ATTACHMENT 3: CLIMATE ACTION PLAN TABLES - REDLINES

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Table ES-1:Reductions from Existing and Planned Accomplishments

	~~2020~~2030	~~2030~~2040	~~2050~~2045
Forecasted Emissions	~~559~~605,420 $MTCO_2e$ ~~(5.1 $MTCO_2e$ per-capita)~~	~~618,670~~696,810 $MTCO_2e$ ~~(5.0 $MTCO_2e$ per-capita)~~	~~667,470~~750,400 $MTCO_2e$ ~~(4.6 $MTCO_2e$ per-capita)~~
Reductions from State existing and planned accomplishments	-~~24,080~~72,900 $MTCO_2e$ ~~(-0.2 $MTCO_2e$ per-capita)~~	-~~107,780~~147,970 $MTCO_2e$ ~~(-0.9 $MTCO_2e$ per-capita)~~	-~~194,570~~196,140 $MTCO_2e$ ~~(-1.4 $MTCO_2e$ per-capita)~~
Reductions from local and regional existing and planned accomplishments	-23,~~700~~980 $MTCO_2e$ ~~(-0.2 $MTCO_2e$ per-capita)~~	-~~32,470~~18,360 $MTCO_2e$ ~~(-0.3 $MTCO_2e$ per-capita)~~	-4,~~120~~950 $MTCO_2e$ ~~(Less than -0.1 $MTCO_2e$ per-capita)~~
Emissions with existing and planned accomplishments	~~511,640~~508,380 $MTCO_2e$ ~~(4.7 $MTCO_2e$ per-capita)~~	~~478,350~~530,510 $MTCO_2e$ ~~(3.9 $MTCO_2e$ per-capita)~~	~~468,720~~549,320 $MTCO_2e$ ~~(3.3 $MTCO_2e$ per-capita)~~

GREENHOUSE GAS INVENTORIES, ~~FORECAST~~FORECASTS, AND REDUCTION TARGETS

Table ES-2:Reductions by Measure

Measure	~~2020~~2030	~~2030~~2040	~~2050~~2045
BE 1: All-electric new construction	-~~880~~21,070	-~~4,640~~38,450	-~~7,420~~47,250
BE 2: All-electric existing buildings	-~~620~~102,210	-~~13,950~~184,610	-~~85,960~~221,260
RE 1: Peninsula Clean Energy	-~~380~~160	-~~1,060~~170	0
RE 2: Renewable energy systems for new and existing residences	-~~60~~70	-~~170~~160	0
RE 3: Renewable energy systems for new and existing nonresidential buildings	-~~10~~60	-~~70~~90	0
EE 1: Residential energy efficiency retrofits	-~~410~~6,160	-~~6,030~~7,020	-~~17,860~~6,790
EE 2: Nonresidential energy efficiency retrofits	-~~840~~3,800	-~~9,930~~8,860	-~~17,040~~13,380
EE 3: Resdential tree planting	~~-<~~Less than -10	~~-<~~Less than -10	~~-<10~~0
ME 1: Energy efficiency for new municipal buildings	Supportive (no measurable GHG reductions)		
ME 2: Energy efficiency at existing municipal buildings	~~-<~~-10	-~~20~~30	-~~70~~40
ME 3: All-electric municipal buildings	~~0~~-130	-~~110~~200	-~~210~~270
CF 1: Electric vehicle charging infrastructure	-~~2,650~~24,420	-~~29,630~~49,390	-~~71,150~~69,780
CF 2: Electric vehicle education and outreach	-~~980~~4,910	-~~17,050~~8,030	-~~17,120~~12,360
CF 3: Clean city fleet	-~~30~~130	-~~170~~200	-~~420~~270
CF 4: Clean fuel and vehicle emissions	-~~20~~4,210	-~~3,130~~16,920	-~~7,000~~26,360
ST 1: Bicycle mode share	-~~40~~80	-~~240~~170	-~~670~~180
ST 2: Pedestrian mode share	-~~390~~110	-~~760~~120	-~~1,110~~130
ST 3: Micromobility and shared mobility	Supportive (no measurable GHG reductions)		
ST 4: Public transit service	-~~830~~3,610	-~~9,130~~5660	-~~25,110~~6,910
ST 5: Commuter programs	~~0~~Less than -10	-~~130~~70	-~~3,420~~160

