans on with our puppies
- High Sierra hiking/swimming in rivers and lakes
- Ride my bike to our local library!
- Summer camping
- Road bike, mountain bike, motorcycle, and camping!
- Trips to the ocean—but just to walk and enjoy, not swim
- Hiking, going to the beach, and outdoor parks

CAP 2.0 Overview and Q&A

City staff presented an overview of the CAP 2.0, the climate action planning process, the City's progress so far, and how previous feedback has been integrated. City staff reminded participants of the emissions reduction targets and the largest emissions sources and reviewed the five sectors addressed in the CAP 2.0.

Question & Answer

Question	Answer
Was there input to this plan from organizations that are focused on equity? I can see that eliminating any use of natural gas will be very expensive for those living in apartments or rental homes (40% of Cupertino) that cannot use solar power, as they are at the mercy of their landlords and PG&E.	Andre will address this question during Energy Section in the presentation.

Discussion of CAP Mitigation Measures and Actions

After the initial presentation by City staff, the meeting focused on proposed mitigation measures and actions in each of the five CAP focus areas. City staff presented on mitigation measures and actions and then asked participants, "what questions do you have?" and "what other considerations or changes would you like to see to increase your support?" Meeting participants shared questions and comments verbally and in the Zoom chat. At the end of each focus area section, participants were asked to respond to a Zoom poll, which asked, "On a scale of 1–5, how supportive are you of these measures and actions?"

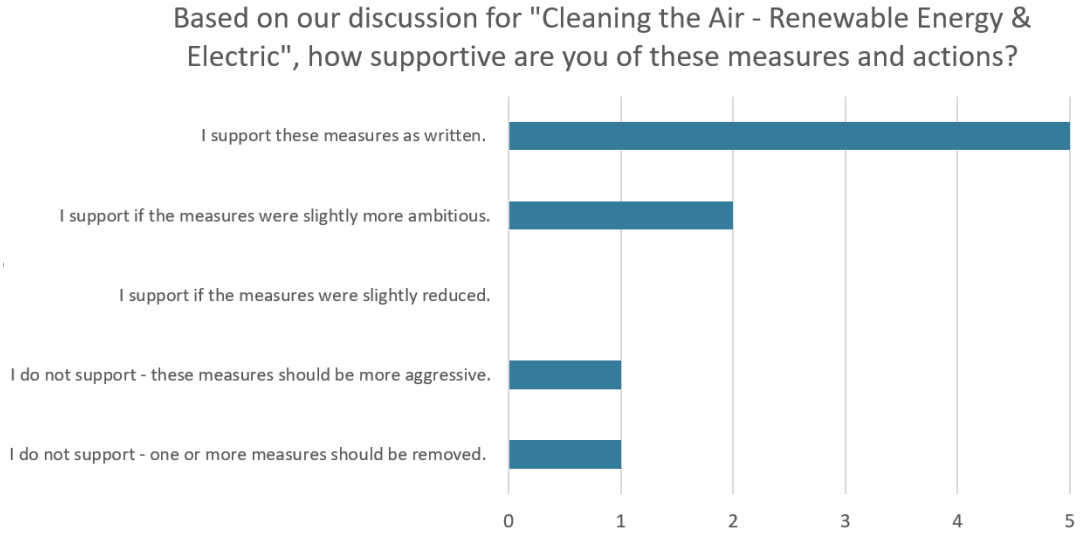
Cleaning the Air – Renewable Energy and Electrification

Question & Answer & Chat Comments

Question	Answer
What considerations have been given to the lack of reliable infrastructure that PG&E has in our state? Especially in the summer, the entire state is subject to power cuts and brownouts. Will we be exacerbating this issue as we are increasing the load?	Short answer: PG&E came to a few of our public meetings and let us know, there's no immediate issues with electric capacity in Cupertino, but we are subject to power shut offs (during high temp/protecting from wildfires) so this is a typical challenge. CAP 2.0 does not have a clear answer, but says before we adopt ordinance, we will perform public outreach to study these actions prior to developing an ordinance. We do not want to require someone to electrify their AC unless we're confident they'll be able to use their appliances. All electric homes are safer, but how do we support this infrastructure? We don't have clear answers, but we'll seek those answers out.
By requiring new buildings to be "All Electric", are we including exceptions for commercial restaurants, who need gas service for cooking certain cuisines where electric and induction heating sources aren't suitable replacements?	Existing ordinance (exemptions are available like hospitals, emergency services) anther is an exemption for certain types of cuisine; applicant (person who is building out new building) burden is on them to say "hey I looked with my designer, there's no alternative to this, I can't comply with this measure because there's no feasible alternative" So this is built into our ordinance today.
Are the Energy Measures evaluated based on their economic costs?	Yes, we are including economic evaluations with each measure.
Also, does this mean if a home is renovated, then will that home need to be modified to be electrical-only?	Measure BE-2, we think the rule will be based on some kind of point in time or milestone in a building's lifespan. Some examples we've seen in neighboring jurisdictions is the development of a rule that requires you to electrify that appliance when it dies or to set a date (by this date, we're going to have all appliances in the building to be electric); or encourage by promoting/incentivizing electrification. Later this summer, we have a budget request to conduct the study and creating our approach for electrifying existing buildings. As these progress from adoption to implementation, that's how we would proceed. We will get into the details, ask the public what works for them, and we'll put that together as a proposal for city council.

Question	Answer
Sierra Club Loma Prieta Chapter, excited to see the measures, one thing I'd love to se is explicit mention potentially adding renter protection ordinances (exists in SJ draft plan); framework for equity probably has that but should be explicitly written that those programs are on the table and studied by the city. Otherwise, I need to digest adjustments to GHG targets, some metrics have changes from simple percentage to specific. I will have more comments on that in the future.	Andre: When we get into the details of creating that ordinance, we will develop that specific framework (economic activity, DAC, offset those communities and comply with ordinances). GHG emissions – we did modify our inventory (appendix B/C), we came up with a pathway to the goal (the goal is the same), but we need to revise sooner (5 years time) when the tech is available to get us to that 2040 date.
How would the city work with ABAG power to encourage market development of natural gas alternatives?	Andre: We are already under the way, authorized ABAG power to institute and power – we think you're in a unique position as an org who sells us gas, take on this task – are there market alternatives? Biofuels, renewable natural gas, go out and see if that is possible with ABAG Power. That's what we're currently under way with.
Model ordinances Andre, you'll be looking at – what's going to be very important is models are great, reality always wins. We're very supportive of the process, but must see where the models come from and where they are adopted to the extent possible. We want to see how the wheel is moving along, not trying to invent the wheel.	
San Jose, Menlo Park and 100 EU cities set goal for 100% carbon neutral by 2030. Any reason why Cupertino going for 2040, 10 years behind?	
Thank you. Menlo Park in SJ (difficult to aim aggressive goals) and they've already passed 2030 carbon neutral. Why does Cupertino not go for that? My household is achieving 100% carbon neutral. We believe we'll get CN in 2 years; Cupertino families have resources. What I've heard from students, neighbors are lack of EV chargers, SVCE (program this year to address issue). Why aren't you aiming for a higher goal?	Andre: Went to City Council to develop technical work, vision was emphasis on equity and message "we don't want to displace residents" we recognize that there are high-income residents, but also low-income residents/fixed income residents. Qualified CEQA GHG reduction plan is something our GP requires us to do. With those combined, we sided on the err of what is feasible, truly evidence to support these measures today. We don't rely on the future. This is why we weren't confident we could put together a specific date that is justified according to the rule and guidelines of CA. That doesn't mean we won't get to that message from City Council. We may need to go back and see if there are measures/actions we need to accelerate. We have come up with good framework, but we acknowledge to revise the plan. Hopefully we have the economic, and technology to advance us.

Question	Answer
Resources coming in from State, let's tap into those resources/funding.	Andre: We can justify this approach to any funding agency (federal state) and show them our numbers, to get funding for pilot programs. This is why it's important we take a rigorous analysis. I will look at SJ's methodology and study.
Getting to carbon neutral by 2030 is unfortunately not likely to be feasible. The useful life of hot water heaters and HVAC are more than 10 years, so unless we are able to stop all new installs today they will still exist in 2030. I support being aggressive but acknowledging the current state of the market. Hopefully we will get there before 2040 but a lot has to change before we can get to market saturation of electric appliances. Also happy to see energy efficiency still acknowledged in partnership with electrification as it is critical to do both.	
It may not be known, but Cupertino is 40% renters that do not have the ability to install solar panels on their home. The vast majority live in market-rate apartments and homes, and will bear the burden of purchasing all their electricity at market rates from PG&E.	



As a follow-up, one person identified the following context for their "I do not support answer":

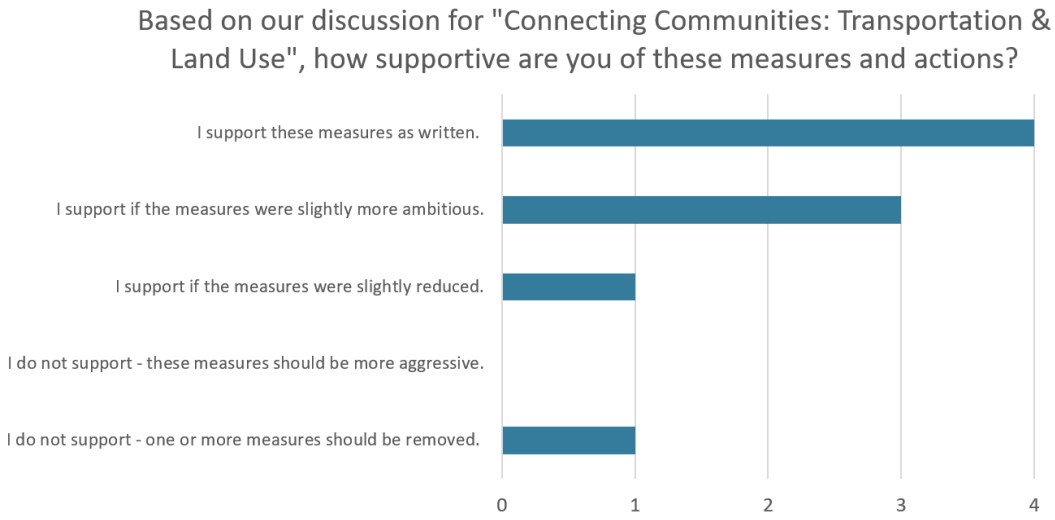
- To follow up to that comment, I would support BE-1, BE-3, BE-4, and BE-5. I have great concerns about requiring replacement appliances to be electric and any changes made to an existing structure also require going completely to electricity.

Connecting Communities – Transportation, Land Use

Question & Answer & Chat Comments

Question	Answer
How does slowing down traffic with slow streets reduce emissions?	Without slow streets, many people won't use bikes or other "active" transportation. It's just too dangerous.
Cities such as San Jose, Menlo Park, flagstaff AZ, Ithaca NY have set the goal, we can look at cities for best practices. Ithaca already working on implementation, 2030 is 8 years away. Hoi P., additional comment: New EV models are already cheaper than combustion with federal and state rebates, and can go 300 miles. Hoi P., additional Comment: Technology is already there and will get better. Low income communities get extra rebates, can buy used EV for free.	
How can measure TR-1 have "teeth"? Right now, whether any infrastructure projects out of the city Bicycle and city Pedestrian Plans are at the mercy of whether individual council members are supportive. *whether they are implemented is at the mercy of whether the individual council members are supportive.	Andre: I don't have a perfect answer, but I will acknowledge that all these actions are subject to public feedback, budget constraints, and whatever the city council identifies as priorities. CAP raises it up to say it is a priority of the community, we have robust calculations that its an effective thing to do, we have a good plan of action addressing multiple pillars of action to get it implemented. None of this is guaranteed unless we can make the case to City Council when the project gets started. That's the normal public process we have to go through for all of these. It won't be easy, but we think putting it in the CAP with all of your support, our staff and community will bring it out to the commission and reiterate that it's an important action item for the City to take. We rely on those feedback at our milestones.
Seattle, WA and Riverside, CA both recently implemented an ordinance that any street that is touched—even for minor repairs/maintenance—must have a Complete Streets plan to allow for safe and easy car, bike and pedestrian traffic. Why can't we have that as part of our plan?	
How were e-bikes and bike sharing considered in developing plan measures? Additional comments: ▪ Scooters would be great! ▪ I agree— would love more options for rental!	Andre: Bringing this back to city council, several years ago 'shared scooters/short term bike rentals' not what we see in Cupertino, but we want to re-visit that. They are going to be a huge part of this plan.
Public transit elements of the plan, TR-2 as it relates to connecting to other cities throughout the Bay, creating better more efficient network, talking to someone at school about it (public	Andre: Massive challenge, we do say in the CAP we want to continue to partner with VTA (as transit agency for the region) partnership action we have. We want to move forward to try things out. Via

Question	Answer
transit doesn't work because it takes so long), the bus would take too long. In relation to partnering with nearby cities, regarding public transit beyond Via Shuttle.	shuttle is a perfectly example of that. Once that's established and serving folks we wanted to serve, measure TR-2 talks about expanding upon those pilot programs. We're working with City of SJ to get grants/expand services into the City of SJ with the Via Shuttle. We see there is a need to continue partnering with VTA, but also a need to try different things (pilot programs).
I'm concerned that slow streets won't be well received by the community when it seems to boil down at least in part to intentionally making traffic worse to advantage alternative modes of transportation. Complete Streets sounds better than Slow Streets.	



Getting to Zero Waste

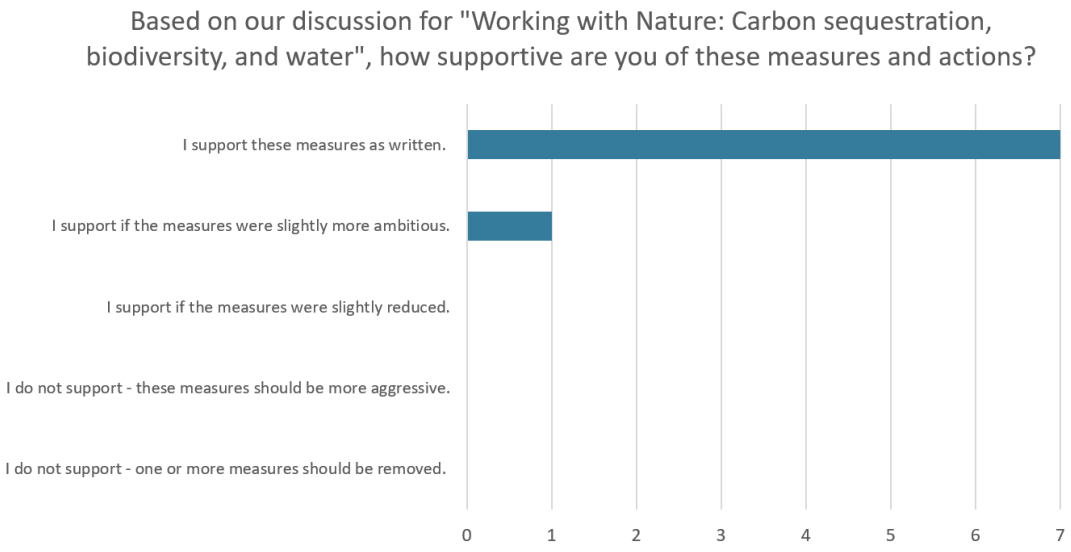
Question & Answer & Chat Comments

Question	Answer
The headline language of W-2 seems to suggest that recycling and composting should be reduced which doesn't seem to be what is intended.	We will amend this to make this clearer.

Working with Nature

Question & Answer & Chat Comments

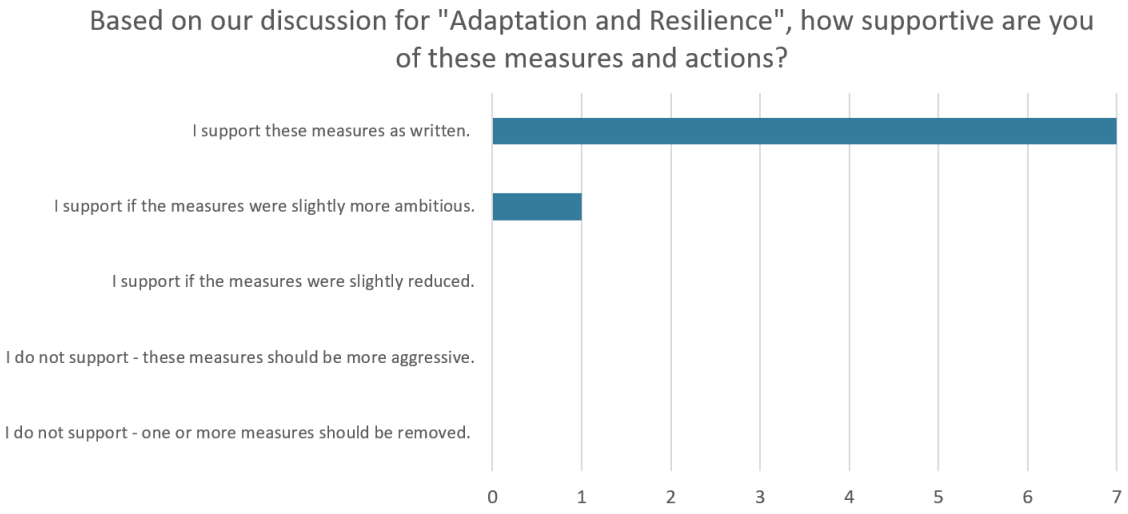
Question	Answer
Kudos to the City for doing an amazing job in this area. I think something that can be done to speed up effort is engage youths and partner with school districts. I see parents and a lot of people are interested in lawn conversions. I think if there's a way to set up – youth program where the students can be engaged, perhaps work with nonprofits and get them trained and send them out for implementation. Educate residents (retired folks) who want their lawn more interesting, but they might not have the knowledge. Add workshops for different groups. People are already there on the subject matter.	Andre: There are fees with changes to landscaping, so whether it is providing direct support to resident or whole HOA, we're in the process of figuring out the best way to accelerate that. We are finishing up the pilot program now.
There are a lot of great ideas in this category. Additional comments: ▪ Yes, the victory garden is an awesome idea.	



Adaptation and Resilience

Question & Answer & Chat Comments

No questions asked.



Conclusion & Next Steps

City and consultant staff reviewed key themes from the discussion and discussed next steps with public review and finalizing the CAP. Staff reviewed upcoming dates, including the close of the online survey, Sustainability Commission voting on CAP 2.0, City Council study session, and City Council adoption. At the end of the meeting, participants were given the choice to answer optional demographic questions.

Question & Answer & Chat Comments

Question	Answer
How long does the survey take?	Tori: Rick- The survey is only 2 questions about Climate Action. There are a few optional demographic questions. The length of time depends on how much detail you want to add in the open-ended question. All questions are optional.

Demographic Polling

1. Which of the following best represents your race/ethnicity? Please select all that apply.

Race	Number of Participants	Percentage
White or Caucasian	**5/9**	**56%**
Other	3/9	33%
Asian or Asian American	1/9	11%
Latino, Latina, or Latinx	0/9	0%
Middle Eastern, North African, or Arab American	0/9	0%
Black or African American	0/9	0%
Native American, American Indian, or Alaska Native	0/9	0%
Native Hawaiian or Pacific Islander	0/9	0%
Prefer not to say	0/9	0%

2. What is your gender identity?

Gender Identity	Number of Participants	Percentage
Man	**4/9**	**44%**
Woman	**4/9**	**44%**
Other	1/9	11%
Non-binary/non-conforming	0/24	0%
Prefer not to say	0/24	0%

3. What is your age?

Age	Number of Participants	Percentage
Under 18	1/9	11%
18–24	0/9	0%
25–34	2/9	22%

Age	Number of Participants	Percentage
35–44	1/9	11%
45–54	**4/9**	**44%**
55–64	0/9	0%
65–74	0/9	0%
75+	0/9	0%
Prefer not to say	1/9	11%

Engagement Summary Report

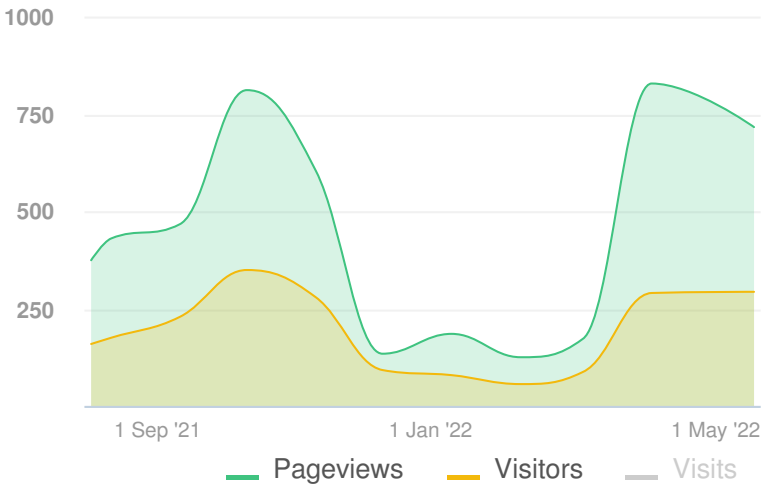
23 July 2021 - 17 May 2022

Climate Action Plan 2.0

Cupertino.org/ClimateAction

BANG THE TABLE engagementHQ

Webpage Visitors Summary



Highlights

TOTAL VISITS	MAX VISITORS PER DAY
2.5 k	54

ENGAGED VISITORS	INFORMED VISITORS	AWARE VISITORS
277	720	1.5 k

PARTICIPANT SUMMARY

ENGAGED
INFORMED
AWARE

277 ENGAGED PARTICIPANTS

	Registered	Unverified	Anonymous
Contributed on Forums	0	0	0
Participated in Surveys	18	124	120
Contributed to Newsfeeds	0	0	0
Participated in Quick Polls	6	0	0
Asked Questions	3	1	0
Contributed to Ideas	3	4	3

** A single engaged participant can perform multiple actions*

	(%)
Climate Action Plan Update…	277 (18.5%)

** Calculated as a percentage of total visits to the Project*

ENGAGED
INFORMED
AWARE

720 INFORMED PARTICIPANTS

	Participants
Viewed a video	50
Downloaded a document	178
Visited the Key Dates page	148
Visited Multiple Project Pages	419
Contributed to a tool (engaged)	277

** A single informed participant can perform multiple actions*

	(%)
Climate Action Plan Update…	720 (48.1%)

** Calculated as a percentage of total visits to the Project*

ENGAGED
INFORMED
AWARE

1,498 AWARE PARTICIPANTS

	Participants
Visited at least one Page	1,498

** Aware user could have also performed an Informed or Engaged Action*

Climate Action Plan Update…	1,498

** Total list of unique visitors to the project*

ENGAGEMENT TOOLS SUMMARY

7	5	2	1	3
SURVEYS	NEWS FEEDS	QUICK POLLS	Q&A'S	Shared ideas

SURVEYS SUMMARY

3	Surveys
3	Languages
327	Submissions

TOP 3 SURVEYS BASED ON CONTRIBUTORS

104	98	108
Contributors to	Contributors to	Contributors to
Survey 1: Share your ideas and concerns	**Survey 2: Actions and Measures Feedback**	**Survey 3: Climate Action Plan Draft Feedback**

NEWSFEEDS SUMMARY

5	NewsFeed
27	Visits
23	Visitors

TOP 3 NEWSFEEDS BASED ON VISITORS

18	5	1
Visitors to	Visitors to	Visitors to
Public Workshop #2 - Register Now to join October 11	Survey 2 now open!	Give your input at Public Workshop #1| July 29 | 5:30 p.m.

QUICK POLLS SUMMARY

2	Quick Polls
6	Contributors
6	Responses

TOP 3 QUICK POLLS BASED ON CONTRIBUTORS

6	0
Contributors to	Contributors to
How would you like to receive project updates?	**Have you watched the Climate Action Plan Video?**

Q & A SUMMARY

1	Q&As
30	Questions Submitted and Answered

TOP 3 Q & A BASED ON CONTRIBUTORS

4
Contributors to
FAQ

IDEAS SUMMARY

3	Ideas
10	Contributors
17	Contributions

TOP 3 IDEAS BASED ON CONTRIBUTORS

10	0	0
Contributed to	Contributed to	Contributed to
If you could see one thing included in this Climate Action Plan 2.0, what would that be?	Share your strategy ideas on a sticky note	Energy Ideas

INFORMATION WIDGET SUMMARY

26	0	3	0	1
DOCUMENTS	PHOTOS	VIDEOS	FAQS	KEY DATES

DOCUMENTS

26	Documents
178	Visitors
379	Downloads

TOP 3 DOCUMENTS BASED ON DOWNLOADS

161	37	22
Downloads	Downloads	Downloads
CAP 2.0 Draft April 2022	City Council Staff Report: CAP Vision Statement and Goal	Rincon and Cascadia Consultant Proposals

VIDEOS

3	Videos
50	Visitors
68	Views

TOP 3 VIDEOS BASED ON VIEWS

33	28	7
Views	Views	Views
Public Workshop #1 - CAP 2.0	City Council Study Session about CAP 2.0	Public Workshop #2 - CAP 2.0

KEY DATES

1	Key Dates
148	Visitors
185	Views

TOP 3 KEY DATES BASED ON VIEWS

185
Views
Climate Action Plan Update - CAP 2.0

TRAFFIC SOURCES OVERVIEW

REFERRER URL	Visits
www.cupertino.org	435
www.google.com	198
lnks.gd	103
l.instagram.com	36
www.bangthetable.com	13
cupertinotoday.com	11
content.govdelivery.com	9
m.facebook.com	9
android-app	8
l.facebook.com	8
patch.com	5
t.co	4
docs.google.com	3
mail.google.com	3
statics.teams.cdn.office.net	3

City of Cupertino CAP Update

Appendix D:
GHG Emissions Reductions Technical Evidence

prepared by

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Figures

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1 Introduction

This report presents the technical quantification and evidence supporting the greenhouse gas (GHG) emissions reduction potential of the City of Cupertino's Climate Action Plan (CAP) Update. Section 15183.5(b)(1) of the California Environmental Quality Act (CEQA) guidelines establishes several criteria which a CAP must meet in order to be considered a "qualified GHG reduction plan" and allow for programmatic CEQA streamlining of project GHG emissions. This document provides the evidence substantiating the GHG emissions reductions associated with the CAP Update measures pursuant to Subsection (D) which states, "measures or a group of measures, including performance standards, that substantial evidence demonstrates, if implemented on a project-by-project basis, would collectively achieve the specified emissions level." Based on the substantial evidence contained in this report, the GHG emissions reductions associated with the measures in the CAP Update are sufficient to exceed Cupertino's fair share of GHG emissions consistent with the reduction target established by Senate Bill (SB) 32, meet the City's 2030 climate action target, and make substantial progress towards the city's 2040 target, which exceeds California's target established by executive order (EO) B-55-18.

The quantification in this report is specifically intended to illustrate a viable path to achieving the City of Cupertino's 2030 climate action target. As required in CEQA Guidelines Section 15183.5(b)(e), mechanisms to monitor the CAP's progress toward achieving the GHG emission reductions provided in this report have been established through the CAP development process. If, based on the tracking of community GHG emissions, the City is not on track to reach the 2030 GHG reduction specified here and exceed the target established by SB 32, the CAP as a whole or specific measures and actions will be amended and a new CAP update will be prepared that includes altered or additional measures and actions, with evidence that their implementation can achieve the City's climate action targets.

1.1 Climate Action Targets

The City of Cupertino's climate action targets are more aggressive than California's goals to reduce GHG emissions 40% below 1990 levels by 2030 (SB 32) and to carbon neutrality[1] by 2045 (EO B-55-18). Cupertino's targets are:

- Reduce the community's per capita GHG emissions to 3.39 metric tons of carbon dioxide equivalent (MT CO_2e) per person – equivalent to 50% below 2010 per capita levels by 2030, or 66% below 1990 per capita levels by 2030.[2] Based on projected population growth through 2030, this is equivalent to reducing the City's mass emissions to 222,867 MT CO_2e by 2030, or 45% below the City's 1990 GHG emissions.
- Achieve carbon neutrality by 2040 and maintain through 2045.

[1] Carbon neutrality refers to a state of net-zero GHG emissions (in units of carbon dioxide equivalent, or CO_2e), where a community's GHG emissions have been reduced as much as possible, and any remaining GHG emissions arising from community-level activities are offset by GHG emissions sequestration activities and technologies, such as tree planting, compost application, or industrial practices that take GHG emissions out of the atmosphere and sequester them in solid or liquid form.

[2] This is equivalent to the City Council recommended target of 54% below 2010 levels by 2030.

The use of per capita emission targets is called for in the California Air Resources Board's (CARB) 2017 Scoping Plan Update .[3] Avoiding interference with and making substantial progress toward the state's 2030 and long-term 2045 goals is important as they have been set at levels that achieve California's fair share of international emissions reductions. Established by the Paris Agreement and the International Panel on Climate Change (IPCC), California's fair share of international emissions reductions are consistent with an emissions level expected to stabilize global climate change effects and avoid adverse environmental consequences.[4]

1.2 Measures and Actions Organization

As part of the CAP Update process, the City of Cupertino has developed a comprehensive set of measures reducing community wide GHG emissions in all sectors to achieve the City's climate action targets. Each measure is supported by a set of actions that provide measurable GHG emissions reduction that is supported by substantial evidence. The City has also developed a set of measures and actions for offsetting GHG emissions through carbon sequestration, established under a new sector called "Carbon Sequestration." Measures and actions are organized according to the following hierarchy:

1. **Sectors:** Sectors define the GHG emissions category in which the GHG reductions will take place and include Building Energy, Transportation, Waste, Water and Wastewater, and Carbon Sequestration.[5]
2. **Measures:** Measures identify specific goals (i.e., activity data targets by 2030 and 2040) to address GHG emissions in each sector. A single measure generally addresses a subsector; for example, three measures may be established under the Transportation sector to address active transportation, shared/public transportation, and single-passenger vehicles.
3. **Actions:** Actions identify the programs, policies, funding pathways, and other specific commitments that the City of Cupertino will implement. Each measure contains a suite of actions, which together have been designed to accomplish the measure goal.
    a. **Key Pillars:** The actions supporting each measure have been designed around a set of key pillars. Each pillar emphasizes specific criteria that have been proven to play an essential role in the implementation of the measure. Because community-focused climate action often requires community-level behavioral changes and buy-in to be implementable and successful, the City must design a suite of actions that support these changes by emphasizing specific needs of the community. The key pillars are: Structural Change, Studies & Plans, Funding, Equity, Engagement, Partnerships, and Regional Collaboration. In general, the actions under a single measure should collectively address

[3] California Air Resources Board. November 2017. California's 2017 Climate Change Scoping Plan. Accessed at: https://ww2.arb.ca.gov/sites/default/files/classic/cc/scopingplan/scoping_plan_2017.pdf

[4] As described under EO B-55-18 Section 3.1.3, Potential Effects of Climate Change. See also the IPCC's report, accessed at: https://www.ipcc.ch/report/ar6/wg1/

[5] Note that the City's municipal measures as established in the CAP Update are not discussed in this document. While the municipal measures are important for reducing the GHG emissions of City operations and establishing the City's operations as demonstrations of climate action leadership, they contribute only minorly to community-level GHG emissions reductions and are a subset of the community GHG emissions. For this reason, the GHG emissions reductions expected from municipal measures were conservatively excluded from the analysis in this document and were not quantified as part of the CAP Update preparation process.

all the key pillars.[6] Identification of the pillars and their inclusion into the CAP helps plan for implementation. More information on the pillars can be found in the CAP.

Measures and actions can be either quantitative or supportive, defined as follows:

- **Quantitative:** Quantitative measures and actions result in quantifiable GHG emissions reductions when implemented. GHG emissions reductions from these measures and actions are supported by case studies, scientific articles, calculations, or other third-party substantial evidence. Quantitative measures/actions can be summed to quantify how the City of Cupertino will meets its 2030 climate action target and demonstrate progress towards the 2040 target. GHG emissions reductions were calculated using published evidence provided through adequately controlled investigations, studies, and articles carried out by qualified experts that establish the effectiveness for the reduction measures and actions. The estimates and underlying calculations provided in this report include the substantial evidence and a transparent approach to achieving the City's GHG emissions reduction targets.
- **Supportive:** Supportive measures and actions may also be quantifiable and have substantial evidence to support their overall contribution to GHG reduction. However, due to one of several factors – including a low GHG reduction benefit, indirect GHG reduction benefit, or potential for double-counting– they have not been quantified and do not contribute directly to the expected GHG reduction target and consistency with the state goals. Despite not being quantified, supportive measures/actions are nevertheless critical to the overall success of the CAP and provide support so that the quantitative measures and actions will be successfully implemented.

1.3 GHG Emissions Reductions

The GHG emissions reduction associated with the Cupertino CAP's measures and actions have been calculated and presented in this report in terms of per capita emissions (in units of MT CO_2e/person). The population projection used to develop the City's GHG emissions forecast (Appendix A) was also used to calculate per capita GHG emissions reductions. Population projections are shown in Table 1.[7]

Table 1 Population Projections for Cupertino

Year	2018	2030	2040
Population	63,228	65,690	68,305

A breakdown of the GHG emissions reductions calculated for each measure is included in Table 2 and Figure 1.

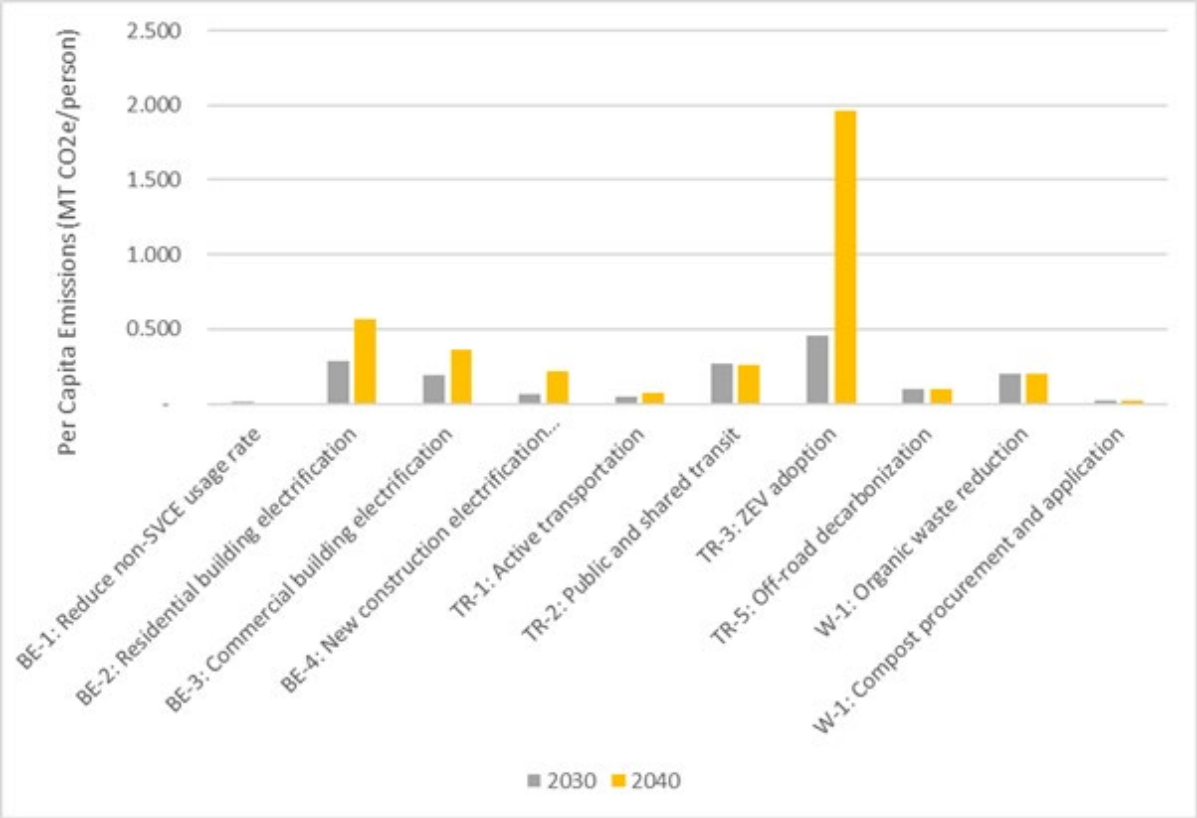
[6] The exception is for measures and actions in the municipal sector because the City has much more leverage to enact changes at a municipal level and may not need to consider each pillar to ensure success during implementation.

[7] Population projections were obtained from the Associated of Bay Area Government (ABAG) Plan Bay Area 2040 website; accessed at: http://2040.planbayarea.org/forecasting-the-future

Table 2 Estimated GHG Emissions Reductions by Measure

Measure #	Measure	Anticipated Reduction/Sequestration (MT CO_2e/person)
GHG Emissions Reduction Measures		
BE-1	Reduce non-SVCE usage rate to 2% for residential and 10% for commercial by 2030 and maintain through 2040	2030: 0.012 2040: 0.004
BE-2	Electrify existing residential buildings to reduce annual residential natural gas usage from 129 therms per person in 2018 to at most 71 therms per person in 2030 and 16 therms per person in 2040	2030: 0.290 2040: 0.566
BE-3	Electrify existing commercial buildings to reduce annual commercial natural gas usage from 119 therms per person in 2018 to at most 90 therms per person in 2030 and 54 therms per person in 2040	2030: 0.190 2040: 0.366
BE-4	Require new residential and commercial development to be all-electric at time of construction	2030: 0.067 2040: 0.221
BE-5	Develop specific requirements for procurement of carbon-free fuels in lieu of natural gas for new projects that cannot be electrified	Supportive
TR-1	Develop and implement an Active Transportation Plan to achieve 15% of active transportation mode share by 2030 and 23% by 2040	2030: 0.048 2040: 0.071
TR-2	Implement public and shared transit programs to achieve 29% of public transit mode share by 2030 and maintain through 2040	2030: 0.269 2040: 0.256
TR-3	Increase zero-emission vehicle (ZEV) adoption to 35% for passenger vehicles and 20% for commercial vehicles by 2030 and 100% for all vehicles by 2040	2030: 0.457 2040: 1.960
TR-4	Refocus transportation infrastructure away from single-occupancy gasoline passenger vehicles to support the bicycle/pedestrian, public transit, and ZEV goals of Measures TR-1, TR-2, and TR-3	Supportive
TR-5	Electrify or otherwise decarbonize 34% of off-road equipment by 2030 and 35% by 2040	2030: 0.098 2040: 0.102
W-1a	Implement SB 1383 requirements and reduce community-wide landfilled organics 75% by 2025 and inorganic waste 35% by 2030 and reduce all waste 90% by 2040	2030: 0.202 2040: 0.200
W-2	Reduce overall waste disposed to garbage, recycling, and compost per capita by 15% by 2035	Supportive
WW-1	Reduce per capita water consumption 15% compared to 2019 levels by 2030 and maintain through 2040	Supportive
WW-2	Support the SJ-SC RWF in implementing GHG emissions reduction projects	Supportive
Carbon Sequestration Measures		
W-1b	Meet or exceed the SB 1383 recycled organics products procurement requirements and sequester or avoid at least 0.018 MT CO2e per person by through 2045	2030: 0.018 2040: 0.018
CS-1	Increase carbon sequestration through tree planting by developing and implementing an Urban Forest Management Plan	Supportive
CS-2	Leverage the carbon sequestration potential of open space and carbon removal	Supportive

Figure 1 Estimated GHG Emissions Reductions Associated with CAP Update



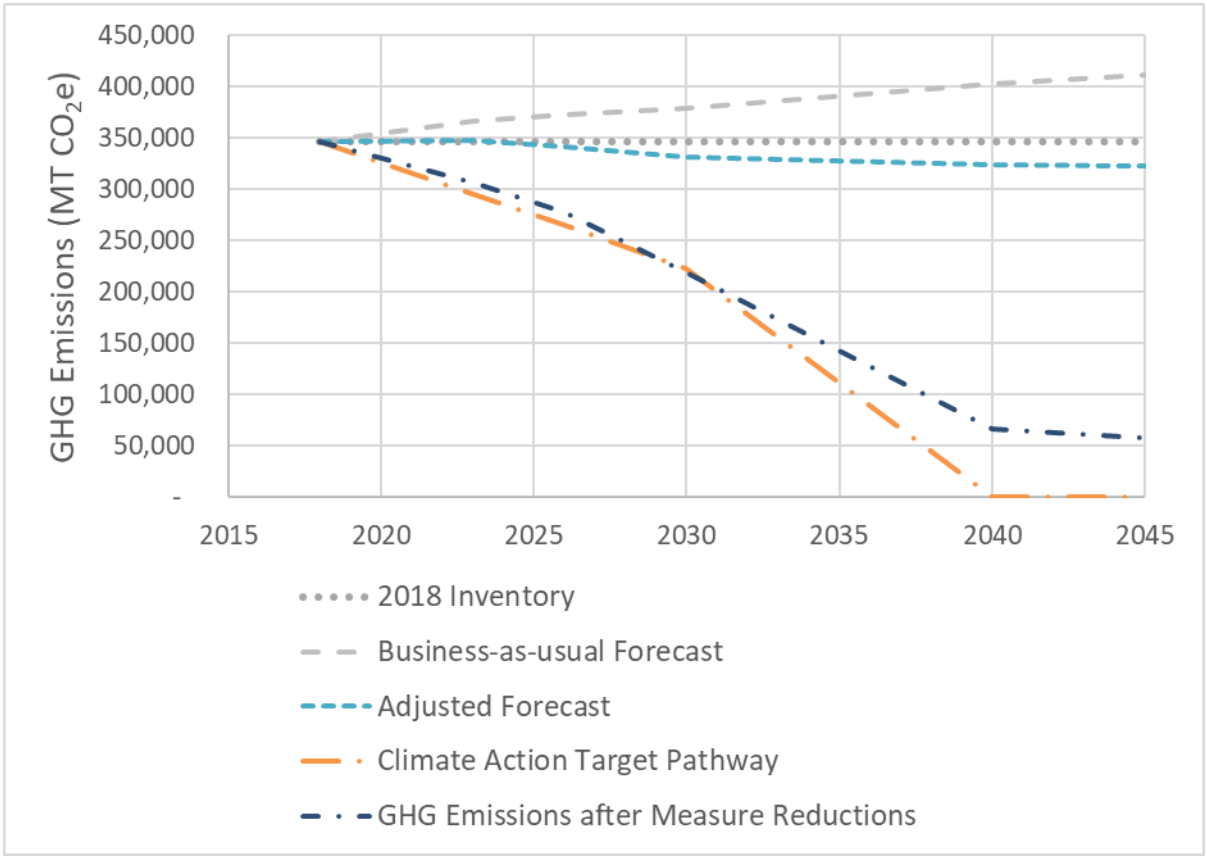
Together, the measures and actions in the CAP Update provide Cupertino with the GHG reductions necessary to achieve Cupertino's 2030 climate action target (Table 3). However, the 2040 GHG emissions reductions quantified in this report are not yet enough to meet the City's long term 2040 climate action target of carbon neutrality. Achieving carbon neutrality will require significant changes to the technology and systems currently in place. The CAP Update aims to establish new systems that are resilient and equitable and allow for a transition to carbon neutrality in the future. This includes electrification of building and transportation systems, an increased shift to active and public/shared transportation, continued usage of carbon neutral electricity, increased water use efficiency, and waste reduction and diversion. As these measures and actions are implemented, the City will gain more information, new technologies will emerge, and current pilot projects and programs will scale to the size needed to reach carbon neutrality. Furthermore, the state is expected to update state-level regulations and provide additional support for meeting carbon neutrality in the future. Future CAP updates past 2030 will also outline new measures and actions that Cupertino will implement to close the remaining gap to achieve the carbon neutrality target.

Table 3 Targets Versus GHG Emissions Reductions

Target/Forecast	2030 GHG Emissions (MT CO_2e/person)	2040 GHG Emissions (MT CO_2e/person)
Business-as-usual Forecast	5.77	5.91
Adjusted Forecast	5.04	4.74
Climate Action Targets	3.39	0.00
GHG Emissions Reductions from Full Implementation of Measures	1.66	3.77
GHG Emissions after Measure Reductions (Adjusted Forecast – GHG Emissions Reductions)	3.39	0.97
Target Anticipated to be Met?	Yes	No; substantial progress demonstrated

Figure 2 shows the climate action targets in relation to the City's GHG emissions after measure implementation. Figure 2 shows GHG emissions in terms of mass emissions (e.g., per capita emissions times the population projection) for better comparison to the 2018 inventory, 1990 back-casts, and forecasts. A complete description of each measure and its contributing actions is included in the remainder of the report.

Figure 2 Targets Versus GHG Emissions Reductions



2 Building Energy Measures

The City of Cupertino's building energy measures are primarily focused on leveraging the renewable energy portfolio provided to the community by Silicon Valley Clean Energy (SVCE) through continued reduction of non-SVCE/direct access usage rates and electrification[8] of Cupertino's building stock. All-electric buildings are powered 100% by electricity and when coupled with renewable electricity generation, their operational energy footprint becomes GHG emissions-free. Based on this strategy, the CAP Update's energy measures consist of the following:

- BE-1: Reduce non-SVCE usage rate to 2% for residential and 10% for commercial by 2030 and maintain through 2040
- BE-2: Electrify existing residential buildings to reduce annual residential natural gas usage from 129 therms per person in 2018 to at most 71 therms per person in 2030 and 16 therms per person in 2040
- BE-3: Electrify existing commercial buildings to reduce annual commercial natural gas usage from 119 therms per person in 2018 to at most 90 therms per person in 2030 and 54 therms per person in 2040
- BE-4: Require new residential and commercial development to be all-electric at time of construction
- BE-5: Develop specific requirements for procurement of carbon-free fuels in lieu of natural gas for new projects that cannot be electrified

SVCE procures low-carbon renewable energy for the community. Using electricity from SVCE instead of natural gas, propane, or other electricity sources to power buildings reduces the GHG emissions associated with building operations to zero or near-zero. Measure BE-1 directs the City to work with SVCE to lower existing residential and commercial non-SVCE usage rates, which increases the GHG reduction potential for SVCE's renewable electricity. Cupertino's building stock currently relies heavily on natural gas. While the City has already adopted an electrification reach code for new construction (included in the CAP as Measure BE-4) which requires developers for most building types to build all-electric buildings with no natural gas line connections,[9] GHG emissions from Cupertino's existing buildings must also be reduced to achieve the City's climate action targets. Measures BE-2 and BE-3 provide frameworks of updated regulations, programs, funding mechanisms, education, and advocacy to drive electrification of existing residential and commercial buildings.

[8] Building electrification consists of converting building appliances, such as space heaters, boilers, stoves, clothes dryers, and hot water heaters, that are currently powered by natural gas or propane to electricity as the primary energy source. This most often consists of retrofitting a building to support more electric capacity and replacing natural gas or propane appliances with electric-powered alternatives.

[9] City of Cupertino. 2019. Cupertino's Electrification Ordinance. Accessed at: https://lpdd.org/wp-content/uploads/2020/08/A-Draft-Ordinance.pdf

Measure BE-1: Reduce non-SVCE usage rate to 2% for residential and 10% for commercial by 2030 and maintain through 2040

Action #	Action	Anticipated Reduction (MT CO_2e/person)
1	Work with SVCE to conduct an annual analysis of non-SVCE and direct access usage rates in the City of Cupertino to understand why residents and businesses opt out of SVCE or use direct access electricity.	
2	Investigate feasibility of adopting an energy benchmarking program in Cupertino. Evaluate similar programs and determine how energy data would be reported and reviewed, if standards could be set to require energy efficiency improvements, and how much staff time would be required to maintain the program.	2030: 0.012 2040: 0.004
3	Establish an energy benchmarking program in Cupertino that requires large commercial entities (over 10,000 square feet) to report their energy usage and energy procurement details.	
4	Develop a program to provide SVCE green energy for rental units and households in the Below Market Rate (BMR) rental and ownership programs.	Supportive
5	Develop a local education program detailing and promoting the benefits of opting in to SVCE service.	Supportive
6	Partner with local community organizations that focus on climate and other social causes to promote the cost efficiency and benefits of SVCE. Solicit applications from among the community to take part in SVCE's Innovation Onramp Program.	Supportive

Actions 1-6: SVCE Opt-in

Electricity in the City is predominantly supplied by SVCE, a Community Choice Aggregation (CCA). CCAs are public, non-profit agencies that procure electricity for a region or community in place of the incumbent utility provider, in this case Pacific Gas & Electric (PG&E). While SVCE determines how electricity will be procured to meet customer demand, PG&E is still responsible for delivering that electricity to SVCE customers via the existing electrical grid. SVCE offers two carbon-free electricity options with lower GHG emissions rates than PG&E: GreenStart, made up of 50% renewables and 50% large hydro sourced electricity (100% GHG-free), and GreenPrime, made up of 100% renewable electricity from solar and wind.[10] Customers in Cupertino are automatically enrolled in SVCE GreenStart, but have the option to opt-up to GreenPrime, to opt-out to receive electricity directly from PG&E, or to procure electricity wholesale directly from electricity generators (i.e., through direct access). Non-SVCE and direct access usage rates for residential and commercial customers in Cupertino are shown in Table 4.

[10] Silicon Valley Clean Energy (SVCE). 2019. Your Power is Making a Difference. Accessed at: https://www.svcleanenergy.org/wp-content/uploads/2020/02/Power-Content-Label-2019-Res.pdf

Table 4 Non-SVCE and Direct Access Usage Rates in Cupertino

Customer Class	Non-SVCE Usage Rate[11]	Direct Access Usage rate[12]	Total
Residential	2.7%	0.02%	2.7%
Commercial	2.3%	11.6%	13.9%

Typical California CCA opt-out rates are 0% for municipal accounts, 5% for residential accounts, and 15% for commercial and industrial accounts.[13] Non-SVCE usage rates are comparatively low, as seen in Table 4, however, switching more customers, particularly direct access customers, to SVCE reduces electricity emissions in the short term and increases the GHG reduction impact of Measures BE-2 and BE-3, when natural gas end-uses are converted to electricity. Measure BE-1 and its actions aim to reduce non-SVCE and direct access usage rates to 2% for residential and 5% for commercial customers.

To support these lower non-SVCE and direct access usage rates, the City will start by working with SVCE to identify barriers to SVCE opt-in (Action 1). To aid in this investigation and help the City better characterize non-SVCE electricity usage, Actions 2 and 3 commit the City to establishing an energy benchmarking program. Energy benchmarking programs can have the effect of improving building performance for participating entities.[14]

In general, the City understands that cost is often the deciding factor for residents and businesses when making energy provider choices.[15] For this reason, the City will develop a program to fund SVCE opt-in for Cupertino's below market rate (BMR) housing. Action 4 additionally commits the City to promoting SVCE's Innovation Onramp Program, a grant program that seeks to address key technical, market, and policy barriers to achieving deep decarbonization.[16]

Finally, the City will conduct additional education and promotion of SVCE programs and benefits (Actions 5 and65). While the impacts associated with promotional and educational outreach around CCAs have not been well documented, some research has been conducted on the effects of promotion and education on energy. One study in New York showed that out of the 8,991 people who participated in informational programs, 69% implemented the recommended practices.[17] Another research meta-analysis reviewed dozens of papers covering various energy efficiency,

[11] Customers opted out of SVCE are serviced by PG&E.

[12] The commercial direct access usage rate excludes direct access electricity procured by Apple, which as a single electricity customer accounted for 44% of electricity (residential plus commercial) used in Cupertino in 2018.

[13] County of Butte. July 2018. Community Choice Aggregation Initial Feasibility Study. Page 18. Accessed at: http://buttecounty.granicus.com/MetaViewer.php?view_id=2&clip_id=512&meta_id=87147

[14] City of Portland. November 2019. 2018 Building Energy Performance Reporting Results. Accessed at: https://www.portland.gov/sites/default/files/2019-11/pepr_2018buildingperformancereport_final_0.pdf

[15] Sara Appel. Civic Business Journal. June 2018. The City of Rancho Mirage Launches Community Choice Aggregation Program with Low Opt-Out Rate. Accessed at: https://www.civicbusinessjournal.com/city-rancho-mirage-launches-community-choice-aggregation-program-low-opt-rate/

[16] Silicon Valley Clean Energy (SVCE). May 2020. SVCE Innovation Onramp Pilots Selected to Accelerate EV Charging Deployment. Accessed at: https://www.svcleanenergy.org/news/svce-innovation-onramp-pilots-selected-to-accelerate-ev-charging-deployment/

[17] Joseph Laquatra. Journal of Extension. December 2009. The Consumer Education Program for Residential Energy Efficiency. Accessed at: https://archives.joe.org/joe/2009december/a6.php

water efficiency, and waste outreach and found that education-only campaigns could produce between 10-12% energy savings.[18]

The methods and assumptions used to calculate the GHG emissions reductions associated with these actions are shown in the table below. GHG emissions reductions were calculated by subtracting GHG emissions attributed to electricity usage after reducing the non-SVCE/direct access usage rate (scenario a) from GHG emissions attributed to electricity usage under the current non-SVCE/direct access usage rate (scenario b).GHG emissions for both scenario a and scenario b were calculated by multiplying the community's total residential/commercial electricity usage by the weighted average residential/commercial electricity emissions factor for each scenario. Weighted average electricity emissions factors were calculated per the equation below:

$$EF_{scenario\ x} = SVCE\ EF * (1 - non\ SVCE\ usage\ rate_{scenario\ x}) + non\ SVCE\ EF * non\ SVCE\ usage\ rate_{scenario\ x}$$

[18] John Green and Lisa A. Skumatz. Skumatz Economic Research Associates, Inc. 2000. Evaluating the Impacts of Education/Outreach Programs: Lessons on Impacts, Methods, and Optimal Education. Accessed at: https://aceee.org/files/proceedings/2000/data/papers/SS00_Panel8_Paper10.pdf

Table 5 GHG Emissions Reductions from Actions 1-6

Inputs and Assumptions		
Residential non-SVCE/direct access usage rate (2018)[19]		2.7%
Commercial non-SVCE/direct access usage rate (2018)[20]		13.8%
GHG Emissions Reductions Calculations		
Year	**2030**	**2040**
Target residential non-SVCE/direct access usage rate	2.0%	2.0%
Target commercial non-SVCE/direct access usage rate	10.0%	10.0%
Communitywide residential electricity usage (kWh)[21]	101,350,471	123,661,696
Communitywide commercial electricity usage (kWh)[22]	156,051,734	156,670,495
SVCE Electricity emissions factor (MT CO_2e/kWh)[23]	0.0000017	0.0000006
Residential non-SVCE electricity emissions factor (MT CO_2e/kWh)[24]	0.0000637	0.0000212
Commercial non-SVCE electricity emissions factor (MT CO_2e/kWh)[25]	0.0001247	0.0000416
Weighted residential electricity emissions factor at 2018 non-SVCE/direct access usage rate (MT CO_2e/kWh)	0.0000034	0.0000011
Weighted commercial electricity emissions factor at 2018 non-SVCE/direct access usage rate (MT CO_2e/kWh)	0.0000188	0.0000063
Weighted residential electricity emissions factor at target non-SVCE/direct access usage rate (MT CO_2e/kWh)	0.0000030	0.0000010
Weighted commercial electricity emissions factor at target non-SVCE/direct access usage rate (MT CO_2e/kWh)	0.0000140	0.0000047
Emissions from electricity usage before reducing non-SVCE/direct access usage rate (MT CO_2e)	3,271	1,119
Emissions from electricity usage after reducing non-SVCE/direct access usage rate (MT CO_2e)	2,492	856
Total Reductions (MT CO_2e)	***779***	***264***
Per Capita Reductions (MT CO_2e/person)	***0.012***	***0.004***

[19] Calculated from 2018 Inventory (see Appendix A).

[20] Calculated from 2018 Inventory (see Appendix A).

[21] Ibid.

[22] Ibid. Does not include electricity used by Apple, which already procures zero-emissions electricity.

[23] Ibid.

[24] Ibid.

[25] Ibid.

Measure BE-2: Electrify existing residential buildings to reduce annual residential natural gas usage from 129 therms per person in 2018 to at most 71 therms per person in 2030 and 16 therms per person in 2040

Action #	Action	Anticipated Reduction (MT CO_2e/person)
Electrification Strategy		
1	Develop a residential building electrification strategy (RBES) to aid in development of a residential building electrification ordinance which: 1. Includes a detailed existing building analysis to understand current natural gas end uses and scenarios to electrify 2. Includes an electrification costs analysis that explores the up-front costs of electrification as well as ongoing energy costs for the end user (homeowners, landlords, and renters) after electrification 3. Considers impacts to renters, renter/landlord dynamics 4. Identifies potential impacts to electrical grid resiliency 5. Identifies and develops protections against potential equity concerns/impacts of electrification 6. Identifies funding and financing opportunities for residential electrification 7. Identifies the City staff resources needed to enforce a new electrification ordinance	Supportive
2	Identify and partner with local community-based organizations with connections to low-income and fixed income people, historically underserved communities, elders, disabled individuals with access needs to assist in development of the RBES.	Supportive
3	Conduct engagement efforts for the public and targeted low-income and fixed income people, historically underserved communities, elders, disabled individuals with access needs during development of the RBES to understand the community's concerns around electrification.	Supportive
Electrification Ordinance		
4	Adopt an electrification ordinance for existing residential buildings by 2023 to be implemented through the building permit process which bans expansion of natural gas infrastructure and requires either electrification of appliances or a disconnect from the gas system at time of replacement and major renovation.	2030: 0.290 2040: 0.566
5	Define equity metrics for ordinance enforcement based on feedback from low-income and fixed income people, historically underserved communities, elders, disabled individuals with access needs. Equity metrics should be designed to prevent displacement and ensure that end-user energy costs for low-income populations will not be greater after electrification than before. Design compliance support programs such as technical assistance to help permit applicants with compliance.	

Action #	Action	Anticipated Reduction (MT CO_2e/person)
6	Enforce ordinance compliance through a comprehensive permitting compliance program, to be developed based on the results of the feasibility study in Action 1. Structure the program to include, as determined necessary, routine training of staff, dedicating staff time to building inspections, charging fees for noncompliance, providing easy to understand compliance checklists online and with permit applications, and facilitating permitting online. Evaluate the effectiveness of the program on a biannual basis to avoid potential issues such as reduced permit application rates.	
7	Actively participate in regional permit streamlining efforts for all-electric building upgrades, EV charging, and battery storage.	Supportive
Workforce Education		
8	Work with the local contractors, realtors, homeowner associations, and labor unions to develop a comprehensive building code and compliance training program, including hosting workforce development trainings discussing the benefits and technical requirements of electrification. Consider working with regional partners to maintain a database of qualified contractors and consultants for electrification retrofits.	Supportive
Neighborhood Electrification		
9	Commit to electrifying the City's Below Market Rate (BMR) rental and housing stock at a neighborhood level by 2040. Establish a plan and schedule for implementing this action by 2024.	Supportive
10	Create a dedicated fund to support BMR rental and housing upgrades, to be supported by grants using an existing regional program (e.g., BayREN Home +).	Supportive
11	Work with PG&E to identify opportunities for natural gas infrastructure pruning to redirect PG&E dollars allocated for pipeline maintenance to electrification retrofit projects instead and reduce the chance of stranded assets. Stranded assets arefunctional natural gas infrastructure with ongoing maintenance costs that has become obsolete due to electrification. Work with PG&E to identify additional funding as needed for the abandonment/removal of the infrastructure. Consider piloting this approach with a group of municipal facilities.	Supportive
12	Collaborate with the County and other cities in the region to advocate for regulatory changes at the state and federal level to allow neighborhood level electrification and natural gas pruning. Consider also supporting federal carbon pricing proposals in the City's legislative platform.	Supportive
Funding and Financing		
13	Seek out funding partnerships with local financiers and work with partners such as SVCE and BayREN to fund a program specifically for decarbonization retrofits, such as a local turnkey retrofit program that leverages existing funding, which offers low-cost financing of electrification and energy efficiency retrofits for residents and local businesses.	Supportive

Action #	Action	Anticipated Reduction (MT CO_2e/person)
14	Develop a program dedicated to understanding, streamlining, and expanding energy and electrification turnkey, rebate, and financing programs (e.g., PACE, CHEEF, and utility-offered incentive programs). Staff would also be responsible for supporting residents with rebate applications, with a focus on low-income residents.	Supportive

Actions 1-3: Electrification Strategy

Actions 1 to 3 commit the City to developing a residential building electrification strategy (RBES) as a first step towards implementing a residential building electrification ordinance. Existing building electrification is relatively untested at a city scale, suggesting that a Cupertino-specific strategy that investigates the opportunities, barriers, and solutions associated with residential building electrification is key to successful implementation of an ordinance. Because of the generally high cost of building electrification, developing solutions for potential equity impacts of residential building electrification is key to successful implementation.[26] The RBES is designed to give special consideration to the potential equity impacts of an electrification ordinance by investigating up-front and on-bill costs of electrification to residents, potential impacts to renters, potential impacts to electrical grid resiliency (Action 1), and by specifically targeting equity groups for feedback on RBES development (Action 3). The City recognizes that outreach to equity groups during policy development processes is often challenging, and therefore plans to engage local community-based organizations with connections to these groups in an effort to engage more intentionally and transparently (Action 2).

Outreach and engagement for the CAP Update found that the community has concerns about the potential for electrification to increase demands on and lower the resiliency of the electrical grid, especially given the potential for service disruptions for public safety power shutoffs (PSPS) multiple times a year. Peak grid demand, and therefore PSPS, usually occurs in the summer on the hottest days when most buildings are running air conditioning. Building electrification in Cupertino in the residential sector prioritizes electrifying residential hot water heaters and heat pumps that run on natural gas (residential stoves and clothes dryers use comparatively insignificant amounts of electricity).[27] Hot water heaters, while used throughout the year, can use electricity during off-peak times by heating water and storing it for use at a later time, avoiding significant contribution to peak demand in the summer. Meanwhile, since heat pumps are primarily used in the winter for space heating, converting to an electric heat pump would similarly avoid contributing to peak demand in the summer. electrifying a heat pump or other space heating appliance has the added benefit of being highly efficient, and widespread electrification of temperature control appliances would likely reduce electricity demand throughout the year. The electrical grid is therefore well-suited to absorbing increased electrical demands from electrification, which even under full electrification scenarios would not exceed current peak summer electricity demands.[28]

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[26] Greenlining Institute. 2019. Equitable Building Electrification: A Framework for Powering Resilient Communities. Accessed at: https://greenlining.org/wp-content/uploads/2019/10/Greenlining_EquitableElectrification_Report_2019_WEB.pdf

[27] Silicon Valley Clean Energy (SVCE). 2020. Buildings Baseline Study (Appendix C).

[28] Reem Rayef. National Resources Defense Council. April 2020. California's Grid is Ready for All-Electric Buildings. Accessed at: https://www.nrdc.org/experts/merrian-borgeson/californias-grid-ready-all-electric-buildings

Actions 4-7: Electrification Ordinance

Actions 4 to 7 commit the City to adopting an electrification ordinance for existing residential buildings by 2023, to be enforced through a comprehensive and equitable permitting compliance program. Natural gas usage from residential buildings accounted for about 13 % of GHG emissions in Cupertino in 2018. To address these GHG emissions, the electrification ordinance bans natural gas line expansion and installation of natural gas heating, ventilation, and air conditioning (HVAC) systems, hot water heaters, and other appliances starting in 2023. HVAC system and hot water heaters are targeted in the ordinance due to their large contribution to residential natural gas end-uses and the cost-effectiveness associated with their replacement on burnout.[29]

The City recognizes that successful ordinance implementation will require effective permit compliance. Permits are required for many energy efficiency improvements, including hot water heaters, insulation, HVAC systems, duct replacement, and others. However, permit evasion remains an issue in many jurisdictions, with permitted HVAC systems only accounting for 8-29% of total installations.[30, 31] Strategies that have proven effective at improving permit compliance in various states and local jurisdictions include streamlining the compliance process, improving third-party enforcement, and advanced training for enforcement staff.[32] Actions 6 and 7 commit the City to developing an enhanced permitting compliance program that incorporates these elements to achieve better permit compliance and therefore improved ordinance implementation success. Per Action 7, the City will work to streamline permitting for electrification and other energy projects at a regional level, to reduce the workforce education needed for project implementation on the ground.

The methods and assumptions used to calculate the GHG emissions reductions associated with these actions are shown in the table below. GHG emissions reductions were calculated based on the percentage of natural gas attributed to water heaters, HVAC systems, and stoves, the average lifespan of each natural gas consuming devices, and the assumption that 96% appliances would be replaced on burnout.

[29] Energy and Environmental Economics (E3). April 2019. Residential Building Electrification in California: Consumer economics, greenhouse gases and grid impacts. Accessed at: https://www.ethree.com/wp-content/uploads/2019/04/E3_Residential_Building_Electrification_in_California_April_2019.pdf

[30] Emily Alvarez and Bruce Mast. BayREN Codes & Standards Program. October 2021. Local Government Policy Calculator for Existing Single-Family Buildings – User Guide. Accessed at: https://www.bayrencodes.org/wp-content/uploads/2021/11/BayREN-Policy-Calculator-User-Guide_10.29.2021.pdf

[31] California Public Utilities Commission (CPUC). September 2017. Final Report: 2014-16 HVAC Permit and Code Compliance Market Assessment (Work Order 6) Volume I – Report. Accessed at: http://www.calmac.org/publications/HVAC_WO6_FINAL_REPORT_VolumeI_22Sept2017.pdf

[32] Ryan Meres et al. American Council for an Energy-Efficient Economy (ACEEE). 2012. Successful Strategies for Improving Compliance with Building Energy Codes. Accessed at: https://www.aceee.org/files/proceedings/2012/data/papers/0193-000112.pdf

Table 6 GHG Emissions Reductions from Actions 4-7

Inputs and Assumptions		
Ordinance implementation year		2023
Natural gas emissions factor (MT CO_2e/therm)[33]		0.005305
Natural gas fugitive emissions factor (MT CO_2e/therm)[34]		0.000173
Convert kWh to therms (kWh/therm)		29.3001
Average increased efficiency of electric appliances over natural gas appliances (%)[35]		300%
Average natural gas water heater lifespan[36]		13
Average natural gas HVAC lifespan[37]		21.5
Average natural gas stove lifespan[38]		12
Natural gas usage that comes from water heater[39]		50%
Natural gas usage that comes from heating/cooling[40]		44%
Natural gas usage that comes from cooking		7%
Assumed noncompliance[41]		6%
GHG Emissions Reductions Calculations		
Year	**2030**	**2040**
Residential natural gas usage after new building electrification ordinance is implemented (therms)	8,186,706	8,186,706
Percentage of homes with replaced water heaters, assuming non-compliance and replacement on burnout	51%	94%
Natural gas reduction from water heater replacement (%)	25%	47%
Percentage of homes with replaced HVAC, assuming non-compliance and replacement on burnout	31%	74%
Natural gas reduction from HVAC replacement (%)	13%	33%
Percentage of homes with replaced stoves, assuming non-compliance and replacement on burnout	55%	94%
Natural gas reduction from stove replacement	4%	6%
Total natural gas saved (therms)	3,491,690	7,069,508
Emissions reduced from total natural gas saved (MT CO_2e)	19,128	38,728
Electricity usage from converting to electric (kWh)	34,102,288	69,045,762
Electricity emissions factor after Measure BE-1 (MT CO_2e/kWh)[42]	0.0000030	0.0000010
Emissions added from converted electricity usage (MT CO_2e)	102	69
Total Reductions (MT CO_2e)	**19,027**	**38,660**
Per Capita Reductions (MT CO_2e/person)	**0.29**	**0.57**
Per capita residential natural gas after ordinance implementation (therms/person)	71	16

Action 8: Workforce Education

Workforce education has been shown to improve code compliance when implemented in addition to a permitting compliance program and has therefore, been identified as a key component of the

[33] Appendix A.

[34] Appendix A.

electrification ordinance implementation process.[43] Action 8 commits the City to implementing a comprehensive workforce education program to provide electrification education at all levels of residential retrofit work within the City.

Actions 9-12: Neighborhood Electrification

Neighborhood scale electrification consists of electrifying entire neighborhoods rather than individual appliances in individual homes and includes elimination (or pruning) of natural gas infrastructure within buildings and beneath the streets. A neighborhood-scale approach to electrification can be more cost-effective overall. For example, in a neighborhood in which half of the buildings have been electrified while the other half still rely on natural gas, those left on natural gas are left paying for the infrastructure for the entire neighborhood.[44] Actions 9 and 10 focus on neighborhood-scale electrification of the City's BMR rental and housing stock by 2040. The City's BMR rental and housing stock consists of between 171 and 259 units.[45] Electrification of these units would help accelerate the electrification timeline expected as a result of implementing an electrification ordinance (Actions 4-6).

Actions 11 and 12 commit the City to exploring natural gas pruning opportunities. Natural gas pruning would require regulatory changes at the CPUC to allow PG&E the flexibility needed to reallocate funding from natural gas infrastructure projects to electrification projects.[46] In the interest of supporting these changes, the City plans to collaborate regionally on advocating for natural gas pruning. Action 10 also commits the City to advocating for a federal-level policy on carbon pricing, to provide a more robust legal and economic framework for incentivizing low-carbon behaviors, such as electrification.

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[35] Pacific Gas & Electric. 2021. Electrification for your home or building. Accessed at: https://www.pge.com/en_US/residential/customer-service/home-services/renovating-and-building/benefits-of-electric-homes-and-buildings/benefits-of-electric-homes-and-buildings.page?

[36] EIA. 2018. Updated Buildings Sector Appliance and Equipment Cost and Efficiencies. Appendix C. Accessed at: https://www.eia.gov/analysis/studies/buildings/equipcosts/pdf/full.pdf

[37] Ibid.

[38] Ibid.

[39] Silicon Valley Clean Energy (SVCE). 2020. Buildings Baseline Study (Appendix C).

[40] Silicon Valley Clean Energy (SVCE). 2020. Buildings Baseline Study (Appendix C).

[41] 8 to 29% of HVAC projects are permitted, while 100% of energy efficiency requirements are met regardless of permitting status. It was therefore assumed that a permit enforcement program will push the average closer to 100%. Noncompliance was therefore calculated as the average of 8%, 29%, 0%, and 0%. See CPUC's Final Report: 2014-16 HVAC Permit and Code Compliance Market Assessment (Work Order 6) Volume I – Report, accessed at: http://www.calmac.org/publications/HVAC_WO6_FINAL_REPORT_VolumeI_22Sept2017.pdf

[42] See calculations for Measure BE-1.

[43] Ryan Meres et al. American Council for an Energy-Efficient Economy (ACEEE). 2012. Successful Strategies for Improving Compliance with Building Energy Codes. Accessed at: https://www.aceee.org/files/proceedings/2012/data/papers/0193-000112.pdf

[44] City of Berkeley. April 2021. Existing Building Electrification Strategy Administrative Draft.

[45] City of Cupertino. 2021. Below Market Rate (BMR) Housing Program. Accessed at: https://www.cupertino.org/our-city/departments/community-development/housing/below-market-rate-housing-program

[46] City of Berkeley. 2021. Existing Building Electrification Strategy.

Actions 13-14: Funding and Financing

In general, electrification has been found to reduce costs for homeowners over the lifetime of appliances when compared to propane or natural gas-fueled equipment, especially when retrofits are bundled and completed when appliances are already planned for replacement, or when coupled with rooftop solar installation.[47] However, the City anticipates that the residential building electrification ordinance will result in up-front retrofit costs for residents that may be difficult for the community, particularly low-income residents, to bear. The largest barrier to existing building electrification is higher up-front capital costs compared to natural gas.[48] On-bill or financed incentives to offset these costs for the end-user are therefore among the most promising opportunities for electrification.[49] Actions 13 and 14 build the support and funding pathway to make existing building electrification possible, particularly for low-income residents of the City. Action 13 commits the City to developing a funding program for decarbonization retrofits, which will seek private capital to fund a local turnkey retrofit program that would allow for low-cost financing of electrification retrofits.[50] Once up-front costs are financed, long term savings can be used to achieve cash flow positive retrofits and/or acceptable ROI's. Demonstrating cost effective pathways for existing building electrification will be a key step before mandatory requirements can be set. Action 14 strengthens the potential reach of Action 13 by committing the City to creating a dedicated staff position for connecting residents to appropriate funding and financing pathways. The City is currently piloting a similar use of staff time in the Climate Victory Gardens Pilot to provide technical and administrative support directly to residents who wish to remove lawns and install drought-tolerant gardens. Action 14 commits the City to a similar use of staff time to support residents to apply for all available rebates and to get unbiased technical advice.

[47] Rocky Mountain Institute (RMI). 2018. The Economics of Electrifying Buildings: How Electric Space and Water Heating Supports Decarbonization of Residential Buildings. Accessed at: file:///L:/EPS/Santa%20Clara%20Co/21-10845%20Cupertino,%20Cupertino%20CAP%20Upd/Report/15_Final%20GHG%20Reduction%20Measures%20List%20with%20Quantification/Sources/RMI_Economics_of_Electrifying_Buildings_2018.pdf

[48] California Center for Sustainable Energy. 2009. Solar Water Heating Pilot Program: Interim Evaluation Report.

[49] Synapse Energy Economics, Inc. October 2018. Decarbonization of Heating Energy Use in California Buildings. https://www.synapse-energy.com/sites/default/files/Decarbonization-Heating-CA-Buildings-17-092-1.pdf

[50] Tik Root. The Washington Post. November 2021. This U.S. city just voted to decarbonize every single building. Accessed at: https://www.washingtonpost.com/climate-solutions/2021/11/03/ithaca-new-york-decarbonize-electrify/

Measure BE-3: Electrify existing commercial buildings to reduce annual commercial natural gas usage from 119 therms per person in 2018 to at most 90 therms per person in 2030 and 54 therms per person in 2040

Action #	Action	Anticipated Reduction (MT CO_2e/person)
Electrification Strategy		
1	Inform and facilitate energy master planning work around electrification for commercial business owners and large developers. Build a partnership with and distribute technical support to the business community (e.g., local business associations) to with the aim of identifying, piloting, and scaling large energy efficiency and electrification projects.	Supportive
2	Develop a commercial building electrification strategy (CBES), building on the existing Baseline Buildings Study from SVCE (2020), with a detailed commercial natural gas usage analysis, analysis to potential impacts to the local commercial sectors, and electrification costs analysis to aid in development of a commercial building electrification ordinance.	Supportive
3	Conduct engagement efforts for the commercial sector during development of the CBES to understand potential concerns and barriers to commercial electrification. Engage with BAAQMD in the development of the CBES in order to coordinate on the approach to emergency power and baseload power generation systems which commonly use natural gas.	Supportive
4	Conduct outreach to small businesses and minority-owned businesses to understand potential equity impacts of the ordinance.	Supportive
Electrification Ordinance		
5	By 2024, adopt an electrification ordinance for existing commercial buildings to be implemented through the building permit process, which bans expansion of natural gas infrastructure, requires electrification of natural gas appliances at time of major renovation and time of replacement where technologically feasible (exceptions can be made where all-electric alternatives to do not exist or are a significant cost burden, to be further defined based on results of the CBES).	2030: 0.190 2040: 0.366
6	Enforce existing buildings electrification ordinance compliance through the same permitting compliance program and with same staff as for residential building electrification.	
Battery Storage		
7	Conduct engagement efforts for the commercial sector to identify ways the City can support commercial battery storage installations and improve local grid resiliency beyond what will be required in the 2022 California Building Energy Code's commercial battery storage and solar installation requirements.	Supportive
Funding and Financing		
8	Work with SVCE and PG&E to develop or expand commercial rebate program and incentivize commercial all-electric retrofits and battery storage installations.	Supportive

Action #	Action	Anticipated Reduction (MT CO_2e/person)
9	Create a program to generate interest and secure partnerships among local business and institutions for the purpose of seeking out grants or initiatives. Leverage this program to facilitate funding opportunities for commercial business electrification.	Supportive
10	Develop a program that funnels Cupertino businesses into the SVCE Innovation Onramp grant program or similar grant offerings.	Supportive

Actions 1-4: Electrification Strategy

Existing building electrification in the commercial sector is less well researched than in the residential sector. While some commercial natural gas end uses may be ripe for electrification – about 27% of commercial floor space heated with fossil fuel systems can be electrified today with a simple payback period of less than 10 years – other end uses may not.[51] However, the commercial sector accounts for a large portion of the City's total natural gas usage (about 48%), and therefore provides significant opportunity for decarbonization. To close the knowledge gap about commercial building electrification in Cupertino, Actions 1 through 4 commit the City to engaging with the commercial sector and business community to understand barriers, equity/cost impacts, and opportunities associated with electrification of commercial natural gas end uses. The City will facilitate two planning efforts – energy master planning work in the short-term through direct partnership with business community groups (Action 1) and development of a commercial building electrification strategy (CBES) in the mid-term to chart a path towards a commercial electrification ordinance (Action 2). Actions 3 and 4 support development of the CBES. GHG emissions reductions associated with commercial building electrification are quantified below, and Actions 1 through 4 are considered supportive to those reductions.

The Bay Area Air Quality Management District (BAAQMD) has also recently shared plans to address nitrogen oxide (NOx) emissions associated with buildings by developing new requirements around natural gas-fired furnaces, boilers, and water heaters, which may support commercial electrification work in Cupertino.[52]

Actions 5-6: Electrification Ordinance

Actions 5 and 6 commit the City to adopting an electrification ordinance for existing commercial buildings by 2024, to be enforced through the same comprehensive and equitable permitting compliance program described under Measure BE-2 Action 6. Natural gas usage from commercial buildings accounted for about 15% of GHG emissions in Cupertino in 2018. To address these GHG emissions, the electrification ordinance bans natural gas line expansion and requires installation of all-electric appliance, such as heat pumps, variable refrigerant flow systems, and hot water heaters, at time of major renovation and time of replacement as technologically feasible. The ordinance

[51] Steven Nadel and Chris Perry. American Council for an Energy-Efficient Economy (ACEEE). October 2020. Electrifying Space Heating in Existing Commercial Buildings: Opportunities and Challenges. Accessed at: https://www.aceee.org/press-release/2020/10/report-electrifying-heating-existing-commercial-buildings-could-cut-their

[52] Jeanne Clinton. April 19, 2021. Costs, Markets, and Funding Options in Accelerating the Bay Area's Building Electrification: Presentation to BAAQMD Stationary Source and Climate Impacts Committee. Accessed at: https://www.baaqmd.gov/~/media/files/board-of-directors/2021/sscic_presentations_04192021-pdf.pdf?la=en

recognizes that current technology may limit the extent to which commercial natural gas end uses in Cupertino can be electrified;[53] for this reason, some limited exemptions are included in the ordinance, to be informed by the results of the CBES. The methods and assumptions used to calculate the GHG emissions reductions associated with these actions are shown in the table below.

[53] kW Engineering. March 2021. Important Considerations for Electrification of Commercial Buildings. Accessed at: https://www.kw-engineering.com/electrification-commercial-buildings-important-considerations/

Table 7 GHG Emissions Reductions from Actions 5-6

Inputs and Assumptions		
Ordinance implementation year		2024
Natural gas emissions factor (MT CO_2e/therm)[54]		0.005305
Natural gas fugitive emissions factor (MT CO_2e/therm)[55]		0.000173
Convert kWh to therms (kWh/therm)		29.3001
Average increased efficiency of electric appliances over natural gas appliances (%)[56]		300%
Average natural gas water heater lifespan[57]		10
Average natural gas HVAC lifespan[58]		23
Natural gas usage that comes from water heater[59]		35%
Natural gas usage that comes from heating/cooling[60]		35%
Assumed noncompliance[61]		6%
GHG Emissions Reductions Calculations		
Year	**2030**	**2040**
Commercial natural gas usage after new building electrification ordinance is implemented (therms)	8,273,884	8,273,884
Percentage of buildings with replaced water heaters, assuming non-compliance and replacement on burnout	56%	94%
Natural gas reduction from water heater replacement (%)	20%	33%
Percentage of commercial buildings with replaced HVAC, assuming non-compliance and replacement on burnout	24%	65%
Natural gas reduction from HVAC replacement (%)	9%	23%
Total natural gas saved (therms)	2,339,225	4,607,564
Emissions reduced from total NG saved (MT CO_2e)	12,815	25,241
Electricity usage from converting to electric (kWh)	22,846,507	45,000,696
Electricity emissions factor after Measure BE-1 (MT CO_2e/kWh)[62]	0.0000140	0.0000047
Emissions added from converted electricity usage (MT CO_2e)	321	211
Total Reductions (MT CO_2e)	**12,494**	**25,031**
Per Capita Reductions (MT CO_2e/person)	**0.190**	**0.366**
Per capita commercial natural gas after ordinance implementation (therms/person)	90	54

Action 7: Battery Storage

While electrification is not expected to result in additional strain on the electrical grid,[63] commercial-scale battery storage projects present an opportunity to improve the resilience of the

electrical grid and provide cost savings over the lifetime of the equipment.[64] 2022 California Building Energy Code requires new commercial construction over 5,000 square feet to install PV and storage to meet 60% of the building's energy load and reduce exports to 10%.[65] Action 7 commits the City to exploring opportunities to support commercial batter storage installations beyond these requirements.

Actions 8-10: Funding and Financing

Technologies that currently exist for electrifying HVAC systems and water heaters in the commercial sector range from cost-effective to prohibitively expensive, usually depending on the complexity of the system.[66] Additionally, while all-electric HVAC systems and water heaters can be cost-effective over their lifetimes, up-front costs may be substantially higher with payback periods longer than 10 years.[67] Financial incentives are needed to make conversion of about 73% of commercial floor space cost effective, not to mention other end uses that are less well studied.[68] To meet this need, Actions 8 through 10 commit the City to developing and expanding financial incentive programs targeted to the commercial sector, including rebates and grant programs.

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[54] Appendix A

[55] Appendix A

[56] Pacific Gas & Electric. 2021. Electrification for your home or building. Accessed at: https://www.pge.com/en_US/residential/customer-service/home-services/renovating-and-building/benefits-of-electric-homes-and-buildings/benefits-of-electric-homes-and-buildings.page?

[57] EIA. 2018. Updated Buildings Sector Appliance and Equipment Cost and Efficiencies. Appendix C. Accessed at: https://www.eia.gov/analysis/studies/buildings/equipcosts/pdf/full.pdf

[58] Ibid.

[59] Silicon Valley Clean Energy (SVCE). 2020. Buildings Baseline Study (Appendix C).

[60] Silicon Valley Clean Energy (SVCE). 2020. Buildings Baseline Study (Appendix C).

[61] Assumed roughly equivalent to residential non-compliance due to lack of sufficient data or studies.

[62] See calculations for Measure BE-1

[63] Reem Rayef. National Resources Defense Council. April 2020. California's Grid is Ready for All-Electric Buildings. Accessed at: https://www.nrdc.org/experts/merrian-borgeson/californias-grid-ready-all-electric-buildings

[64] National Renewable Energy Laboratory (NREL). June 2021. Battery Storage for Resilience. Accessed at: https://www.nrel.gov/docs/fy21osti/79850.pdf

[65] Kelsey Misbrener. Solar Power World. August 2021. California Energy Commission mandates solar + storage on new commercial buildings. Accessed at: https://www.solarpowerworldonline.com/2021/08/california-energy-commission-mandates-solar-storage-new-commercial-buildings/

[66] Steven Nadel and Chris Perry. American Council for an Energy-Efficient Economy (ACEEE). October 2020. Electrifying Space Heating in Existing Commercial Buildings: Opportunities and Challenges. Accessed at: https://www.aceee.org/press-release/2020/10/report-electrifying-heating-existing-commercial-buildings-could-cut-their

[67] Ibid.

[68] Ibid.

Measure BE-4: Require new residential and commercial development to be all-electric at time of construction

Action #	Action	Anticipated Reduction (MT CO_2e/person)
1	Adopt an electrification ordinance for new residential and commercial development which requires developers to build all-electric at time of construction. Actively maintain the electrification ordinance through each tri-annual code cycle.	2030: 0.067 2040: 0.221

Action 1: New Construction Electrification Ordinance

Action 1 commits the City to adopting an electrification ordinance for new construction. While this action was already completed by the City in 2019, it is included in the CAP to allow the City to accurately account for the GHG emissions reductions associated with the ordinance, which were not captured in the 2018 inventory or the adjusted forecast. Additionally, the City must activey study and re-adopt or modify the new construction electrification ordinance with each tri-annual code cycle. The ordinance consists of local amendments to the State Energy Code and the State Green Building Code. The methods and assumptions used to calculate the GHG emissions reductions associated with this action are shown in the table below.

Table 8 GHG Emissions Reductions from Action 1

Inputs and Assumptions		
Implementation year for residential development		2020
Implementation year for commercial development		2020
Natural gas emission factor (MT CO_2e/therm)[69]		0.00530
Natural gas fugitive emissions factor (MT CO_2e/therm)[70]		0.00017
Convert kWh to therms (kWh/therm)		29.3001
Average increased efficiency of electric appliances over natural gas appliances (%)[71]		3
GHG Emissions Reductions Calculations		
Year	**2030**	**2040**
Residential Reductions		
Residential natural gas usage (therms)[72]	8,289,600	10,192,093
Residential natural gas usage in ordinance implementation year (therms)	8,186,706	8,186,706
Natural gas saved (therms)	102,894	2,005,387
Emissions reduced from natural gas saved (MT CO_2e)	564	10,986
Electricity usage from converting to electric (kWh)	1,004,930	19,586,017
Electricity emissions factor after Measure BE-1 (MT CO_2e/kWh)	0.0000030	0.0000010
Emissions added from converted electricity usage (MT CO_2e)	3	19
Total emission reductions (MT CO_2e)	561	10,967
Commercial Reductions		
Commercial natural gas usage (therms)[73]	8,995,575	9,031,243
Commercial natural gas usage in ordinance implementation year (therms)	8,273,884	8,273,884
Natural gas saved (therms)	721,691	757,359
Emissions reduced from natural gas saved (MT CO_2e)	3,954	4,149
Electricity usage from converting to electric (kWh)	7,048,539	7,396,902
Electricity emissions factor after Measure BE-1 (MT CO_2e/kWh)	0.0000140	0.0000047
Emissions added from converted electricity usage (MT CO_2e)	99	35
Total emission reductions (MT CO_2e)	3,855	4,114
Totals		
Total Reductions (MT CO_2e)	**4,415**	**15,081**
Per Capita Reductions (MT CO_2e)	**0.067**	**0.221**

[69] Appendix A.

[70] Appendix A

[71] Pacific Gas & Electric. 2021. Electrification for your home or building. Accessed at: https://www.pge.com/en_US/residential/customer-service/home-services/renovating-and-building/benefits-of-electric-homes-and-buildings/benefits-of-electric-homes-and-buildings.page?

[72] Appendix A.

[73] Appendix A.

Measure BE-5: Develop specific requirements for procurement of carbon-free fuels in lieu of natural gas for new projects that cannot be electrified

Action #	Action	Anticipated Reduction (MT CO_2e/person)
1	Energy consumption by Apple facilities is significant in Cupertino. Coordinate with Apple during preparation of future community inventories to ensure that Apple is continuing to procure biofuel for their Apple Park fuel cell through a legitimate book and claim process and that the data is reflected correctly in Cupertino's community inventory according to the latest inventory guidance and protocols from CARB and ICLEI.	Supportive
2	Develop requirements for future commercial projects with fuel cells, stationary generators, or other natural gas equipment that cannot be electric to coordinate with the City and procure biofuel or other carbon-free fuel for operation of the equipment. Coordinate this action with the Bay Area Air Quality Management District, which conducts regular analysis on carbon-free alternatives to diesel generators under the Diesel-Free by '33 program.	Supportive
3	Work with the City's natural gas provider, ABAG POWER, to develop market alternatives to natural gas that provide legitimate carbon reduction opportunities, such as renewable diesel fuels or bio-based fuels. Consider purchasing these fuels at a price premium.	Supportive

Action 1: Coordinate with Apple during community inventory updates

Apple is a large employer and user of natural gas in Cupertino, and therefore accounts for a large portion of the City's commercial/industrial natural gas. On June 29, 2012, the proposed Apple Campus 2 Project was certified as an Environmental leadership Development Project (Leadership Project) by the Governor's Office pursuant to the Jobs and Economic Improvement Through Environmental Leadership Act of 2011 (AB 900).[74] In an effort to reduce GHG emissions, Apple directly purchases biofuel through a book and claim agreement to power their fuel cell, located in Cupertino. The gas which arrives at Apple is delivered via PG&E infrastructure and is included in the natural gas total for the City.

Just like GHG-free electricity, which produces a Renewable Energy Credit (REC), biofuel generates a fuel attribute in the United States that can be bought or sold separately from the fuel itself, which is typically injected into the nearest common pipeline where it becomes indistinguishable from the other natural gas in the system. The fuel attribute is matched with the unit of energy purchased (therms), and that attribute belongs to the purchaser of the biofuel who holds the market credit. Apple purchases enough biofuel annually to power the fuel cell. The biofuel is then directly injected into a common natural gas pipeline in the United States.

Because the biogas avoids natural gas usage equal to Apple's fuel cell usage within the geographical boundaries of the United States, which is not being claimed by anyone else, natural gas fuel cell CO_2 emissions are considered zero. This process is verified annually through Apple's regular sustainability reporting. This approach to accounting for biofuels is supported by the California Air Resources Board as part of their Low Carbon Fuel Standard program.[75] Furthermore, while the U.S.

[74] See: https://www.cupertino.org/our-city/departments/community-development/planning/major-projects/apple-park

[75] https://ww2.arb.ca.gov/sites/default/files/classic/fuels/lcfs/guidance/lcfsguidance_19-05.pdf

Community Protocol "does not provide guidance on quantifying or reporting on GHG benefits associated with; actions that have been or could be taken to reduce emissions, carbon offset projects, purchased carbon credits, or renewable energy credits" they do state that information on these types of activities is "best presented in the context of climate action plans".[76] Therefore, as a key action towards decarbonization of the City, Cupertino will track the GHG reduction benefits of Apple's biofuel purchases (Action 1). As part of this action, Cupertino will verify Apple's book and claim process for biofuel and review Apple's reporting methodologies each time before accounting for biofuel directly in Cupertino's GHG emissions inventory. This process is similar to reviewing emissions factors for electricity as part of future inventory updates, which have RECs built directly into their calculation.

Actions 2-3: Require future projects to procure carbon-free fuel

These actions will ensure that no future commercial projects with gas-fired fuel cells, generators, or other equipment come to Cupertino and cause increases in community natural gas usage.

[76] https://icleiusa.org/us-community-protocol/

3 Transportation Measures

Reducing transportation emissions and becoming a carbon neutral city means reducing the number of miles driven by fossil fuel-powered vehicles, particularly passenger vehicles, which account for 43% of GHG emissions in the City of Cupertino. The City's transportation strategy consists of a multi-pronged approach for incentivizing alternatives to fossil fuel-powered vehicle trips, including shifting transportation mode share[77] to active transportation and public transit options; electrifying passenger and commercial vehicle trips, and decarbonizing off-road equipment. This CAP prioritizes reducing vehicle miles travelled (VMT) first, by improving active and public transportation mode share, then shifting remaining VMT to electric vehicles. While in theory, 100% electrification of all vehicles in Cupertino could achieve zero-emissions in the transportation sector without reducing VMT, the City recognizes that cars and roadways carry huge amounts of embodied emissions[78] not accounted for in the inventory, over which the City has little control.[79] Reducing VMT carries additional benefits outside of GHG emissions reductions as well, including reduced congestion, reduced space needed for roadways and parking, local economic revitalization, and lifestyle improvements.[80] Based on this strategy, the CAP Update's transportation measures consist of the following:

- TR-1: Develop and implement an Active Transportation Plan to achieve 15% of active transportation mode share by 2030 and 23% by 2040
- TR-2: Implement public and shared transit programs to achieve 29% of public transit mode share by 2030 and maintain through 2040
- TR-3: Increase zero-emission vehicle (ZEV) adoption to 35% for passenger vehicles and 20% for commercial vehicles by 2030 and 100% for all vehicles by 2040
- TR-4: Refocus transportation infrastructure away from single-occupancy gasoline and diesel passenger vehicles to support the bicycle/pedestrian, public transit, and ZEV goals of Measures TR-1, TR-2, and TR-3
- TR-5: Electrify or otherwise decarbonize 34% of off-road equipment by 2030 and 35% by 2040

To achieve a greater than 15% mode shift to active transportation (Measure TR-1), the City plans to provide low stress and convenient infrastructure and prioritize mobility via active transportation. Infrastructure needs include bikeways, sidewalk improvements, and expansions of both kinds of infrastructure to all areas of the City. Once the infrastructure is available and stress/comfort is not an issue, comparison with other cities around the world suggest more people will choose active transportation.

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[77] Mode share in this context is used to refer to percentage of passenger trips that can be attributed to one transportation mode or another. For example, 5% active transit mode share means that 5% of all passenger trips are taken using active transit modes (walking, biking, scootering, etc.). Importantly, mode share does not refer to percentage of passenger VMT that can be attributed to a specific transportation mode, since not all trips are the same length. To convert from mode share to percent of VMT, some assumption about the length of trip in each type of mode must be applied.

[78] Embodied emissions are associated with energy used in the extraction, processing, and transportation of materials.

[79] Mark Mills. August 2021. The tough calculus of emissions and the future of EVs. Accessed at: https://techcrunch.com/2021/08/22/the-tough-calculus-of-emissions-and-the-future-of-evs/

[80] Richard Campbell and Margaret Wittgens. March 2004. The Business Case for Active Transportation. Accessed at: http://thirdwavecycling.com/pdfs/at_business_case.pdf

To achieve a greater than 29% mode shift to public transit (Measure TR-2), the City plans to improve public and shared transit programs and infrastructure. This measure prioritizes shared and public transit in the City, makes transit more convenient, and reduces the time it takes to reach a destination via transit – important determining factors for shared and public transit mode share.

While the City cannot require its residents or businesses to buy ZEVs, Measure TR-3 will ensure the infrastructure and incentives are present in the City to begin to remove present barriers to passenger and commercial ZEV adoption.

Measure TR-4 provides the supportive framework for the goals in Measures TR-1, TR-2, and TR-3 by creating behavior disincentives for owning a fossil fuel-powered passenger vehicle, such as limited parking options, local taxes to support transit, and Transportation Network Company (TNC) user taxes. Finally, Measure TR-5 establishes a goal of decarbonizing 34% of off-road equipment by 2030, supported by a new City ordinance, and expanded rebates and incentives.

Measure TR-1: Develop and implement an Active Transportation Plan to achieve 15% of active transportation mode share by 2030 and 23% by 2040

Action #	Action	Anticipated Reduction (MT CO_2e/person)
Pedestrian and Bicycle Network Planning		
1	As part of the City's active transportation planning, identify priority projects to connect neighborhoods with commercial areas via bike/ped paths, repainted roadways, and e-bike share.	Supportive
2	Collaborate with the County, VTA, and SVCE to connect Cupertino's bicycle network to cross-jurisdiction bicycle superhighways and other e-bike networks as feasible.	Supportive
3	Engage the Bicycle Pedestrian Commission, Safe Routes to School network, and community groups to identify additional short-term and long-term bikeway and pedestrian infrastructure improvement projects to implement.	Supportive
4	Ensure there is equitable access to safe bicycle and pedestrian infrastructure in all areas of the city. Prioritize new bicycle and pedestrian facilities (e.g., bike paths, bike parking, sidewalks) in areas with underdeveloped facilities and also in areas with low-income populations .	Supportive
Pedestrian and Bicycle Infrastructure		
5	Continue to implement the 2018 Pedestrian Plan and the 2016 Bicycle Transportation Plan's prioritized list of projects, with accelerated completion of all planned bike paths by 2030.	2030: 0.048 2040: 0.071
6	Re-stripe arterial, minor collector, and major collector roads (as mapped in the 2016 Bicycle Transportation Plan) without existing designated bike lanes to include bike lanes and reduce the width of existing car lanes/travel where determined by the bicycle and pedestrian plans.	
7	Conduct a pilot program, including a plan for pilot implementation, that designates the road space on select streets specifically for bikes and is closed to through-traffic motor vehicles. As part of the plan, consider location and extent of pilot program based on transportation data analysis, and develop success tracking metrics to inform potential pilot expansion.	
Bicycle Parking Infrastructure		
8	Evaluate and update the City's Zoning Code, Transportation Demand Management Ordinance, and California Green Building Code to ensure the City requires installation of accessible, shaded, and secure bicycle parking for new commercial development and retrofits.	Supportive
9	Improve the bike/e-bike parking network to reduce theft and increase rider attraction. This would include surveying existing bike parking facilities throughout the city and developing a plan to improve these with preference given to improving bike/e-bike parking facilities near public transit stops to improve and expand access to transit (i.e., first and last-mile access)	Supportive
Micro-mobility		

Action #	Action	Anticipated Reduction (MT CO_2e/person)
10	Design a micro-mobility program that explores expansion of the use of electric bikes and scooters and shared micro mobility options.	Supportive
11	Bring an e-bike share or e-scooter share to Cupertino with focus on placing hubs near neighborhood entry points and commercial areas. Adopt an ordinance to allow and manage the mobility share.	Supportive
12	Pilot a program to provide free or reduced-price access to e-bikes or other micro mobility options to low-income residents and students.	Supportive
Funding and Financing		
13	Establish a program for researching and obtaining grant funding for bike and pedestrian network expansion.	Supportive

Actions 1-4: Pedestrian and Bicycle Network Planning

Current bicycle and pedestrian mode share in Cupertino (as of 2015) is low – 0.7% and 1.2%, respectively.[81] Studies show that investments in active transportation infrastructure have demonstrated improvements in active transportation mode shifts and GHG emissions reductions.[82] Cupertino has adopted a Bicycle Transportation Plan (2016)[83] and a Pedestrian Plan (2018),[84] which identify programs and projects to improve pedestrian and bicycle infrastructure in Cupertino. Actions 1 through 4 commit the City to expanding on these efforts, including identification of additional projects to enhance active transportation infrastructure connectivity (Actions 1, 2, and 4), and connect the existing active transportation network to other jurisdictions (Action 2). Because active transportation initiatives require coordination across many different stakeholders and agencies, partnerships across public agencies, community groups, and advocacy groups are necessary for successful infrastructure improvements.[85] Actions 2 and 3 therefore identify important stakeholders in Cupertino for this work, including the County, Valley Transportation Authority (VTA), SVCE, Bicycle Pedestrian Commission, and other community groups. Action 4 additionally integrates equity considerations into project prioritization, based on the understanding

[81] City of Cupertino. June 2016. City of Cupertino 2016 Bicycle Transportation Plan. Accessed at: https://www.cupertino.org/home/showpublisheddocument/3479/636443578340030000

[82] Andrew Glazener and Haneen Khreis. January 2019. Transforming our Cities: Best Practices Towards Clean Air and Active Transportation. Accessed at: https://link.springer.com/article/10.1007/s40572-019-0228-1

[83] City of Cupertino. June 2016. City of Cupertino 2016 Bicycle Transportation Plan. Accessed at: https://www.cupertino.org/home/showpublisheddocument/3479/636443578340030000

[84] City of Cupertino. February 2018. City of Cupertino 2018 Pedestrian Transportation Plan. Accessed at: https://www.cupertino.org/home/showpublisheddocument/16864/636650034974470000

[85] Deborah R. Young et al. August 2020. Creating Built Environments That Expand Active Transportation and Active Living Across the United States: A Policy Statement From the American Heart Association. Accessed at: https://www.ahajournals.org/doi/full/10.1161/CIR.0000000000000878

that the distribution of pedestrian and bicycle infrastructure is often inequitable, and equity should be considered as part of the active transportation infrastructure planning process.[86]

Actions 5-7: Pedestrian and Bicycle Infrastructure

Walking, bikes, e-bikes, and other active transportation modes can have a strong impact on cities' GHG emissions, with the potential to cut urban transportation emissions up to 11% in cities that make a strong commitment to promoting bicycle travel.[87] Nationally, 16.4% of vehicle trips were one mile or less in 2017, a distance easily travelled by foot or bicycle.[88] Actions 5 through 7 commit the City to implementing key improvements to Cupertino's bicycle and pedestrian networks. The City's existing Pedestrian Transportation Plan and Bicycle Transportation Plan identify a number of programs and projects, such as 50 added miles of bike lane buildout, sidewalk buildouts, intersection improvements, Safe Routes to School program expansion, and education programs, that will make the active transportation network in Cupertino more connected, accessible, and safe. Action 5 directs the City to implement these plans on an accelerated timeline to achieve an active transportation network buildout of over 90 miles of connected multimodal bikeways and comprehensive active transportation options of safe routes for pedestrians and bicyclists. Action 6 directs the City to add more bikeway beyond what is proposed in the Bicycle Transportation Plan, by repainting roads to add bike lanes and limiting space on the roads for cars. Action 7 pilots designated streets for bicycles, which helps to prioritize bicycle and pedestrian movement in the City and increase the safety of active transportation in those areas.

In order to estimate the mode shift potential associated with Actions 5 through 7, other cities with similar buildouts (bike network mileage versus road network mileage) were compared. Results from significant investment in bicycle infrastructure in California suggest that bicycle mode share can be increased on par with leading bicycle cities in the state. The City of Davis leads the state with 23.2% bicycle mode share in 2019 followed by the City of Berkeley with 9.7% bicycle mode share in 2019 (see Table 9). GHG emissions quantification in 2030 for these actions conservatively estimates the average of the two (15%), while quantification in 2040 estimates a mode shift close to the maximum. A 15% bicycle mode share translates approximately to a 3% decrease in passenger VMT from. The methods and assumptions used to calculate the GHG emissions reductions associated with these actions are shown in Table 10.

[86] Richard J Lee. September 2016. Understanding the role of equity in active transportation planning in the United States. Accessed at: https://www.tandfonline.com/doi/abs/10.1080/01441647.2016.1239660

[87] Jacob Mason et al. Institute for Transportation & Development Policy and the University of California, Davis. November 2015. A Global High Shift Cycling Scenario. Accessed at: https://itdpdotorg.wpengine.com/wp-content/uploads/2015/11/A-Global-High-Shift-Cycling-Scenario_Nov-2015.pdf

[88] National Household Travel Survey. December 2021. Population Vehicle Trips Statistics. Accessed at: https://nhts.ornl.gov/vehicle-trips

Table 9 Bicycle Network Buildout versus Mode Share

City	Bike Network Length (miles)	Road Network Length (miles)	Bike Buildout Ratio	Bicycle Mode Share (%)
City of Davis in 2021	123[89]	169[90]	0.72	23.2%[91]
City of Berkeley in 2021	50.8[92]	221[93]	0.23	9.7%[94]
City of Cupertino in 2030	90[95]	160[96]	0.56	15%[97]

[89] City of Davis. September 2020. Form 1878 (League of American Bicyclists Bicycle Friendly America Application Form). Accessed at: https://bikeleague.org/content/about-bfc-application-process

[90] Ibid.

[91] Wikipedia. November 2021. List of U.S. Cities with Most Bicycle Commuters. Accessed at: https://en.wikipedia.org/wiki/List_of_U.S._cities_with_most_bicycle_commuters

[92] City of Berkeley. May 2017. City of Berkeley Bicycle Plan. Accessed at: https://www.cityofberkeley.info/uploadedFiles/Public_Works/Level_3_-_Transportation/Berkeley-Bicycle-Plan-2017-Executive%20Summary.pdf

[93] City of Berkeley. 2003. General Plan Transportation Element Introduction. Accessed at: https://www.cityofberkeley.info/Planning_and_Development/Home/General_Plan_-_Transportation_Element.aspx

[94] Wikipedia. November 2021. List of U.S. Cities with Most Bicycle Commuters. Accessed at: https://en.wikipedia.org/wiki/List_of_U.S._cities_with_most_bicycle_commuters

[95] City of Cupertino. June 2016. City of Cupertino 2016 Bicycle Transportation Plan. Accessed at: https://www.cupertino.org/home/showpublisheddocument/3479/636443578340030000

[96] Ibid.

[97] Conservatively estimated as the average of Berkeley and City of Davis mode share since the buildout ratio for Cupertino in 2030 will sit between Berkeley's and Davis'.

Table 10 GHG Emissions Reductions from Actions 5-7

Inputs and Assumptions		
Existing bicycle mode share (2015)[98]		1%
Average bike trip length (miles)[99]		1.5
GHG Emissions Reductions Calculations		
Year	**2030**	**2040**
Bicycle mode share target[100]	15%	23%
Passenger trips/mile[101]	0.1314	0.1325
Mode share increase from 2015	14%	22%
Passenger VMT[102]	402,635,644	429,178,926
Passenger trips	52,913,916	56,886,156
New bike trips substituted for vehicle trips (miles)	7,566,690	12,685,613
Passenger VMT reduced with bike trips (miles)	11,350,035	19,028,419
Percent of passenger VMT reduced with bike trips (%)	3%	4%
Passenger emissions factor (MT CO_2e/VMT)[103]	0.00027500	0.00025342
Total Reductions (MT CO_2e)	**3,121.24**	**4,822.27**
Per Capita Reductions (MT CO_2e/person)	**0.048**	**0.071**

Actions 8-9: Bicycle Parking Infrastructure

A bicycle network is not complete without secure and convenient bike parking at the end of a trip. Bicycle parking in Cupertino is available at many shopping centers, schools, and some parks. Most bicycle parking is short-term bicycle racks. Cupertino must continue to increase the amount of high-quality bicycle parking to improve its Bicycle Friendly Communities designation per the League of American Bicyclists. Improved bicycle parking would increase bicycling by making residents confident they'll have a safe place to leave their bike when they arrive at their destination.[104] Action 8 commits the City to strong bicycle parking installation requirements for commercial developments while Action 9 commits the City to improving its existing bike parking network, making substantial progress towards an improved bike parking network.

98 City of Cupertino. June 2016. City of Cupertino 2016 Bicycle Transportation Plan. Accessed at: https://www.cupertino.org/home/showpublisheddocument/3479/636443578340030000

99 California Air Resources Board (CARB). April 2019. Quantifying Reductions in Vehicle Miles Traveled from New Bike Paths, Lanes, and Cycle Tracks. Accessed at: http://ww2.arb.ca.gov/sites/default/files/auction-proceeds/bicycle_facilities_technical_041519.pdf

100 See Table 9.ou

101 Calculated from data for the County of Santa Clara from California Air Resources Board's (CARB) EMFAC2021 model, accessed at: https://arb.ca.gov/emfac/emissions-inventory/d7e33b22a7ef163d2dc9fd91182391d41cb025f9

102 Appendix A

103 Calculated from data for the County of Santa Clara from California Air Resources Board's (CARB) EMFAC2021 model, accessed at: https://arb.ca.gov/emfac/emissions-inventory/d7e33b22a7ef163d2dc9fd91182391d41cb025f9

104 City of Cupertino. June 2016. City of Cupertino 2016 Bicycle Transportation Plan. Accessed at: https://www.cupertino.org/home/showpublisheddocument/3479/636443578340030000

Actions 10-12: Micro-mobility

Actions 10 through 12 commit the City to planning, implementing, and providing funding for a micro-mobility program in Cupertino. There is good evidence to suggest that micro-mobility programs like e-bike share can reduce VMT and associated GHG emissions. A 2019 report from the City of Santa Monica found that 49% of shared rideable trips replaced vehicle trips based on answers to survey questions.[105] A 2014 study from Utrecht University suggests that the car substitution rate of shared rideables is dependent on what proportion of trips are already taken by car in a city. [106] In the study, Minneapolis and Melbourne had between 70% and 76% vehicle mode share in 2014 and showed high rates of car mode substitution (19% to 21%) after shared rideables were introduced. On the other hand, London and Washington DC had between 36% and 46% vehicle mode share in 2014 and showed much lower rates of car mode substitution where shared rideables were introduced (2% to 7%). Sacramento and Santa Monica both had high vehicle mode share (83% and 72% respectively) before shared rideables were introduced, suggesting that Cupertino would see a similar if not higher car substitution rate of shared rideables as Santa Monica and Sacramento. Both studies previously mentioned suggest that average trip duration of shared rideable trips is about 2 miles (this is seen consistently across the six diverse cities mentioned above) and appears to be largely independent of other city metrics.

An e-bike ride share program has the potential to be even more successful, as e-bike riders can go longer distances and are more accessible to non-riders. A study in Portland, Oregon found that a 15% e-bike mode share could result in a 12% reduction in transportation-related emissions.[107]

Action 13: Funding and Financing

Action 13 commits the City to devoting staff time to identifying funding opportunities for bike and pedestrian network expansion, in support of Actions 1 through 12. While much less expensive than roadways, bicycle and pedestrian infrastructure can be expensive for cities to build and maintain, and funding sources outside of city budgets are generally needed to fund active transportation infrastructure projects.

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[105] City of Santa Monica. November 2019. Shared Mobility Pilot Program Summary Report. Accessed at: https://www.smgov.net/uploadedFiles/Departments/PCD/Transportation/SantaMonicaSharedMobilityEvaluation_Final_110419.pdf

[106] Elliot Fishman et al. 2014. Bike share's impact on car use: Evidence from the United States, Great Britain, and Australia. Accessed at: http://mobility-workspace.eu/wp-content/uploads/Bike-shares-impact-on-car-use-3.pdf

[107] Michael McQueen. October 2020. The E-Bike Potential: Estimating regional e-bike impacts on greenhouse gas emissions. Accessed at: https://www.sciencedirect.com/science/article/pii/S1361920920306696

Measure TR-2: Implement public and shared transit programs to achieve 29% of public transit mode share by 2030 and maintain through 2040

Action #	Action	Anticipated Reduction (MT CO_2e/person)
Transit Planning		
1	Develop a plan for on-demand community shuttle (Via-Cupertino) expansion and designated streets for transit based on data collected by the City.	Supportive
Public Transit Improvements		
2	Include public transit in the designated streets pilot program in Measure TR-1 (Action 7).	2030: 0.269 2040: 0.256
3	Aggressively expand the on-demand community shuttle to meet shared transit goals and support vulnerable populations: secure funding to support transition to an all-electric fleet, maintain bike racks on all fleet vehicles, increase service and coverage, wheelchair accessibility, and offer free or deeply subsidized passes to students attending Cupertino schools and low-income individuals.	
4	Partner with VTA and neighboring cities to develop high-capacity transit service along the Stevens Creek Boulevard/I-280 corridor	Supportive
Funding and Financing		
5	Conduct a free public transit pilot program that provides free public transit on VTA and the Via-Cupertino Shuttle to students, foster youth, and unhoused youth in Cupertino.	Supportive
Transportation Demand Management		
6	Require medium to large-sized employers (25 employees or more) to develop a Transportation Demand Management (TDM) Plan. TDM plans should include subsidies for employees to bike, walk, or carpool, and provide free transit passes for all employees.	Supportive
7	Require new multi-family development projects to install a car share or provide e-bikes/e-scooters to each new tenant.	Supportive
Transportation Authority Coordination		
8	Establish a program for supporting regional transportation coordination for improving region-wide service, such as establishing prioritized service, obtaining grant funding for service expansion or headway reductions.	Supportive

Action 1: Transit Planning

Effective implementation of the key actions under Measure TR-2 – including designated streets for transit (Action 2) and expansion of the Via-Cupertino Shuttle (Action 3) – requires planning. Action 1 commits the City to conducting a study to support both actions, which will help the City determine the steps for implementation, associated costs and other potential barriers, and to identify the most strategic and impactful locations within Cupertino to implement the programs.

Actions 2-4: Public Transit Improvements

In general, increases and improvements to public transportation systems reduce a city's dependence on fossil fuels and reduce VMT. The best ways to improve a transit system and reduce driving is to expand its geographical reach and increase the frequency and reliability of transit service. Each new mile of transit usage replaces VMT on much more than a 1:1 basis. Approximately 1% increase in transit frequency saves 0.5% in VMT.[108] Further, improving transit access has the potential to shift trips from cars to transit, which may reduce vehicle trips, VMT, and greenhouse gas emissions, with time spent getting to a transit stop being the key indicator of transit access.[109]

Action 2 commits the City to piloting a designated streets program for buses (to be implemented in conjunction with Measure TR-1 Action 7 – designated streets for active transportation) which helps to prioritize bus movement in the City. This action addresses the need for increased frequency and reliability of transit service. Action 3 commits the City to expanding the existing Via-Cupertino Shuttle program, an on-demand community shuttle accessed via phone or app that goes everywhere in Cupertino and connects to some locations outside of Cupertino. This action addresses the need for expanded geographical reach of transit and addresses the first-last mile problem[110] in Cupertino. Action 3 commits the City to developing new high-capacity transit service in key regional travel corridors for improved, more frequent, and more reliable transit service.

In order to estimate the mode shift potential associated with Actions 2, 3, and 4, other cities with similar levels and types of public transit investment were compared. Success in other cities suggests that significant investment in public transit can increase public transit mode share on par with those cities. The City of San Francisco leads the state with 26% transit mode share in 2017 (pre-COVID).[111, 112] The City of Seattle has documented significant increases in public transit mode share to 48% in 2017 (pre-COVID).[113] Key strategies employed by these cities include significant expansions of transit service lines, designated streets or lanes for bus lines to decrease headways, implementation of taxes to support transit, reduced parking availability, and TNC user taxes. Cupertino will follow the lead of San Francisco and Seattle and implement all of these strategies in Actions 2, 3, 4, and Measure TR-4. Quantification estimates that given full implementation of the public transit improvement actions, the average of Seattle and San Francisco's public transit mode share (29%) is achievable for Cupertino in 2030, given the barriers to public transit that Cupertino currently faces. This would be equivalent to a 16% decrease in passenger VMT from public transit. The methods and assumptions used to calculate the GHG emissions reductions associated with these actions are shown in the table below.

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[108] Todd Litman. Victoria Transport Policy Institute. August 2021. Evaluating Public Transit Benefits and Costs Best Practices Guidebook. Accessed at: https://www.vtpi.org/tranben.pdf

[109] California Air Resources Board (CARB). August 2017. Methods to Assess Co-Benefits of California Climate Investments: Vehicle Miles Travelled. Accessed at: http://ww2.arb.ca.gov/sites/default/files/auction-proceeds/carb_vehicle_miles_traveled.pdf

[110] The first-last mile transit problem refers to the distance a commuter needs to travel, typically on-foot or by bicycle, between home and the nearest public transit stop, or vice versa. Often if the distance is greater than ¼ mile, the travel distance can function as a barrier to public transit use (see Footnote 109).

[111] San Francisco Municipal Transportation Agency (SFMTA). December 2021. Sustainable Transportation Mode Share. Accessed at: https://www.sfmta.com/reports/sustainable-transportation-mode-share

[112] Pre-COVID numbers are referenced here with the understanding that public transit usage during the COVID pandemic were lower than normal and are likely to increase again assuming a return to pre-COVID conditions.

[113] Commute Seattle. December 2021. 2019 Mode Split Study Report. Accessed at: https://www.commuteseattle.com/resource/2019-mode-split-study/

Table 11 GHG Emissions Reductions from Actions 2-4

Inputs and Assumptions		
Existing transit mode share (2014)[114]		2%
Average transit trip length (miles)[115]		4.5
GHG Emissions Reductions Calculations		
Year	**2030**	**2040**
Transit mode share target[116]	29%	29%
Passenger trips/mile[117]	0.1314	0.1325
Mode share increase from 2014	27%	27%
Passenger VMT (miles)[118]	402,635,644	429,178,926
Passenger trips	52,913,916	56,886,156
New transit trips substituted for vehicle trips	14,286,757	15,359,262
VMT reduced with public transit (miles)	64,290,408	69,116,679
Percent of forecasted passenger VMT reduced with public transit (%)	16%	16%
Passenger emissions factor (MT CO_2e/VMT)[119]	0.00027500	0.00025342
Total Reductions (MT CO_2e)	**17,679.75**	**17,515.86**
Per Capita Reductions (MT CO_2e/person)	**0.269**	**0.256**

While the City believes the aggressive public transit actions in this CAP will push Cupertino towards a 29% public transit mode share and an associated 16% decrease in VMT, the City also recognizes that increasing public transit mode share on this order of magnitude in California has only been accomplished successfully by the City of San Francisco, and in all other California cities VMT has stagnated or increased. Given this, the City recognizes that the 29% transit mode share/16% VMT reduction is a stretch goal and may be difficult to achieve despite the actions in this CAP being some of the most aggressive public transit programs in the state. At a bare minimum (lower bound public transit scenario), the City expects to be able to achieve a 5% public transit mode share by 2030, which corresponds to a 2% decrease in VMT. Under this lower bound scenario, Cupertino would not meet its aggressive target to decrease per capita GHG emissions 50% below 2010 levels, but would

[114] City of Cupertino. June 2016. City of Cupertino 2016 Bicycle Transportation Plan. Accessed at: https://www.cupertino.org/home/showpublisheddocument/3479/636443578340030000

[115] See Table 1; average of trip lengths for bus and light rail used.
American Public Transportation Association. December 2018. 2018 Public Transportation Fact Book. Accessed at: https://www.apta.com/wp-content/uploads/Resources/resources/statistics/Documents/FactBook/2018-APTA-Fact-Book.pdf

[116] Commute Seattle. December 2021. 2019 Mode Split Study Report. Accessed at: https://www.commuteseattle.com/resource/2019-mode-split-study/

San Francisco Municipal Transportation Agency (SFMTA). December 2021. Sustainable Transportation Mode Share. Accessed at: https://www.sfmta.com/reports/sustainable-transportation-mode-share

[117] Calculated from data for the County of Santa Clara from California Air Resources Board's (CARB) EMFAC2021 model, accessed at: https://arb.ca.gov/emfac/emissions-inventory/d7e33b22a7ef163d2dc9fd91182391d41cb025f9

[118] Forecasted VMT from adjusted forecast (Appendix A) minus VMT reduced from Measure TR-1.

[119] Calculated from data for the County of Santa Clara from California Air Resources Board's (CARB) EMFAC2021 model, accessed at: https://arb.ca.gov/emfac/emissions-inventory/d7e33b22a7ef163d2dc9fd91182391d41cb025f9

still exceed the state level target to decrease emissions 40% below 1990 levels by 2030 (SB 32). This scenario is detailed in Table 12. Therefore, at a minimum, Cupertino expects to exceed the state level target for 2030 set by SB 32 regardless of the performance of Measure TR-2.

Table 12 Lower Bound Public Transit GHG Emissions Reductions Scenario for Cupertino

2030 Scenario	GHG Emissions (MT CO_2e/person)
BAU GHG emissions	5.77
Adjusted GHG emissions	5.04
City target (50% below 2010 levels by 2030)	3.39
SB 32 target (40% below 1990 levels by 2030)	3.68
GHG emissions reductions from TR-2 under lower bound public transit scenario (5% public transit mode share by 2030)[120]	0.030
GHG emissions reductions from all measures except TR-2 under lower bound public transit scenario[121]	1.447
GHG emissions after CAP implementation under lower bound public transit scenario	3.57
Lower bound public transit scenario meets or exceeds City target?	No
Lower bound public transit scenario meets or exceeds SB 32 target?	Exceeds

Action 5: Funding and Financing

Cupertino understands that reducing VMT through improved public transit will require a large behavior shift regarding transportation in Cupertino, and California as a whole. Current transit mode share in Cupertino is only 2% (see table and sources above). In an effort to incentivize this behavior shift, Action 4 commits the City to piloting a free public transit program with VTA and Via-Cupertino Shuttle, which provides free public transit to Cupertino's students, foster youth, and unhoused youth. This action was based on the successful implementation of a similar program in nearby Sacramento, California.[122] The City of Sacramento has seen demonstrated success with their program, including increased public transit ridership, better school access for children, and improved afterschool transportation.[123]

[120] Calculated the same as in Table 11, but substituting the 29% mode share target in 2030 for 5%.

[121] Under the lower bound public transit scenario, all other measure reductions are the same as under the 29% public transit mode share scenario except TR-3 Actions 1-2. Under the lower bound public transit scenario, the calculations in Table 13 change in the following way: "Passenger VMT after mode shift to active and shared transit" adjusts to 384,142,231 miles and "Per capita reductions" adjusts to 0.398 MT CO_2e reduced per person.

[122] City of Sacramento. July 2021. Student Fare-Free Transit Pass Program. Accessed at: https://www.sacrt.com/apps/free-sacramento-student-fares/

[123] Alex Karner. University of Texas at Austin. January 2021. RydeFreeRT Evaluation Study: User Demographics, Attitudes, and Impacts on Travel Behavior. Accessed at: https://www.sacrt.com/rydefreert/docs/RydeFreeRT_Evaluation_(FINAL).pdf

Actions 6-7: Transportation Demand Management

Actions 5 and 6 commit the City to implementing strong transportation demand management (TDM) requirements for existing employers and new developments in Cupertino. TDM is defined as a set of strategies aimed at maximizing traveler choices, especially for commuters, and reducing VMT and congestion by encouraging shifts away from single-occupancy vehicles. Effective employer TDM strategies include subsidizing or paying workers for vanpooling, taking public transit, and other more sustainable transit options, as well as requiring new development to provide alternative transit options to driving.[124] Seattle Children's Hospital has reduced its employee drive-alone cohort 35% between 1990 and 2017 by paying employees $4 every day they do not drive to work.[125] Action 5 requires employers with over 25 employees to implement similar strategies as part of their operations. Action 6 puts the onus on developers to build out transit options as part of a new multi-family development project. This helps ensure that as Cupertino's multi-family units are developed, residents of those units will have immediate access to non-single occupancy vehicle transportation options.

Action 8: Transportation Authority Coordination

The City recognizes that its jurisdiction is limited to the boundaries of Cupertino; however, an attractive public transportation network is regional in nature and crosses city and county boundaries. VTA is the special district responsible for public transportation services, congestion management, specific highway improvement projects, and countywide transportation planning for Santa Clara County, including Cupertino. Improving public transportation within Cupertino and throughout the region necessitates collaborating and supporting VTA's programs. Action 7 therefore commits the City to dedicating staff time or creating a staff position with VTA engagement, support, and collaboration as its focus. This will be key to aligning Cupertino's micro mobility programs (e.g., the designated streets program in Action 2, Via-Cupertino Shuttle expansion in Action 3, and the TDM requirements in Actions 5 and 6) with VTA programs to maximize the impact of those programs.

[124] Adam Russell. Mobility Lab. February 2017. Five ways employers are thinking big on commuter benefits. Accessed at: https://mobilitylab.org/2017/02/21/five-ways-employers-are-thinking-big-on-commuter-benefits/

[125] Ibid.

Measure TR-3: Increase zero-emission vehicle (ZEV) adoption[126] to 35% for passenger vehicles and 20% for commercial vehicles by 2030 and 100% for all vehicles by 2040

Action #	Action	Anticipated Reduction (MT CO_2e/person)
Public Electric Vehicle Chargers		
1	Conduct a survey of existing publicly accessible electric vehicle chargers, their locations, and their kW hour charging speed, and identify a prioritized list of locations for new electric vehicle charging stations with particular consideration for equitable distribution of chargers to residents of multi-family homes, low-income and fixed income people, communities of color, elders, and disabled individuals with access needs .	2030:0.339 2040:1.1263
2	Leverage public and private partnerships to add 719 new publicly accessible Level 2 and 3 electric vehicle charging stations to the City by 2030.	
Private Electric Vehicle Chargers		
3	Review electric vehicle infrastructure reach code for new development and consider re-adoption of the reach code or strengthening electric vehicle installation requirements at next code cycle.	Supportive
4	Create a local reach code ordinance for installation of electric vehicle charging infrastructure at existing multi-family and commercial sites. Work with SVCE on model code development and coordinate efforts with other SVCE cities.	Supportive
5	Continue to maintain and advertise a streamlined electric vehicle infrastructure permitting process in accordance with SB 1236 and SB 970.	Supportive
Private/Commercial Vehicle Fleets		
6	Investigate commercial vehicle fleets in Cupertino and identify businesses/employers to target for accelerating zero emission vehicle (ZEV) adoption.	2030: 0.118 2040: 0.697
7	Work and collaborate with local businesses/employers to develop and implement a plan for City-supported accelerated fleet electrification. As part of the plan, identify opportunities for accelerated fleet electrification and promote zero-emission vehicle (ZEV) adoption within major private and employee fleets in the city.	
ZEV Car Share		
8	Support zero-emission vehicle (ZEV) car share companies in coming to Cupertino; collaborate with neighboring jurisdictions and the County to do the same to create a larger connected network of ZEV car share.	Supportive

[126] For the purposes of this document and the Cupertino CAP Update, ZEV adoption refers to percent of vehicles registered in Cupertino that are ZEV.

Action #	Action	Anticipated Reduction (MT CO_2e/person)
9	Establish affordable, zero-emission vehicle (ZEV) car share to serve affordable housing and/or multifamily developments with a priority to target renters, residents in multi-unit housing, low-income and fixed income people, communities of color, elders, and disabled individuals with access needs.	Supportive
Community and Stakeholder Engagement		
10	Review zero-emission vehicle (ZEV) adoption rates based on demographics of Cupertino to identify ways to improve ZEV adoption among renters, low-income and fixed income people, communities of color, elders, disabled individuals with access needs. Based on the results, conduct targeted outreach to groups to identify barriers and concerns of potential ZEV drivers. Work with community-based organizations to target outreach and program planning to reduce barriers for ZEV adoption among groups with low participation rates.	Supportive
11	Coordinate with community-based organizations, agencies, and non-profits to conduct zero-emission vehicle (ZEV) education events for renters, low-income and fixed income people, communities of color, elders, and disabled individuals with access needs that would include information on costs/benefits of owning ZEVs, steps on how to receive incentives for ZEVs, and other benefits.	Supportive
Funding and Financing		
12	Work with SVCE and PG&E to incentivize electric vehicle charger installations through on-bill financing.	Supportive
13	Identify and implement incentives for commercial fleet electrification. This could include local tax breaks.	Supportive

Actions 1-2: Public Electric Vehicle Chargers

Adding and supporting the addition of electric vehicle chargers within Cupertino will be the main mechanism through which the City will encourage zero-emission vehicle (ZEV) adoption within the community. The state has established a goal of putting 5 million ZEVs on the road by 2030. However, the recent passing of executive order N-79-20 calls for 100% of passenger vehicle sales to be all-electric by 2035. This new executive order puts the total number of ZEVs on the road by 2035 at approximately 15 million.[127] Based on the current number of vehicles registered in California and a 2% growth rate per year, 15 million ZEV's accounts for 35% of total passenger vehicles in 2035. The City has established its own goal in line with this and aims to reach 35% ZEV adoption by 2030, 5 years ahead of the state, and 100% by 2040. As of 2020, 8% of passenger vehicles in Cupertino were ZEVs.[128]

While the City cannot require residents to buy and use ZEVs rather than gasoline or diesel-powered vehicles, the City will take actions to incentivize this behavior change and support this level of ZEV

[127] Susan Carpenter. Spectrum News 1. October 2020. What it will take to get 100% EV sales in California. Accessed at: https://spectrumnews1.com/ca/la-west/transportation/2020/10/05/what-it-will-take-to-sell-100--evs-in-california

[128] California Department of Motor Vehicles (DMV). January 2020. Fuel Type by County as of 11/2020. Accessed at: https://www.dmv.ca.gov/portal/uploads/2020/09/MotorVehicleFuelTypes_City_01012020.pdf

adoption. The City's primary target to achieve this measure is to provide one public electric vehicle charger for every 20 electric vehicles (addressed by Actions 1 and 2 discussed in more detail here), as well as ensure as many privately owned chargers are installed in existing buildings and new development as practicable, in line with the leading ZEV cities in California, such as San Francisco, Los Angeles, and San Jose. Increasing private electric vehicle chargers is addressed in Actions 3 and 4, discussed in the section below.

Action 1 commits the City to surveying the existing network of publicly accessible electric vehicle chargers to determine priority locations for installation of new chargers. Cupertino currently (as of December 2021) hosts 173 publicly accessible electric vehicle chargers, putting the City's ZEV-to-public charger ratio just above 20.[129] Action 2 commits the City to installing at least 719 new publicly accessible Level 2 and 3 chargers by 2030. 719 new chargers were calculated to be the minimum number of new publicly accessible chargers that would be needed to support the City's 2030 goal to achieve 35% passenger ZEV adoption, based on Cupertino's current ratio of 20 ZEVs to publicly accessible chargers. This ratio is also in line with leading electric vehicle cities in the state, including Sacramento and San Francisco. The methods and assumptions used to calculate the number of chargers needed by 2030 and 2040, as well as the GHG emissions reductions associated with these actions are shown in the table below.

[129] PlugShare. December 2021. Best EV Charging Stations in Cupertino. Accessed at: https://www.plugshare.com/directory/us/california/cupertino#:~:text=There%20are%20180%20Charging%20Stations%20in%20Cupertino.

Table 13 GHG Emissions Reductions from Actions 1-2

Inputs and Assumptions		
Total registered vehicles in Cupertino (2020)[130]		47,212
Registered EVs in Cupertino (2020)[131]		3,786
EV chargers in Cupertino (2021)[132]		173
2020 population[133]		60,381
Cars per capita		0.78
Cars needed per public EV charger		20
GHG Emissions Reductions Calculations		
Year	**2030**	**2040**
Passenger ZEV adoption goal	35%	100%
Business-as-usual passenger ZEV adoption (%)[134]	10.14%	11.28%
ZEV adoption beyond business-as-usual	24.9%	100%
Passenger VMT after mode shift to active and shared transit (miles)[135]	326,995,201	341,033,827
Passenger VMT emissions factor (MT CO_2e/VMT)[136]	0.00027500	0.00025342
Emission Reduction from increased ZEV (MT CO_2e)	22,356	86,426
ZEV electricity usage (kWh/mile)[137]	0.371025797	0.369790302
ZEV electricity usage from increased ZEV adoption (kWh)	30,162,252	126,111,002
Electricity emissions factor after Measure BE-1 (MT CO_2e/kWh)[138]	0.000003	0.0000010
Emissions from electricity usage for added ZEVs (MT CO_2e)	86	115
Total Reductions (MT CO_2e)	**22,266**	**86,301**
Per Capita Reductions (MT CO_2e/person)	**0.339**	**1.263**
Electric Vehicle Charger Count Calculations		
Population[139]	65,690	68,305
Total registered vehicles	51,363	53,408
Registered ZEVs goal	17,977	53,408
Additional public EV chargers needed to support ZEV goal	**719**	**2,490**

Actions 3-5: Private Electric Vehicle Chargers

Actions 3 through 5 commit the City to maintaining an electric vehicle reach code for new development and existing buildings, as well as a streamlined permitting process for electric vehicle

[130] California Department of Motor Vehicles (DMV). January 2020. Fuel Type by County as of 11/2020. Accessed at: https://www.dmv.ca.gov/portal/uploads/2020/09/MotorVehicleFuelTypes_City_01012020.pdf

[131] Ibid.

[132] PlugShare. December 2021. Best EV Charging Stations in Cupertino. Accessed at: https://www.plugshare.com/directory/us/california/cupertino#:~:text=There%20are%20180%20Charging%20Stations%20in%20Cupertino.

[133] United States Census Bureau. December 2021. QuickFacts: Cupertino City, California. Accessed at: https://www.census.gov/quickfacts/fact/table/cupertinocitycalifornia/PST045219

[134] Calculated from data for the County of Santa Clara from California Air Resources Board's (CARB) EMFAC2021 model, accessed at: https://arb.ca.gov/emfac/emissions-inventory/d7e33b22a7ef163d2dc9fd91182391d41cb025f9

[135] Forecasted VMT from adjusted forecast (Appendix A) minus VMT reduced from Measures TR-1 and TR-2.

charger installation. Electric vehicle-ready reach codes (as in Action 3) are one of the most effective and low-cost strategies for states and local governments to encourage consumers to buy or lease electric vehicles and can save consumers thousands of dollars in installation costs.[140] However, new development only accounts for a small fraction of buildings in Cupertino, and the City recognizes the need for electric vehicle charging infrastructure in existing buildings as well, especially in homes and apartment buildings. To encourage this, Action 4 commits the City to implementing a requirement for electric vehicle installation in existing buildings to support this need. Finally, Action 5 commits the City to maintaining a streamlined permitting process, a key strategy for cities in supporting ZEV adoption. SB 1236 and SB 970 require cities to adopt permit streamlining procedures for electric vehicle charging stations. Cupertino has adopted most but not all of the permit streamlining procedures under these State laws. Action 5 commits the City to adopting all procedures under these bills.

Actions 6-7: Private/Commercial Vehicle Fleets

Commercial electric vehicle adoption is projected to occur at a slower rate than passenger vehicle adoption, with the greatest electrification success projected in light-duty commercial vehicles.[141] To accelerate commercial electric vehicle adoption in Cupertino and achieve 20% ZEV adoption in 2030 and 100% in 2040, the City plans to actively identify and engage businesses/employers with vehicle fleets to accelerate ZEV adoption. Action 6 commits the City to investigating existing commercial vehicle fleets to help identify businesses/employers to engage, while Action 7 commits the City to working with identified businesses/employers to enact a plan for accelerated ZEV adoption. These actions directly contribute to the City's goal of 20% commercial ZEV adoption by 2030 and 100% by 2040. The expanded charger network the City has committed to with Actions 1 and 2 will also help the City achieve this goal. The methods and assumptions used to calculate the GHG emissions reductions associated with these actions are shown in the table below.

[136] Calculated from data for the County of Santa Clara from California Air Resources Board's (CARB) EMFAC2021 model, accessed at: https://arb.ca.gov/emfac/emissions-inventory/d7e33b22a7ef163d2dc9fd91182391d41cb025f9

[137] Ibid.

[138] See calculations for Measure BE-1.

[139] Appendix A

[140] Southeast Energy Efficiency Project (SWEEP). December 2018. Cracking the Code on EV-Rady Building Codes. Accessed at: https://www.swenergy.org/cracking-the-code-on-ev-ready-building-codes

[141] Erica Schueller. FleetOwner. July 2021. What it will take to accelerate electric truck adoption. Accessed at: https://www.fleetowner.com/drivers-seat/article/21167635/what-it-will-take-to-accelerate-electric-truck-adoption

Table 14 GHG Emissions Reductions from Actions 6-7

GHG Emissions Reductions Calculations		
Year	**2030**	**2040**
Commercial ZEV adoption goal	20%	100%
Business-as-usual commercial ZEV adoption (%)	7.73%	30.06%
ZEV adoption beyond business-as-usual	12.3%	100.0%
Commercial VMT (miles)	59,858,476	61,457,285
Commercial VMT emissions factor (MT CO_2e/VMT)	0.00107089	0.00077902
Emission Reduction from increased ZEV adoption (MT CO_2e)	7,864	47,877
ZEV electricity usage (kWh/mile)	1.019	1.000
ZEV electricity usage from increased ZEV adoption (kWh)	7,483,845	61,434,422
Electricity emissions factor after Measure BE-1 (MT CO_2e/kWh)	0.0000140	0.0000047
Emissions from electricity usage for ZEVs	105	287
Total Reductions (MT CO_2e)	**7,759**	**47,589**
Per Capita Reductions (MT CO_2e/person)	**0.118**	**0.697**

Actions 8-9: ZEV Car Share

Research from the Transportation Sustainability Research Center at the University of California – Berkeley shows that car share programs lower vehicle ownership and overall VMT.[142] While a majority of car share members use the program to add or replace vehicle trips (leading generally to small VMT increases), a minority of members (2-5%) use car share as a replacement for vehicle ownership (leading generally to larger VMT reductions). The net effect is an overall decrease in vehicle ownership, VMT, and GHG emissions. Approximately one car share vehicle replaces seven to eleven cars and VMT is reduced, on average, between 6% to 16% per car share household assuming one-way usage.

Action 8 commits the city to supporting ZEV car share companies in coming to Cupertino with the aim of creating a regional connected network of ZEV car share. Action 9 commits the City to pursuing ZEV car share that specifically serves affordable housing/multifamily developments as a way to bridge the equity gap between low-income residents and renters and ZEV ownership.

Actions 10-11: Community and Stakeholder Engagement

Community and stakeholder engagement around ZEV adoption will be critical in helping the City understand existing barriers to ZEV adoption, and in helping the community share in the benefits of ZEV adoption. Actions 10 and 11 commit the City to identifying ZEV ownership statistics in Cupertino and barriers to ZEV ownership within the community, working with local community-based organizations to engage populations where ZEV ownership is low (such as among renters or low-

[142] Elliot Martin and Susan Shaheen. Transportation Sustainability Research Center at University of California, Berkeley. July 2016. Impacts of Car2Go on Vehicle Ownership, Modal Shift, Vehicle Miles Travelled, and Greenhouse Gas Emissions: An Analysis of Five North American Cities. Accessed at: http://innovativemobility.org/wp-content/uploads/2016/07/Impactsofcar2go_FiveCities_2016.pdf

income residents), and conducting education and outreach around the benefits of ZEV ownership and available incentives that can make ZEV ownership more affordable in the short-term.

Actions 12-13: Funding and Financing

Actions 12 and 13 commit the City to providing monetary incentives, in the form of on-bill financing for residents and local tax breaks for businesses, for installing electric vehicle chargers or adopting ZEVs. These actions help accelerate Cupertino's ZEV adoption rates beyond what is anticipated at the state level.

Measure TR-4: Refocus transportation infrastructure away from single-occupancy gasoline and diesel passenger vehicles to support the bicycle/pedestrian, public transit, and ZEV goals of Measures TR-1, TR-2, and TR-3

Action #	Action	Anticipated Reduction (MT CO_2e/person)
Feasibility Planning		
1	Conduct public outreach and analysis of the potential community impacts and benefits of implementing disincentive-based policies for driving gasoline and diesel single passenger vehicles. Explore options such as limiting parking options, increased local taxes (income tax, gasoline tax, or car registration tax), and transportation network company (TNC) user taxes.	Supportive
2	In addition to general public outreach, conduct targeted outreach to students, low-income and fixed income people, historically underserved communities, elders, and disabled individuals with access needs during analysis of the disincentive-based transportation policies to understand the community's potential concerns.	Supportive
3	Define equity metrics for implementation of disincentives based on feedback from local students, low-income and fixed income people, communities of color, elders, and disabled individuals with access needs and structure the disincentive programs to meet these metrics.	Supportive
Parking Restrictions		
4	Develop a plan and timeline for allowing developers to build housing without off-street parking if it is close to frequent transit service, to be implemented at a time when frequent transit options are more available in Cupertino.	Supportive
5	As part of future updates to the General Plan, conduct a traffic pattern study to identify commercial areas of the city to severely limit or eliminate parking for single-passenger gasoline and diesel vehicles.	Supportive
6	Conduct a study of citywide parking minimums and based on available transportation options, travel demand, and land use, consider parking maximums and potentially charging for public parking spaces.	Supportive
Local Taxes		
7	Identify options for funding active and public transit programs through a local tax starting in 2023 (e.g., income tax, local gasoline tax, or gasoline/car registration tax). Ensure any tax or fee is designed to have low to no impact on low-income residents (e.g., includes a rebate for CARE/FERA customers, or has progressive fee levels based on income bracket/value of the car).	Supportive
8	Implement a user tax on Transportation Network Companies (TNC), taxi companies, and other private transportation services, which would put a small fee on the use of these services to generate funds to pay for transit and mobility infrastructure. Exceptions to a user tax may be made for private transportation services that demonstrably reduce VMT.	Supportive

Action #	Action	Anticipated Reduction (MT CO_2e/person)
Tracking		
9	Track the results of the CAP's driving disincentive programs - parking limitations, increased local taxes (income tax, gasoline tax, or car registration tax), and TNC user taxes - and share these results with neighboring jurisdictions and the County to collaborate on extending these programs within the County.	Supportive

Actions 1-3: Feasibility Planning

While incentive-based policies and infrastructure improvements, such as those identified in Measures TR-1, TR-2, and TR-3 can be effective in changing community choices around transportation, the impacts of incentive-based policies increase when coupled with disincentives for less favorable choices, such as making it less convenient to drive a gasoline-fueled single passenger vehicle.[143] However, disincentive-based policies can be unpopular and place a burden on the community if not implemented carefully. Actions 1 and 2 commit the City to conducting feasibility planning for implementing disincentives for driving gasoline-fueled single passenger vehicles, including analyzing and engaging the community on potential impacts and benefits of limiting parking options, increasing local taxes, and implementing transportation network company (TNC) user taxes. Action 3 commits the City to developing equity metrics for the implementation of disincentives to ensure potential impacts to equity groups are mitigated.

Actions 4-6: Parking Restrictions

Reduced parking supply, when combined with other VMT reduction measures such as efficient public transit, land use policies, and urban parking pricing can reduce VMT.[144] Reduced parking supply makes driving single-passenger vehicles less attractive and can shift traveler choice to other options. Parking supply can be reduced by decreasing parking requirements for new development (e.g., Action 4), eliminating parking spots along curbs (e.g., Action 5), and implementing parking maximums (e.g., Action 6). Actions 4 through 6 commit the City to exploring options for implementing these types of parking restrictions in Cupertino.

Actions 7-8: Local Taxes

Institution of local taxes has had demonstrated success in the City of Seattle, which observed an 89% increase in light rail ridership and a decrease in traffic and VMT since 2006 despite a substantial population increase.[145] Transit infrastructure improvements in the City are paid for by a local sales

[143] Gabriel Ayobami Ogunkunbi et al. August 2021. Evidence-Based Market Overview of Incentives and Disincentives in Electric Mobility as a Key to the Sustainable Future. Accessed at: https://www.mdpi.com/2673-7590/1/2/17/pdf

[144] Lee Provost. Caltrans Division of Research, Innovation and System Information. March 2018. Pricing and Parking Management to Reduce Vehicle Miles Travelled (VMT). Accessed at: https://dot.ca.gov/-/media/dot-media/programs/research-innovation-system-information/documents/preliminary-investigations/final-pricing-parking-management-to-reduce-vehicles-miles-traveled-pi-a11y.pdf

[145] Erick Trickey. May 2019. Has Seattle Found the Solution to Driving Alone to Work? Accessed at: https://www.politico.com/magazine/story/2019/05/23/seattle-car-free-transportation-what-works-226935/

tax, property tax, and car registration tax. Action 7 commits the City to exploring options to implement a similar program.

Action 8 commits the City to implementing a TNC user tax within Cupertino. The City of San Francisco was given a special variance by the state of California to implement a Traffic Congestion Mitigation tax on private transit service vehicles. The revenues of this tax go to offsetting the emissions from these services through the funding of transit and VMT reducing projects.[146] The City will pursue a similar tax in order to help offset the impacts of TNC's in Cupertino.

Action 9: Tracking

Tracking the results of Measure TR-4 is key to successful and equitable implementation of Actions 1 through 8. Sharing results with neighboring jurisdictions may encourage adoption of similar programs in neighboring jurisdictions and improve the success of these programs.

[146] City and County of San Francisco Treasurer and Tax Collector. December 2021. Traffic Congestion Mitigation Tax. Accessed at: https://sftreasurer.org/business/taxes-fees/traffic-congestion-mitigation-tax-tcm#:~:text=The%20City%20imposes%20a%20Traffic,or%20private%20transit%20services%20vehicle.

Measure TR-5: Electrify or otherwise decarbonize 34% of off-road equipment by 2030 and 35% by 2040

Action #	Action	Anticipated Reduction (MT CO_2e/person)
1	Investigate commercial off-road equipment fleets in Cupertino and identify fleets with highest decarbonization potential.	Supportive
2	Partner with BAAQMD to expand rebate and incentive programs for upgrading off-road equipment and switching to biofuels or electric equipment.	Supportive
3	Partner with SVCE and the County of Santa Clara to incentivize electrification of landscaping equipment and other off-road equipment types such as construction machinery.	Supportive
4	By 2025, develop an ordinance to ban local operation of gasoline and diesel-powered off-road equipment by 2030 to improve public health, reduce noise, and reduce local GHG emissions. This ordinance can build upon the noise ordinance which regulates landscaping equipment. Include allowance for biofuels (i.e., renewable diesel) for equipment for which zero emission alternatives are not available in the ordinance.	2030: 0.098 2040: 0.102

Action 1: Investigating

Off-road equipment in Cupertino accounts for 4% of the City's GHG emissions. While only a small part of GHG emissions in Cupertino, getting to carbon neutrality will involve decarbonizing the majority of off-road equipment, which currently runs on gasoline, diesel, and natural gas. To support a gasoline and diesel phase-out ordinance for off-road equipment, Action 1 commits the City to investigating commercial off-road fleets in Cupertino, to better understand what types of commercial off-road equipment exist in Cupertino, how old it is, and how much potential there is for electrification or decarbonization.

Action 2: Biofuel Incentives

The Bay Area Air Quality Management District (BAAQMD) provides various funding opportunities for off-road equipment upgrades and fuel switching projects.[147] Many off-road vehicle types have lower carbon or decarbonized options for upgrading, or can use renewable diesel or biodiesel, but these options are more expensive. Partnering with BAAQMD to expand rebate and incentive programs will make lower-carbon options for off-road equipment more cost-effective and attractive for equipment owners.

Action 3: Electrical Landscaping Equipment Program

SVCE and the County are important partners for landscaping equipment electrification work. As the principal electricity provider in the region, SVCE can help identify opportunities for electrification. Working with the County will help address the issue on a regional scale. This action will contribute to increasing incentives for landscape equipment users in Cupertino to electrify.

[147] Bay Area Air Quality Management District (BAAQMD). December 2021. Off-Road Vehicles. Accessed at: https://www.baaqmd.gov/funding-and-incentives/businesses-and-fleets/off-road-vehicles

Action 4: Phase-out Ordinance

Action 4 commits the City to introducing a ban on the operation of gasoline and diesel-powered off-road equipment by 2030 . Cupertino expects that this action may be supported by future CARB regulations for off-road equipment that may ban their sale in the region by 2030.[148] While some off-road equipment does not have market-ready zero-emissions alternatives, lawn and garden equipment, light-duty off-road equipment, and portable off-road equipment can generally be electrified or use biodiesel today. It was therefore conservatively assumed that implementation of Action 4 would eliminate the gasoline and diesel usage for this equipment in 2030, with potential for greater emissions reduction in the future, as more low- and no-emissions alternative equipment becomes available. The methods and assumptions used to calculate the GHG emissions reductions associated with Action 4 are shown in the table below.

Table 15 GHG Emissions Reductions from Action 4

Inputs and Assumptions	
Ordinance implementation year	2030
Diesel emissions factor (MT CO_2e/gallon)[149]	0.01048
Gasoline emissions factor (MT CO_2e/gallon)[150]	0.00929
Convert gallons of diesel to kWh[151]	22.91
Convert gallons of gasoline to kWh[152]	20
GHG Emissions Reductions Calculations	
Year	**2030**	**2040**
Lawn/light duty/portable diesel fuel usage projected (gallons)[153]	361,524	408,740
Lawn/light duty/portable gasoline fuel usage projected (gallons)[154]	290,874	290,910
Lawn/light duty/portable diesel fuel usage after measure (gallons)	0	0
Lawn/light duty/portable gasoline fuel usage after measure (gallons)	0	0
Emissions reduced from electric replacement equipment (MT CO_2e)	6,492	6,988
Added electricity from electric replacement equipment (kWH)	14,099,991	15,182,433
Electricity EF (MT CO2e/kWh)	0.00000298	0.00000099
Added emissions from added electricity usage (MT CO2e)	42	15
Total Reductions (MT CO_2e)	**6,450**	**6,972**
Per Capita Reductions (MT CO_2e/person)	**0.098**	**0.102**

[148] See: https://ww2.arb.ca.gov/rulemaking/2021/sore2021

[149] Calculated from Tables 2 and 5 of the Environmental Protection Agency's (EPA) Emission Factors for Greenhouse Gas Inventories (March 2020). Accessed at: https://www.epa.gov/sites/default/files/2020-04/documents/ghg-emission-factors-hub.pdf

[150] Ibid.

[151] EPA Equivalencies Calculator, accessed at: https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator

[152] Ibid.

[153] Calculated from data for the County of Santa Clara from California Air Resources Board's (CARB) Offroad Emissions model, accessed at: https://arb.ca.gov/emfac/emissions-inventory/d7e33b22a7ef163d2dc9fd91182391d41cb025f9

[154] Ibid.

4 Waste Measures

The City of Cupertino's waste measures focus on reducing solid waste generation and increasing diversion from the landfill. Particular emphasis is placed on reduction of organic waste sent to landfills, as landfilled organic waste is the major source of waste-related greenhouse gas emissions. The measures in this section also support the City's overall goal of working toward zero waste of resources, though actions that address inorganic waste have minimal impact toward meeting the city's communitywide greenhouse gas emissions reduction goals.

The CAP Update's waste measures consist of the following:

- W-1a: Implement SB 1383 requirements and reduce community-wide landfilled organics 75% by 2025 and inorganic waste 35% by 2030 and reduce all waste 90% by 2040
- W-2: Reduce overall waste disposed to garbage, recycling, and compost per capita by 15% by 2035

Working toward zero waste of resources requires that the city address two factors: 1) waste generation, reducing the amount of waste generated regardless of its destination (e.g., landfilling, recycling, composting); and 2) waste diversion, recycling the waste that is generated through available facilities. Measure W-1a focuses on waste diversion and Measure W-2 focuses on waste generation.

Actions for reducing organic waste are underpinned by SB-1383 requirements, which lay out specific programs, policies, and objectives for the city to support the state's goal of a 75% reduction in organics waste by 2025. While not explicitly modeled, many of these actions support achievement of SB-1383 goals. Actions that address inorganic waste are not quantified in this analysis due to their very minimal impact on communitywide greenhouse gas emission reduction gals.

Measure W-1a: Implement SB 1383 requirements and reduce communitywide landfilled organics 75 percent by 2025 and inorganic waste 35 percent by 2030 and reduce all waste 90 percent by 2040

Action #	Action	Anticipated Reduction (MT CO2e/person)
1	Partner with local community organizations and businesses to implement all required activities under SB 1383.	2030: 0.202 2040: 0.200
2	Route collected landfilled waste through a materials recovery facility (MRF) to increase diversion before final disposal. Continue financial support for low-income residents to offset increase trash rates.	Supportive
3	Work with contracted hauler to develop and implement a comprehensive monitoring and quality control program with a focus on consumer behavior change.	Supportive
4	Encourage businesses to educate their employees about organic waste diversion and proper sorting annually by providing training resources and rebate program to fund employee time for training.	Supportive
5	Establish relationships with multi-family (MF) property owners/managers to develop signage for their properties to encourage food waste diversity. Go door-to-door at each MF unit yearly to provide supplies and education for proper sorting.	Supportive
6	Conduct targeted, multi-lingual, culturally appropriate, and geographically diverse waste diversion educational and technical assistance campaigns based on outcomes of the waste characterization study and comprehensive monitoring and quality control program. Topics could include proper sorting, reduce smell/mess, where does the material go after it leaves the curb, methane from food waste in landfill.	Supportive
7	Partner with schools, retirement communities, and other large institutions to create waste diversion and prevention programs/procedures/plans.	Supportive
8	Work with hauler to determine data necessary to meet zero waste goals and establish protocol for regular collection and reporting of associated metrics.	Supportive
9	Implement enforcement and fee for incorrectly sorted materials with sensitivity to shared collection.	Supportive
10	Conduct construction and demolition (C&D) feasibility study to determine if the City can expand C&D waste diversion requirements and if feasible create a deconstruction ordinance to require reuse of materials.	Supportive
11	Conduct waste characterization studies every 4-5 years to inform programs and policies. Leverage waste characterization data to understand the waste stream and create a plan to increase diversion and reduce contamination.	Supportive
12	Understand alternatives to three waste streams disposal and fill in waste generation gaps by collecting data from take-back locations (grocery stores, auto shops, carpets, mattresses, battery collection, etc.).	Supportive

Action #	Action	Anticipated Reduction (MT CO2e/person)
13	Increase access to recycling facilities such as California Refund Value (CRV) redemption and extended producer responsibility (EPR) take-back programs.	Supportive
14	Monitor and report recycling activity, including the number of materials recycled, programmatic achievements, and the strength of commodity markets. Produce reports to the City Council as needed to inform future zero waste planning.	Supportive
15	Add extra bulky-item pickup service for low- and medium-income residents at a subsidized cost to help minimize illegal dumping and increase access to bulky item disposal.	Supportive
16	Conduct a study about textiles recycling opportunities that can be rolled out across Cupertino.	Supportive

Action 1

Emission reductions in the waste sector will be driven by Cupertino's compliance with SB 1383, which sets a statewide target to reduce organic waste disposal 75 percent relative to 2014 levels and recover 20 percent of edible food by 2025. CalRecycle has provided a suite of activities that jurisdictions are required to complete to achieve this target, including the following:

- Provide organic waste collection services for all residents and businesses and monitor contamination
- Implement an edible food recovery program for commercial edible food generators, with compliance beginning between 2022 and 2024.
- Procure organic waste to meet organic waste product procurement targets, as notified by CalRecycle by 2022
- Conduct education and outreach to businesses, residents, and commercial edible food generators by 2022 and annually thereafter
- Ensure there is adequate capacity and collection services to comply with SB 1383 requirements
- Adopt enforceable ordinances prior to 2022 encompassing requirements for organics and edible food generators in the city
- Monitor compliance beginning in 2022, conduct enforcement beginning in 2024, and maintain records of implementation

Completing these activities is expected to provide the level of composting and food donation that will reduce Cupertino's organic waste disposal by 75 percent by 2025, aligning with the SB 1383 state target. Cupertino already has a food recovery program implemented per SB 1383 requirements. Compliance with this program was required locally starting January 1, 2022.

Cupertino is projected to send 33,502 metric tons of solid waste to landfill in 2030 and 34,836 metric tons in 2040, 41 percent of which is estimated to be organic (27% food waste, 16% paper, 13% wood, 6% garden waste, 6% textiles).[155] Calculations assumed that emission reductions would

[155] City of Cupertino. 2018. Cupertino Waste Characterization Study.

come from diverting that waste to compost or hunger relief, decreasing the methane generation potential of this waste to zero.

These calculations aligned with the assumptions and methods of Cupertino's 2018 greenhouse gas inventory, which utilized the Global Protocol for Community-Scale Greenhouse Gas Emissions Inventories (GPC) and Cupertino's waste characterization study. The results of the waste characterization study are shown in Table 15.

Table 16 Cupertino Waste Characterization Study Results

Waste Category	Percent of Waste Stream	Default Carbon Content (tonne C/tonne)[156]
Food waste	27%	0.15
Garden and plant waste	6%	0.2
Paper	16%	0.4
Wood	13%	0.43
Textiles	6%	0.24

Table 17 GHG Emissions Reductions from Action 1

Inputs and Assumptions		
Organic waste diversion		75%
Fraction of DOC degraded (DOCf)		0.6
Fraction of methane in landfill gas		0.5
Stoichiometric ratio between methane and carbon		1.33
Methane recovery at landfill		75%
Oxidation factor		0.10
Calculations		
Year	**2030**	**2040**
Forecasted waste (MT)[157]	33,235.90	34,123.62
Forecasted waste emissions (MT CO_2e)[158]	17,135.50	17,593.19
Organic waste diverted (MT)	16,931	17,383
Total waste sent to landfill after diversion (MT)	16,305	16,740
Food waste sent to landfill after diversion (MT)	2,246	2,306
New percent food waste (%)	14%	14%
Garden and plant waste sent to landfill after diversion (MT)	504	517
New percent garden and plant waste (%)	3%	3%
Paper waste sent to landfill after diversion (MT)	1,280	1,280

[156] C40 Cities Climate Leadership Group. 2014. The Global Protocol for Community-Scale Greenhouse Gas Emissions Inventories (GPC). Equation 8.4.

[157] Appendix A.

[158] Ibid.

New percent paper waste (%)	8%	8%
Wood waste sent to landfill after diversion (MT)	1,070	1,099
New percent wood waste (%)	7%	7%
Textile waste sent to landfill after diversion (MT)	503	516
New percent textile waste (%)	3%	3%
DOC of waste sent to landfill after diversion[159]	0.094	0.093
Methane generation potential after diversion (CH_4/MT)[160]	0.04	0.04
Landfill emissions after diversion (MT CO_2e)[161]	3,848	3,916
Total Reductions (MT CO_2e)	**13,288**	**13,677**
Per Capita Reductions (MT CO_2e/person)	**0.202**	**0.200**

Actions 3-5

Actions 3, 4, and 5 directly support implementation of SB 1383, as contamination monitoring and annual organics recycling education fall within the scope of SB 1383 requirements. Conducting these monitoring and education activities will help ensure that the community is doing its best to achieve organic waste reduction and edible food recovery targets.

Action 6

While this action will not lead to direct GHG emission reductions, it is an important component of the strategy behind SB 1383 implementation. For example, education around composting and food waste reduction can provide the information needed by residents to start a home compost pile and/or reduce their overall waste. Providing these materials in multiple languages in a culturally appropriate manner will further the impacts of this action.

Action 7

Action 7 falls partially within the scope of SB 1383's requirements, as large institutions will be required to participate in organics collection and edible food recovery. A piece of this measure that is working with large institutions to create waste prevention programs, procedures, or plan, is difficult to quantify currently but will also support SB 1383's organic waste reduction target. This measure will also help Cupertino reduce inorganic waste disposal, but this is not as significant for reducing emissions.

Actions 8-9

Actions 8 and 9 will directly support implementation of SB 1383, as contamination monitoring and enforcement falls within SB 1383's scope. This action will also support inorganic waste diversion, but this is not as significant for reducing emissions.

[159] GPC Equation 8.1

[160] GPC Equation 8.4

[161] GPC Equation 8.3

Actions 10-12

Actions 10 through 12 encompass studies and plans that will not directly impact GHG emissions but will support the City's goal to reduce all waste generation.

Actions 13-16

Actions 13 through 16 will contribute to the City's goal to reduce overall waste generation but will not directly contribute to the City's quantified emissions reduction target, which is associated with organic waste reduction.

Measure W-2: Reduce overall waste disposed to garbage, recycling, and compost per capita by 15% by 2035

Action #	Action	Anticipated Reduction (MT CO2e/person)
1	Conduct a consumption-based GHG emissions inventory to understand the community's worst consumption habits and emission reduction potential and provide educational materials on a closed-loop circular economy.	Supportive
2	Based on results of the consumption-based emissions inventory, create a plan to achieve the objective of zero growth of waste generation. Consider reusable diaper service, plant-based diets, etc.	Supportive
3	Consider creation of upcycle/resell shop to increase access to items for reuse and create jobs.	Supportive
4	Conduct targeted, multi-lingual, culturally appropriate, and geographically diverse waste prevention educational and technical assistance campaigns based on a waste characterization study. Outreach topics can include food waste prevention, edible food recovery strategies, proper storage, how to fix clothes/electronics, how to donate, reusable alternatives, effects of overconsumption, sustainable consumption habits, buying second hand, buying durable, sharing, repurposing.	Supportive
5	Create a training/education program that is free and accessible to all residents and employees to learn about waste prevention and diversion strategies and effects of overconsumption.	Supportive
6	Expand edible food recovery program to all restaurants and food generating businesses and create incentives for small businesses who otherwise could not participate.	Supportive
7	Fund edible food recovery organizations so they can expand and manage increased volume. Leverage CalRecycle support for projects that prevent food waste or rescue edible food.	Supportive
8	Work with the business community to design and promote extended producer responsibility such as take-back programs.	Supportive
9	Consider a fee at point of use for single-use foodware by food service providers. Fee would be waived for individuals who are dependent on these products for health reasons.	Supportive
10	Partner with local organizations, schools, and libraries to establish pop-up repair cafes for commonly broken and easily repaired items.	Supportive
11	Increase bans on "problem materials." Ban items without means of recycling or recycling markets, such as sale of polystyrene, produce bags, plastic packaging, straws, plastics #4-7, mixed materials.	Supportive
12	**Waste management at large events:** Create a requirement for large events to use an event waste management service. This could be included as a condition before the City issues a special event permit.	Supportive

Actions 1-2

A consumption-based emissions inventory will not directly result in GHG emissions reductions. The plan based on the inventory named in Action 2 is yet undetermined, so the impacts on GHG emissions are unknown.

Actions 4-5

Education campaign will not have direct impact on GHG emissions.

Action 6

We calculated an estimate of food recovered, but the impact is projected to be small, and we do not recommend including it in a quantitative assessment.

Action 7

This action is included in the scope of SB 1383 and will support its emission reduction target by ensuring that there is adequate capacity for food recovery.

Action 8

This action will support SB 1383's targets by enabling local projects that reduce disposal of organic waste via waste prevention and food recovery.

Actions 3 and 8-12

These actions are anticipated to assist Cupertino towards an overall reduction in inorganic waste disposal but will not contribute to quantified emissions reductions targets.

5 Water & Wastewater Measures

Water and wastewater account only for a small portion of a community's GHG emissions. Wastewater GHG emissions accounted for 5% of the community's GHG emissions in 2018. GHG emissions from water were not accounted for separately in the City's inventory but are 100% attributable to the use of electricity to pump, distribute, and treat water, and are therefore captured in the community's electricity usage in 2018. While only a small part of the City's GHG emissions, water conservation and decarbonized wastewater treatment are important aspects of a community's overall sustainability and resiliency. To this end, the CAP Update's water and wastewater measures consist of the following supportive measures:

- Measure WW-1: Reduce per capita water consumption 15% compared to 2019 levels by 2030 and maintain through 2040
- Measure WW-2: Support the SJ-SC RWF in implementing GHG emissions reduction projects

Measure WW-1: Reduce per capita water consumption 15% compared to 2019 levels by 2030 and maintain through 2040

Action #	Action	Anticipated Sequestration (MT CO_2e/person)
Water Efficiency Ordinance		
1	Adopt an ordinance for installation of dual-plumbing water systems that utilize greywater for irrigation at new residential construction, including ADUs, and in major retrofits. In doing so the City will: ▪ Engage with builders and developers to provide information on the new requirements for residential new construction ▪ Develop and adopt an ordinance based on the available model ordinances	Supportive
Outreach, Education, and Engagement		
2	Work with Santa Clara Valley Water to develop an enhanced public engagement campaign that promotes water efficiency rebates from Santa Clara Valley Water (Greywater, Laundry to Landscape program), including educating residents on the benefits of dual-plumbing greywater systems, low-flow fixtures, and their connection to climate resilience and GHG emissions reductions. Ensure that all outreach and education is in multiple languages.	Supportive
3	Perform targeted outreach to households with low-income and fixed income people, communities of color, elders, and disabled individuals with access needs to provide free water conservation devices through the Santa Clara Valley Water. Ensure that all outreach and education is in multiple languages.	Supportive
4	Work with schools to educate youth about water conversation.	Supportive
Water Conservation Programs		
5	Continue to provide rebates or other funding to low- and medium-income homes for installing laundry to landscape, rainwater catchment system, and low-flow appliances.	Supportive
6	Work with Santa Clara Valley Water and Cupertino's three water retailers to provide Wi-Fi connected meters that citizens can check on phones and computers.	Supportive
7	Partner with Santa Clara Valley Water to support a brackish water/desalinization program, as feasible.	Supportive
8	Expand the Climate Victory Gardens pilot to an ongoing program and work with Santa Clara Valley Water to expand to a regional service.	Supportive

Action 1: Water Efficiency Ordinance

Action 1 commits the City to implementing a water efficiency ordinance in an effort to install more greywater systems throughout the community. Greywater systems filter wastewater from washing machines, bathtubs, and showers for garden irrigation. Homeowners that install greywater systems

can save up to 40,000 gallons of water per year, resulting in much lower water bills.[162] Greywater systems have the added benefit of sending wastewater from homes to the ground, rather than through the sewage system, more closely mimicking the earth's natural water cycle and improving the local ecology.

Actions 2-4: Outreach, Education, and Engagement

Actions 2-4 commit the City to working with Santa Clara Valley Water to engage with the community, including low-income and fixed income people, communities of color, elders, and disabled individuals with access needs , about the benefits and opportunities associated with more efficient water consumption. Valley Water currently runs multiple outreach and education programs throughout the community, including events, learning programs, school classroom programs, library programs, and others.[163] By partnering with Valley Water to enhance these programs, the City intends to expand their impact, reach, and social equity.

Actions 5-8: Water Conservation Programs

Laundry to landscape, rainwater catchment systems, and low-flow appliances have demonstrated success in reducing water consumption. Action 5 provides funding for integrating more of these systems into Cupertino's households, providing more opportunity for lower-income residents to adopt these technologies.

Wi-Fi connected water meters, typically referred to as "smart" meters, have the potential to help all water customers manage their water consumption.[164] Traditional water meters typically require that city staff visit to record usage, while Wi-Fi connected water meters allow customers and water agencies to observe and track water usage in real-time, and make better-informed decisions about water conservation. Action 6 commits the City to providing Wi-Fi connected meters in the community to reap these benefits.

Desalination has been identified by Valley Water as a potential long-term solution to the limited availability of fresh water in Santa Clara County.[165] Action 7 commits the City to supporting Valley Water's efforts in this area, as Valley Water plans for the long-term resiliency of the County's water supply.

Cupertino's Climate Victory Garden program is a direct-install Turf-to-Native Garden program that helps customers replace turf with a California friendly, low water-use landscape.[166] Turf can promote erosion and typically requires large amounts of water throughout the growing season, while native plants are usually more drought resistant, require less water, and provide an ecosystem

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[162] Water Wise Group. December 2021. Greywater System Benefits. Accessed at: https://waterwisegroup.com/greywater-education/greywater-benefits/

[163] Valley Water. December 2021. Water Education Programs and Events. Accessed at: https://www.valleywater.org/learning-center/water-education-programs-and-events

[164] Taylor Goldenstein. Los Angeles Times. May 2015. Smart water meters help users, agencies gauge usage. Accessed at: https://www.latimes.com/local/california/la-me-smart-meter-explainer-20150505-story.html

[165] Valley Water. December 2021. Desalination. Accessed at: https://www.valleywater.org/your-water/water-supply-planning/desalination

[166] City of Cupertino. December 2021. Climate Victory Gardens. Accessed at: https://www.cupertino.org/our-city/departments/environment-sustainability/climate-gardens

including water, food, and shelter for native birds, insects, and other kinds of wildlife.[167] Following the success of the program in converting residential and commercial turf in Cupertino, Action 8 commits the City to expanding this program, and partnering with Valley Water to make the program regional.

[167] May Ellen Ellis. Gardening Know How. December 2021. What is Naturescaping – Tips for Planting a Native Lawn. Accessed at: https://www.gardeningknowhow.com/lawn-care/lawn-substitutes/lagen/planting-a-native-lawn.htm

Measure WW-2: Support the SJ-SC RWF in implementing GHG emissions reduction projects

Action #	Action	Anticipated Sequestration (MT CO_2e/person)
1	Establish a program or function for supporting SJ-SC RWF in obtaining grant funding for methane capture or other GHG reduction infrastructure. Explore opportunities related to methane capture and conversion to biofuel through the state's Low Carbon Fuel Standard (LCFS) program.	Supportive
2	Collaborate with the cities of San Jose, Santa Clara, Campbell, Los Gatos, Monte Sereno, and Saratoga, and the County to advocate and support GHG reductions at the SJ-SC RWF. Explore opportunities to scale beyond regional coordination.	Supportive

Actions 1-2: SJ-SC RWF Decarbonization

The San Jose-Santa Clara Regional Wastewater Facility (SJ-SC RWF)provides wastewater services to the cities of San Jose, Santa Clara, Milpitas, Cupertino, Campbell, Los Gatos, Monte Sereno, and Saratoga, as well as portions of the unincorporated county. GHG emissions at the RWF occur as a result of nitrous oxide from wastewater influent and effluent as a byproduct of the wastewater treatment process and from combustion of digester gas collected during treatment. The RWF also produces about 10 million gallons per day of recycled water, used for landscape irrigation and other non-potable end uses in San Jose, Santa Clara, and Milpitas.

As part of the RWF's Capital Improvement Plan (CIP), the RWF will rehabilitate and modernize four anaerobic digesters, including the installation of a heat recovery system, gas treatment system, and cogeneration engines to convert collected digester gas into electricity.[168] These improvements will enhance energy self-sufficiency, future reliability, and GHG emissions reductions at the RWF.

Through Actions 1 and 2, the City plans to support the work that is planned at the RWF, through dedication of staff time and resources to identifying grant funding, opportunities such as through the Low Carbon Fuel Standard (LCFS), and coordination with the other cities that the RWF serves to reduce GHG emissions at the RWF even further.

[168] City of San Jose. August 2020. 2030 Greenhouse Gas Reduction Strategy. Accessed at: https://www.sanjoseca.gov/home/showpublisheddocument/63605/637345707563600000

6 Carbon Sequestration Measures

To achieve carbon neutrality in 2040, the City of Cupertino will reduce GHG emissions across all sectors to achieve as close to zero GHG emissions as possible. However, due to limitations in technology and the length of time that it takes to normalize new low-GHG emission behaviors – such as taking public transit rather than driving or installing an electric stove rather than a gas stove – it is expected that some GHG emissions will remain under the City's jurisdiction in 2040. A carbon-neutral future therefore includes carbon sequestration[169] mechanisms, which take carbon out of the atmosphere, to offset remaining GHG emissions. Strategies available for carbon sequestration include planting trees, managing greenspace effectively, composting, and removing carbon from the atmosphere. The CAP's carbon sequestration measures align with these strategies[170] and consist of the following:

- Measure W-1b: Meet or exceed the SB 1383 recycled organics products procurement requirements and sequester or avoid at least 0.018 MT CO2e per person by through 2045[171]
- Measure CS-1: Increase carbon sequestration through tree planting by developing and implementing an Urban Forest Management Plan
- Measure CS-2: Leverage the carbon sequestration potential of open space and carbon removal

[169] Carbon sequestration refers to the physical removal of CO_2 from the atmosphere, either through natural processes such as photosynthesis and weatherization, or industrial chemical processes that transform atmospheric CO_2 to a solid state.

[170] Note that measures regarding composting are included in the CAP Update's waste measures rather than the carbon sequestration measures.

[171] While GHG emissions reductions from Measure W-1a were already quantified and included in Section 4, implementation of Measure W-1b is associated with additional carbon sequestration benefits due to compost procurement actions associated with the measure.

Measure W-1b: Meet or exceed the SB 1383 recycled organics products procurement requirements and sequester or avoid at least 0.018 MT CO_2e per person by through 2045

Action #	Action	Anticipated Sequestration (MT CO2e/person)
1	Develop partnerships with local community organizations and businesses to implement all required recycled organics products procurement activities under SB 1383.	2030: 0.018 2040: 0.018

Action 1: Compost Procurement

SB 1383 requires each jurisdiction in California to procure recycled organics products to meet specific procurement targets, as notified by CalRecycle by 2022. Action 1 commits the City to meeting these procurement requirements. The City expects to meet these requirements through the procurement of compost, which may be applied through a compost trading program in the County and adjacent counties, resulting in carbon sequestration benefits for Cupertino. Guidance from CalRecycle has set the procurement target for Cupertino in 2022 at 4,692 tons of compost, based on Cupertino's population.[172] Based on this procurement target, Cupertino's population, and the carbon sequestration potential per ton of mixed organics compost, the carbon sequestration potential for Cupertino's compost procurement through 2040 was calculated. However, the City may also choose to meet the procurement targets in other ways, primarily through procurement of renewable transportation fuel gas (i.e., renewable diesel), or through procurement of heat from renewable natural gas. To meet the carbon sequestration/GHG reduction associated with the measure, however, the City would not procure electricity from renewable gas to meet the procurement requirement. While the City may ultimately procure a combination of these products to meet the CalRecycle procurement requirement in 2030 and 2045, Action 1 commits the City to meeting the minimum GHG emissions reduction benefit that would be achieved through compost procurement alone. The methods and assumptions used to calculate the GHG emissions reductions associated with Action 1 are shown in the table below.

Table 18 GHG Emissions Reductions from Action 1

Inputs and Assumptions	
Cupertino procurement requirement in 2022 (tons/year)[173]	4,692
Cupertino 2022 population (CalRecycle)[174]	58,656
Per person compost procurement requirement (tons/person)	0.08
Emissions avoided from mixed organics compost application excluding avoided landfill methane (MT CO_2e/ton)[175]	0.23

[172] CalRecycle. December 2021. Jurisdiction Procurement Targets Based on January 1, 2021 Population Estimates.

[173] Ibid.

[174] Ibid.

[175] California Air Resources Board (CARB). May 2017. Method for Estimating Greenhouse Gas Emission Reductions from Diversion of Organic Waste from Landfills to Compost Facilities (Final Draft). Table 14. Accessed at: https://ww2.arb.ca.gov/sites/default/files/classic/cc/waste/cerffinal.pdf

Cupertino alternative renewable transportation fuel gas procurement target in 2022 (DGE/year)[176]		98,542
Cupertino alternative renewable gas heat procurement target in 2022 (therms/year)[177]		8,603
Emissions reduced when switching from diesel to biodiesel (MT CO2e/DGE)[178]		0.01021
Emissions reduced when switching from natural gas to renewable gas (MT CO2e/therm)		0.00530
Calculations		
Year	**2030**	**2040**
Population	65,690	68,305
Estimated procurement requirement	5,255	5,464
Total Sequestration (MT CO_2e)	**1,209**	**1,257**
Per Capita Sequestration (MT CO_2e/person)	**0.018**	**0.018**
Calculations for Alternative Procurement Options		
Quantity of renewable transportation fuel gas (i.e., renewable diesel) required to meet GHG reduction from compost procurement (diesel-gallon-equivalent/year)	118,371	123,084
Quantity of heat from renewable gas required to meet GHG reduction from compost procurement (therms/year)	227,826	236,896

[176] Calculated from CalRecycle Procurement Calculator Tool using Cupertino 2022 population as an input. Accessed at: https://www2.calrecycle.ca.gov/Docs/Web/118908

[177] Ibid.

[178] Calculated as the fossil-fuel CO_2 emissions associated with diesel transportation fuel in Table 2 of the Environmental Protection Agency's (EPA) Emission Factors for Greenhouse Gas Inventories (March 2020). Accessed at: https://www.epa.gov/sites/default/files/2020-04/documents/ghg-emission-factors-hub.pdf

Measure CS-1: Increase carbon sequestration through tree planting by developing and implementing an Urban Forest Management Plan

Action #	Action	Anticipated Sequestration (MT CO_2e/person)
Urban Forest Management Plan		
1	Identify and partner with local community-based organizations with connections to low-income and fixed income people, historically underserved communities, elders, and disabled individuals with access needs to assist in development of an Urban Forest Management Plan (UFMP) to ensure equity is prioritized as part of the plan.	Supportive
2	Conduct an urban heat island study to assist in identifying priority areas in Cupertino for planting new trees.	Supportive
3	Develop an Urban Forest Management Plan (UFMP) based on the City's tree canopy assessment that identifies the framework and strategy for expanding the tree canopy in Cupertino. As part of the UFMP development effort, identify a tree canopy expansion goal. Ensure the sustainability of the urban forest (including all existing and new trees) by including in the UFMP plans for continued tree maintenance and protection, attention to safety, resident engagement, and the planting of native and climate-appropriate trees.	Supportive
Tree Protection Ordinance Review		
4	Review the Tree Protection Ordinance and ensure that trees are protected with the Housing Element Update. Ensure any trees that may be removed to accommodate new housing are replaced with at least a 2:1 ratio.	Supportive
Funding and Financing		
5	Establish a program for obtaining grant funding for development of UFMP and tree planting.	Supportive

Actions 1-3: Urban Forest Management Plan

The City of Cupertino is home to 20,079 City trees as of December 2021.[179] Cupertino's trees compose a 23% urban tree canopy.[180] Results from Cupertino's Tree Canopy Assessment suggest that Cupertino accommodates 1,983 acres of additional plantable space, equal to 27% of the City's footprint.[181] This suggests that up to 23,500 new trees could be planted in Cupertino. Actions 1 to 3 commit the City to preparing an Urban Forest Management Plan (UFMP) to direct the planting of new trees. Tree planting locations will be prioritized based on the results of an urban heat island study (Action 2) and by working with local community-based organizations to understand where

[179] City of Cupertino. December 2021. Tree Plotter App. Accessed at: https://pg-cloud.com/Cupertino/?zoomtolocation=1&popupclosest=trees

[180] City of Cupertino. 2018. Climate Action Plan 2018 Progress Report. Accessed at: https://www.cupertino.org/home/showpublisheddocument/25662/637104551121630000

[181] Ibid.

there is the greatest need for new canopy cover (Action 1). The UFMP will identify a tree canopy expansion goal. Carbon sequestration benefit from these actions are not quantified here, however, once a tree canopy expansion goal is identified, the City will calculate the carbon sequestration benefit in support of meeting the climate action goals.

Action 4: Tree Protection Ordinance Review

The City of Cupertino is required to update its Housing Element as part of the General Plan Update process. The City's Housing Element Update and the direction of residential development in Cupertino will be influenced by SB 9,[182] which allows for higher home counts per residential parcel, and SB 10,[183] which authorizes local governments to rezone neighborhoods for increased housing density. Both SB 9 and 10 provide avenues for densification in California with the ultimate aim of increasing housing production capacity in the state. Increased densification can mean a decrease in plantable space, potentially impacting the City's existing and planned tree canopy. Action 4 works to protect existing and future tree canopy by reviewing the City's existing tree protection ordinance to ensure that trees are protected or replaced as part of the implementation of the Housing Element Update. Action 4 therefore protects tree canopy in Cupertino and supports implementation of the UFMP.

Action 5: Funding and Financing

Planting and maintaining trees within the City comes with high-capital costs. Each tree costs approximately $438 to plant, not including maintenance costs, which include trimming, watering, and street cleaning for leaf litter.[184] Action 5 commits the City to devoting staff time and resources towards obtaining grant funding for tree plantings.

[182] California Legislative Information. September 2021. Senate Bill No. 9. Accessed at: https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=202120220SB9

[183] California Legislative Information. September 2021. Senate Bill No. 10. Accessed at: https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=202120220SB10

[184] City of Cupertino. Resolution 21-034.

Measure CS-2: Leverage the carbon sequestration potential of open space and carbon removal

Action #	Action	Anticipated Sequestration (MT CO_2e/person)
Open Space		
1	Study opportunities to create new natural areas in existing open spaces, parklands, and fields with native species, biodiverse ecology, higher carbon sequestration potential and ecologically responsible recreation opportunities for the community.	Supportive
2	Expand community gardens program beyond McClellan Ranch Preserve. Continue to prioritize locating new gardens in high-density housing areas. Program goals include promoting healthy living through access to healthy food, creating a secure place where residents can strengthen community bonds, and providing education on safe organic gardening practices.	Supportive
Carbon Removal		
3	Study options to invest in carbon drawdown removal in a way that is appropriate for Cupertino. The study should include a review of the Oxford Carbon Drawdown Principles and identify if there exist any investments within or outside of Cupertino that make sense to contribute to for carbon drawdown.	Supportive
4	Develop an embodied carbon emissions policy and ordinance that encourages or requires carbon to be sequestered in building materials such as mass timber framing or low-carbon concrete.	Supportive

Actions 1-2: Open Space

Open space in cities presents an important opportunity to increase carbon sequestration potential. Planting open spaces with native species known to absorb higher amounts of carbon from the air can increase carbon sequestration potential when properly scaled. Improvements to open space offer many additional co-benefits aside from carbon sequestration, including healthier air, more walkable spaces, improved local biodiversity, and better food access in cities. Actions 1 and 2 commit the City to identifying these opportunities and implementing them where feasible.

Action 3-4: Carbon Removal

Opportunities may exist for Cupertino to sequester carbon through carbon drawdown removal or by purchasing in carbon-embedded building materials. Exploring practices like these may provide additional carbon sequestration potential in the City. Actions 3 and 4 commit the City to exploring these opportunities.

Appendix E: Existing Programs and Accomplishments

An overview of the progress that Cupertino has achieved since the 2015 CAP is depicted in Table 1 through Table 5 below. The following tables include both completed and ongoing actions for each sector of the community. Additional context for some 2015 CAP measures and descriptions of complementary sustainability projects and programs pursued by the City of Cupertino beyond the 2015 CAP measures, are included in the text below the tables.

Energy Sector

Sustainable Energy Portfolio

Table 1 CAP 2015 Accomplishments: Sustainable Energy Portfolio Measures

Status	Measure ID	Measure
Completed	A-1	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
Completed	A-2	Develop resolution to opt into PG&E Green Option program for municipal electricity purchases (Note: program is currently capped at 272 MW and as5 year pilot program; it is currently unknown how enrollment decisions will be made should program become fully subscribed)
Completed	A-2	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)
Completed	A-2	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
Completed	A-2	Ensure that new street light installations achieve comparable or better efficiency level as achieved through previous streetlight retrofit program
Completed	A-4	Use high-resolution data from analytics (e.g., appliance end-use) to inform development of targeted energy efficiency retrofit programs [see M-F-4]
Completed	B-1	Benchmark & Track Consumption Data Collected per Facility
Completed	B-1	Establish Energy Efficiency Fund
Completed	B-1	Complete Parking Lot and Park Facility Lighting Retrofits

Status	Measure ID	Measure
Completed	B-1 thru B-6	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:
Completed	B-2	Identify potential jurisdictional partners for development of CCE (e.g., Sunnyvale, Mountain View)
Completed	B-2	Identify City-owned parking lot lighting that has not yet been converted to LED, magnetic induction, or similar highly-efficient technology
Completed	B-3	Conduct feasibility study to assess viability of CCE program in Cupertino (can be conducted jointly with other jurisdictional partners)
Completed	B-3	After installation of additional meters, organize PG&E data by facility and City department (e.g., Meters 1, 2 and 3 represent Memorial Park)
Completed	B-3	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)
Completed	B-4	Based on results of feasibility study, pursue development of (or participation in) CCE per State requirements
Completed	B-4	Benchmark all eligible municipal facilities using ENERGY STAR Portfolio Manager
Completed	B-5	Adopt resolution for City to participate in CCE
Completed	B-5	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
Completed	B-6	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)

Municipal Solar Project: The City installed a 103kW solar carport at the Cupertino Service Center.

Removing Barriers for New Solar: Cupertino achieved the SolSmart award from Department of Energy recognizing the permit streamlining process that makes it easier to install new solar.

Community Clean Energy: One of the most significant steps the City has taken to reduce emissions was to participate in the Community Choice Energy (CCE) opt-in program along with several nearby communities to form Silicon Valley Clean Energy (SVCE). SVCE is a community-owned electricity provider that sources renewable energy at competitive rates for participating communities, delivered through PG&E's existing infrastructure. By sourcing renewable and low carbon electricity, this opt-in energy provider has helped Cupertino drastically reduce energy related emissions and will continue to provide significant emissions reductions into the future.

Sustainable Funding: The City established a Sustainability Capital Reserves fund as a sustainable way to help support future sustainability projects and programs through rebates received from other

sustainability and conservation projects. [1] In this way, savings from past projects can help fund future projects and provide more energy and resource savings.

Building Energy Use Reduction

Table 2 CAP 2015 Accomplishments: Building Energy Use Measures

Status	Measure ID	Measure
Completed	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
Completed	A	Develop overarching energy plan for community that considers energy sources and their reliability with regards to estimated climate change impacts
Completed	A	Conduct outreach program to educate residents and businesses about potential benefits of solar service providers 'power purchase agreements (PPA)
Completed	A	Work with other Santa Clara County partners to conduct feasibility study of developing multi-jurisdiction CCA program
Completed	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

[1] Cupertino, City of. "Operating Budget 2019-2020 Financial Policies and Schedules". Available: https://www.cupertino.org/home/showpublisheddocument/24233/636923348883830000. Accessed December 2021.

Status	Measure ID	Measure
Completed	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)
Completed	B	Based on most current Statewide legislation (e.g., Cal Green 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
Completed	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
Completed	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
Completed	C	Work with PACE financing providers to educate local Realtor and contractor community about PACE offerings, process, and benefits to increase participation
Completed	C	Pending result of PPA workshop, remove identified barriers to wide-scale solar installation throughout city
Completed	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
Completed	C-E-3	Homes and Commercial Building Retrofit Outreach. Develop aggressive outreach program to drive voluntary participation in energy and water-efficiency retrofits
Completed	C-E-4	Energy Assurance and Resiliency Plan. Develop long-term communitywide energy conservation plan that considers future opportunities to influence building energy efficiency through additional or enhanced building regulations.
Completed	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
Completed	D	Provide general information on City website describing various solar PV financing / installation options (e.g., PPA, community shared solar, outright purchase)
Completed	K	Consider including solar pre-wiring / pre-plumbing requirements in future revisions to City's Green Building Ordinance

Status	Measure ID	Measure
Completed	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

New Construction Electrification Ordinance: In December of 2019 the City of Cupertino Reach Code requiring all new buildings, including accessory dwelling units, to be all-electric was approved. This ordinance takes steps beyond the requirements for California building codes, and also requires outdoor pools, spas, and barbeques to be included within the definition of an all-electric building.

Building Decarbonization Plan: SVCE produced a regional Building Decarbonization Plan which includes consideration of strategies for Cupertino to influence building energy efficiency through additional or enhanced building regulations. Cupertino's first measure was completed with our all-electric reach code which requires all electric and additional EVSE above and beyond the building code.

Data for Change: In 2020 SVCE launched the Data Hive which provides a streamlined way to review interval metering and energy use data for commercial and residential buildings.

Community Outreach for Personal Climate Action: The City has launched a number of programs in partnership with other organizations to promote personal climate action, including the Cupertino Climate Challenge, and Home Energy Intel, which combine customer meter data with insights to create personal climate action plans.

Cupertino Climate Challenge

Transportation Sector

Alternative Transportation & Reducing Fuel Emissions

Table 3 CAP 2015 Accomplishments: Alternative Transportation & Fuel Emissions Reduction Measures

Status	Measure ID	Measure
Completed	A	Update City's Bicycle and Pedestrian Transportation Plans to reflect current bicycle and pedestrian safety and access needs; prioritize new projects identified
Completed	A	Support regional efforts to implement SB 1339 commute benefit requirements for employers with more than 50 employees

Status	Measure ID	Measure
Completed	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
Completed	A	Through City's General Plan process, identify areas that could support net increase in population or employment through land use changes within one quarter mile walking distance of priority transit stops Planning Department
Completed	A	Implement Telematics to Improve Route and Fuel Optimization
Completed	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
Completed	B	Evaluate potential demand for city-wide bikeshare program; discuss expansion opportunities with Bay Area Bike Share
Completed	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
Completed	B	Update Vehicle Use Policy to Prioritize Fuel-Efficient Operations and Maintenance
Completed	C	Identify grant-funds to pursue Plan-recommended education, design, and/or construction projects
Completed	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
Completed	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
Completed	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
Completed	E	Continue to evaluate City’s bike & walkability through use of online and community surveying tools including Walk Score, Bicycle Friendly Community criteria, Safe Routes to School, Walkability Checklist, etc.
Completed	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

Status	Measure ID	Measure
Completed	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)
Completed	G	Continue to provide links to existing maps identifying Bay Area alternative fuel charging and refueling infrastructure
Completed	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
Ongoing	A	Continue to operate municipal bike fleet for City employee use and encouragement of bike fleets at large employers 
Ongoing	A	Work with VTA to identify local roadways on which traffic congestion frequently leads to impacted transit reliability or timing
Ongoing	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

Status	Measure ID	Measure
Ongoing	A	Update Green Purchasing Policy and Vehicle Replacement Schedule to Prioritize Alternative Fuel Vehicles and Infrastructure
Ongoing	A	Install Electric Vehicle Charging Stations
Ongoing	B	Research possible funding strategies with business improvement districts, major employers, community organizations, and other appropriate partners
Ongoing	B	Consider opportunities for transit-priority signal integration along these routes that would not further contribute to congestion problems
Ongoing	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)
Ongoing	B	Expand City Bike Fleet, Training, and Promotion
Ongoing	C	Promote Vehicle Alternatives to Reduce Car-Travel to City-Sponsored Events
Ongoing	C	Expand Commuter Benefits Program
Ongoing	E	Partner with 511.org and employers to leverage new ride matching technologies and promote rideshare among employees
Ongoing	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
Ongoing	M-VF-1	Transition City vehicle fleet to fuel-efficient and alternative-fuel vehicle models.
Ongoing	M-VF-2	Increase availability of alternative refueling infrastructure to support municipal fleet transition.
Ongoing	M-VF-3	Encourage and promote fuel efficient driving.

Bike Plan Implementation: Cupertino adopted a Bicycle Transportation Plan in 2016 and has moved forward on numerous projects to improve the safety and ease and bike and pedestrian transportation. Multiple trails and off-street bike paths have been created that connect to existing routes, and construction is underway on the first three phases of the Class IV bike lanes project along McClellan Road.

Bicycle-Friendly Community: Cupertino was designated a bicycle-friendly community by the American League of Bicyclists. In addition to planned projects, the City boasts existing bicycle and pedestrian friendly features such as the Don Burnett Bicycle Pedestrian Bridge. This beautiful bridge is exclusively for pedestrian and bicycle use and connects Cupertino to nearby Sunnyvale.

Electric Vehicle Infrastructure: The City has worked to support adoption of electric vehicles by providing infrastructure such as public EV chargers at City Hall, the Cupertino Library, and Quinlan Community

Center. By encouraging the use of electric vehicles, combined with a clean energy grid powered by renewables, this can translate into far fewer GHG emissions from driving.

Diesel Free by 2033: In August 2019 the City Council adopted Resolution No. 18-076 supporting the Bay Area Air Quality Management District's (BAAQMD) Diesel Free by 2033 statement of purpose, reflecting the goal of eliminating diesel pollution by December 31, 2033.

Electric and Renewable Diesel Fleet: Public Works staff added electric vehicles and hybrids to the transportation fleet and switched to renewable diesel for all diesel fleet vehicles. Renewable diesel is made from wastes, such as animal fats from food industry waste and used cooking oil. These changes reduced City fleet emissions by 32 percent from 2010 emissions levels.

Vehicle Miles Traveled (VMT) Reduction Ordinance: Enacted in March of 2021, Ordinance No. 21-2223 sets a new standard for reviewing the transportation impacts of new developments. Transportation impacts are now measured in VMT in accordance with CEQA (California Environmental Quality Act) guidelines, and the City set a new target for reducing miles traveled by car to 14.4 percent below the City's baseline rate.[2] Any project that cannot meet this threshold would trigger a transportation impact under CEQA, unless it is mitigated sufficiently to meet the City's reduction target.

[2] Cupertino, City of. "Ordinance No. 21-2223". 2021. Available: https://www.cupertino.org/home/showpublisheddocument/29192/637537459060370000 . Accessed December 2022.

Water Sector

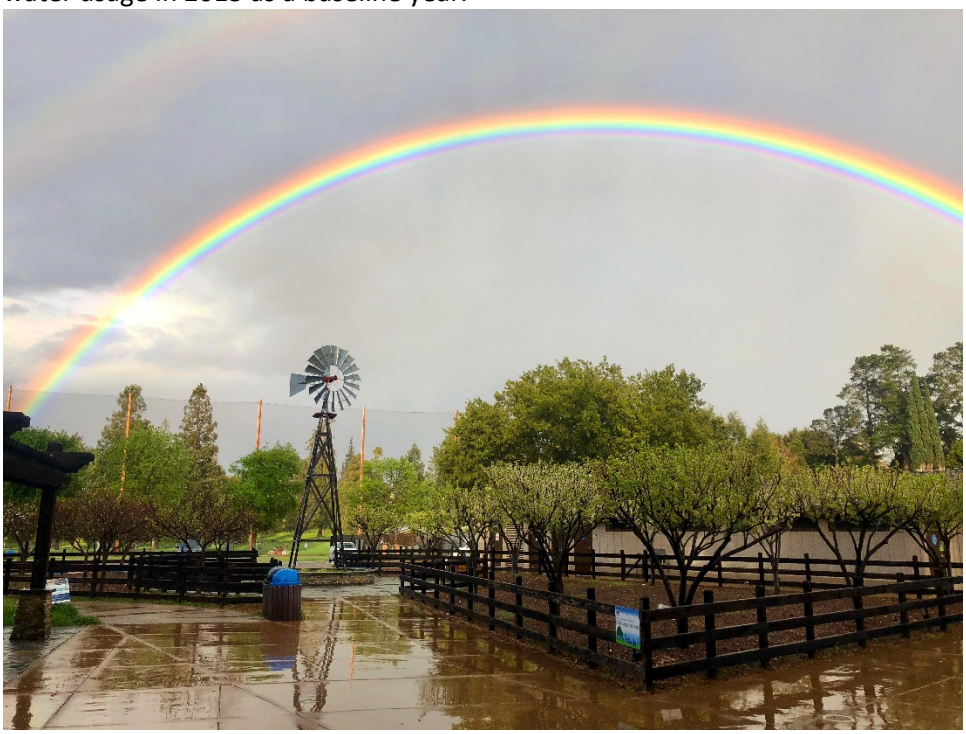
Conservation

Table 4 CAP 2015 Accomplishments: Water Conservation Measures

Status	Measure ID	Measure
Completed	A	Develop public information campaign that highlights/advertises City projects and landscaping practices that conserve water (e.g., drought-tolerant landscaping, efficient irrigations systems)
Completed	B	Work with local water providers to identify opportunities for water use data tracking and reporting at communitywide level; if successful, share this information through CAP's annual progress reporting procedures, aligned with required General Plan implementation annual reports
Completed	B-1	Benchmark & Track Water Use per Meter
Completed	B-3	Incorporate water use reporting into overarching annual CAP reporting procedure described in Chapter 7
Completed	C	Partner with community/neighborhood groups to promote existing water conservation programs and participation involuntary turf-removal programs
Completed	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
Completed	C-1	Adopt Water Budget & Green Grounds Policy
Completed	C-2	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
Completed	C-5	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
Completed	D-2	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
Completed	D-6	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)
Completed	D-7	Install informational placards or signs at new landscaping installations that quantify water saving potential from new designs and refer public to additional informational resources

Status	Measure ID	Measure
Completed	E-1	Install Graywater and Rainwater Catchment Systems in New Construction and Major Retrofit Projects

Municipal Water Savings: The city has reduced water usage 30 percent for municipal compared to water usage in 2013 as a baseline year.



Drought Tolerant Demo Garden: Cupertino converted the landscaping around City Hall into a drought-tolerant garden to conserve water and showcase water-efficient landscaping strategies, alternative irrigation options, and low-impact landscape design techniques to inspire residents to do the same.

Adopted Water Budget: Water budgets are included as requirements for projects under WELO and municipal code section 14.15.

Water Efficient Landscape Ordinance: Updated in 2015, requires water use reduction measures for projects that include landscape areas of 500 square feet or more.

Natural Resources and Sustainability

Creek Clean Up: Cupertino hosts biannual creek cleanups at Creekside Park and volunteers collect trash from Calabazas Creek to improve wildlife habitat and prevent trash from entering the San Francisco Bay.

Runoff Management and Recharging Groundwater: The Municipal Code sets a maximum impervious area for lots to help maximize the amount of ground surface that water and storm runoff may permeate. Limiting impervious lot coverage and maximizing water infiltration can reduce the amount of runoff that collects pollutants and may overwhelm infrastructure during storms, helps to recharge groundwater, maintain surface flow for creeks, and contributes to a cooler ground surface temperature.

Infrastructure

Storm Drainage Master Plan: In 2018 the City completed a Stormwater Infrastructure plan which identifies facilities needed to prevent "10-year" event street flooding, "100-year" event structure flooding, and green infrastructure to meet water quality protection needs in a cost-effective manner. The plan also provides low impact development (LID) principles to manage stormwater by mimicking natural hydrology, minimizing grading and protecting or restoring natural drainage systems on both public and private developments.

Bioswales at the Cupertino City Library: The Cupertino Library parking lot includes landscaping features called bioswales. These areas recharge the groundwater and naturally filter runoff to prevent pollutants, such as car oil, from entering waterways.

Waste Sector

Reducing Solid Waste

Table 5 CAP 2015 Accomplishments: Solid Waste Reduction Measures

Status	Measure ID	Measure
Completed	A	Continue to implement City's goal to divert 75% of communitywide solid waste through franchise waste hauling contract
Completed	A	Establish Stretch Waste Reduction and Diversion Goals
Completed	A	Expand Municipal Collection and Composting Program
Completed	A	Set C&D Diversion Policy for Municipal Projects
Completed	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
Completed	B	Work with franchise waste haulers to evaluate capability of area landfill operators to maximize C&D waste diversion (e.g.,75% diversion)
Completed	B	Create Paperless Office Policy/Program
Completed	C	Establish timeline and funding mechanism to perform periodic Waste Characterization Study updates to evaluate efficacy of new outreach programs
Completed	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
Completed	C	Work with franchise waste haulers to evaluate capability of area landfill operators to maximize C&D waste diversion (e.g.,75% diversion)
Completed	D	Develop robust outreach campaign to ensure communitywide 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)
Completed	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
Completed	D	Conduct Waste Characterization Audits and Track Materials/Diversion

Status	Measure ID	Measure
Completed	M-SW-3	Enhance construction and demolition waste diversion rates for municipal projects.
Ongoing	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
Ongoing	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
Ongoing	B	Provide information to local elementary schools on existing organics collection program for incorporation into on-going recycling program curriculum
Ongoing	C-SW-1	Zero Waste Goal. Maximize solid waste diversion communitywide through preparation of a zero-waste strategic plan
Ongoing	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

Waste Diversion & Zero-Waste Policy: Cupertino continues to make inroads towards its goal to divert 75 percent of community wide solid waste in accordance with the Cupertino zero waste policy, with a goal of reaching and maintaining eighty percent (80 percent) waste diversion by 2025 as calculated using CalRecycle's Diversion rate equivalent formula. Cupetino's waste diversion rate as of 2018 is 73 percent.

Organics Waste and Food Recovery Ordinance: The City passed an ordinance in alignment with California SB 1383 to reduce the volume of food that is wasted by recovering edible food for community members in need and minimizing food waste sent to landfills which decreases waste related GHG emissions.

- Implementation of citywide for contamination monitoring, procurement, and edible food recovery began as of Jan 1, 2022.
- Expanded edible food recovery scheduled to begin Jan. 1, 2024.

Free Compost Bin for Residents: Cupertino residents can each receive a free compost bin as part of free home composting courses, sponsored by the Recycling and Waste Reduction Commission of Santa Clara County.[3]

Construction and Demolition Debris: The City enacted a robust system to collect waste tags and demonstrate the City's construction and development debris requirements are met before a certificate of occupancy is issued. The City's goal is to divert 65 percent of construction and demolition (C&D) waste from the landfill and achieved a diversion rate of 52 percent as of 2018.

Paperless Office Policy: Cupertino was one of the first cities to pilot paperless agendas, and the Building and Planning Department has required electronic plan submittal since 2016.

[3] The composting courses are offered by the UC Cooperative Extension Composting Education Program.

Commercial Organics Ordinance: Requires high generators of food waste to separate food, yard and compostable paper waste for collection by Recology and composting.

Foam Foodware Container Ordinance: Ordinance NO. 14 -2116, adopted in 2014, restricts distribution of food containers made from polystyrene foam (known as Styrofoam™) which generally is used only once and lasts hundreds or thousands of years in the landfill.

Reusable Bag Ordinance: Adopted in 2013, prohibits the distribution of thin, plastic carry-out bags.

Carbon Sequestration

Urban Forest & Green Infrastructure

Tree Planting: The County of Santa Clara has initiated a program to partner with neighborhood groups, community organizations, and the business community to encourage voluntary tree planting on private property and identify opportunities for such organizations to assist with maintenance of street trees planted within public rights-of-way, and Cupertino's Tree Division is actively participating in this program. Trees store carbon as they grow, helping to offset some community emissions.

Healthy Urban Forest: Maintaining and expanding the community's urban forest not only makes for a greener and more beautiful Cupertino, but also helps to store carbon from the atmosphere as the trees grow in number and size. Additionally, healthy trees can have a positive impact on property values, energy savings, and air quality. The City of Cupertino is responsible for maintaining over 20,000 trees throughout the community.

Engagement

Community Collaboration

Green Business Network: Cupertino a network of green businesses that have actively sought to improve their environmental and sustainability performance. Since 2010, Cupertino's award-winning GreenBiz program has helped over 60 businesses achieve California Green Business certification, resulting in GHG emission reductions of over 7,600 metric tons of carbon dioxide and the diversion of over 22 million pounds of waste cumulatively.

Free Bulk Compost: From March to October, Cupertino residents can visit 12100 Stevens Canyon Road on Fridays and Saturdays to pick up free bulk compost. The compost is made from food scraps and yard waste collected by Cupertino's organics recovery program.

Earth & Arbor Day Festival: Every year Cupertino hosts an Earth and Arbor Day Festival in April. This event serves to increase community awareness and engagement with environmental stewardship. During the festivities community members of all ages can learn about environmental issues and solutions through hands-on activities, while enjoying live entertainment, and delicious food served by local food trucks.

Awards and Recognition

2019 Beacon Award: from the Institute for Local Government recognizing Cupertino's holistic approach to addressing climate change.

CDP Climate Action Scorecard: Overall Score of B for the 2018 CDP Climate Action Scorecard, ranking Cupertino above average of participating cities for climate action and information disclosure.

Green Biz Cupertino has been honored with four different awards recognizing the program's success in engaging the business community to prosper while benefiting the planet. The awards include:

- ICLEI's Green Business Challenge Award, 2014
- Silicon Valley Leadership Group's Red Tape to Red Carpet Award, 2014
- Green Technology's Green California Leadership Award, 2013
- Acterra Business Environmental Award, 2013

Lessons Learned

Cupertino met its 2020 emissions target ahead of schedule, and the measures and actions in this CAP Update provide Cupertino with the per capita GHG reductions necessary to achieve Cupertino's 2030 climate action targets. However, the City's ambitious target of carbon neutrality by 2040 requires some difficult to achieve reductions in emissions that depend on significant changes to the technology and systems currently in place.[4] This CAP Update aims to establish new systems that are resilient and equitable and that will allow for a transition to carbon neutrality in the future. Measures and actions that support this aim include electrification of building and transportation systems, an increased shift to active and public/shared transportation, continued usage of carbon neutral electricity, increased water use efficiency, and waste reduction and diversion. As these current measures and actions are implemented, the City will gain more information, new technologies will emerge, and current pilot projects and programs will scale to the size needed to reach carbon neutrality. Furthermore, the State is expected to update State-level regulations and provide additional support for meeting carbon neutrality in the future. The City has additionally identified a future CAP update schedule, and will outline new measures and actions that Cupertino will implement to close the remaining gap to achieve the target of carbon neutrality by 2040.

[4] Association of Environmental Professionals (AEP). "The California Supplement to the United States Communitywide Greenhouse Gas (GHG) Protocol". 2013. Available: https://califaep.org/docs/California_Supplement_to_the_National_Protocol.pdf . Accessed February 2022; and California Air Resources Board (CARB). "California's 2017 Climate Change Scoping Plan". Available: https://ww2.arb.ca.gov/sites/default/files/classic//cc/scopingplan/scoping_plan_2017.pdf . Accessed February 2022.