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Measure	~~2020~~2030	~~2030~~2040	~~2050~~2045
ST 6: Transportation Demand Management	-~~60~~2,010	-~~2,330~~7,950	-~~8,460~~13,410
ST 7: Transit-oriented development	-~~160~~10,200	-~~990~~18,920	-~~2,370~~23,700
SW 1: Composting program	-~~950~~1,030	-~~12,650~~1,710	-~~14~~1,850
SW 2: Expanded recycling service	-~~810~~6,070	-~~5,360~~7,730	-8,~~530~~820
SW 3: Waste awareness and source reduction	-~~420~~2,080	-~~1,910~~4,050	-5,~~510~~590
WW 1: Water efficiency retrofits for existing buildings	-~~20~~170	-~~100~~300	-~~230~~360
WW 2: Water-efficient landscaping	~~-<~~Less than -10	~~-<~~-10	0
WW 3: Water efficiency in new construction	~~0~~Less than -10	~~-<~~-10	-~~10~~20
OR 1: Alternative fuel lawn and garden equipment	~~0~~-3,660	-~~200~~7,130	-~~1,140~~9,890
Total	**-~~10,560~~196,360**	**-~~119,760~~367,960**	**-~~295,660~~468,780**

Note: Due to rounding, totals may not equal the sum of the component parts.

GREENHOUSE GAS INVENTORIES, ~~FORECAST~~FORECASTS, AND REDUCTION TARGETS

Table 1: California Climate Change Impacts

Climate Impact	Historical Trends	Future Direction of Change	Confidence for Future Change
Temperature	Warming	Warming	Very High
Sea Level Rise	Rising	Rising	Very High
Snowpack	Declining	Declining	Very High
Annual Precipitation	No Significant Trends	Unknown	Low
Intensity of Heavy Precipitation Events	No Significant Trends	Increasing	Medium-High
Frequency of Droughts	No Significant Trends	Increasing	Medium-High
Frequency and Intensity of Santa Ana Winds	No Significant Trends	Unknown	Low
Marine Layer Clouds	Some Downward Trends	Unknown	Low
Acres Burned by Wildfire	Increasing	Increasing	Medium-High

Source: Bedsworth, Louise, Dan Cayan, Guido Franco, Leah Fisher, Sonya Ziaja. (California Governor's Office of Planning and Research, Scripps Institution of Oceanography, California Energy Commission, California Public Utilities Commission). 2018. Statewide Summary Report. California's Fourth Climate Change Assessment. Publication number: SUMCCCA4-2018-013.

Table 2: San Mateo Population (2005 – ~~2017~~2019)

Indicator	2005 Value	2010 Value	2015 Value	2017 Value	2019 Value	~~Percent~~Percentage Change, 2005–~~2017~~2019	Source
Population	93,400	97,110	101,610	103,470	~~11%~~104,599	12%	CA Dept. of Finance, ABAG

Table 3: San Mateo 2005 Community-Wide GHG Emissions

Sector	$MTCO_2e$ ~~(Absolute)~~	
On-road transportation	282,~~380~~370	~~3.02~~42%

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Commercial/industrial built environment		169,000 ~~141,960~~		~~1.52~~25%
Residential built environment		~~136,680~~163,770		~~1.46~~25%
~~Off-road equipment~~		~~55,770~~	~~0.60~~	~~8%~~
Solid waste generation		22,180		3%
~~Point sources~~Off-road equipment		15,900 ~~7,390~~		~~0.08~~2%
Landfill		7,370		1%
Rail		4,350		1%
Water and wastewater		2,520		0~~.03~~%
Land use and sequestration		-1,050		-1%
Total		**~~660,600~~666,410**		**100%**
Informational Items				
Point sources	7,390	1%		

Note: Due to rounding, totals may not equal the sum of the component parts.

GREENHOUSE GAS INVENTORIES, ~~FORECAST~~FORECASTS, AND REDUCTION TARGETS

Table 4: San Mateo 2005-~~2017~~ 2019 Community-Wide Emissions ~~(Absolute)~~

Sector	2005 ($MTCO_2e$)	2010 ($MTCO_2e$)	2015 ($MTCO_2e$)	2017 ($MTCO_2e$)	2019 ($MTCO_2e$)	~~Percent~~Percentage Change, 2005 to ~~2017~~2019
On-road transportation	282,~~380~~370	287,~~540~~550	280,~~560~~570	269,~~100~~110	~~-5%~~276,560	-2%
Commercial/industrial built environment	~~141,960~~169,000	~~131,610~~151,200	~~119,500~~137,350	~~85,840~~101,720	~~-40%~~83,660	-50%
Residential built environment	~~136,680~~163,770	~~136,590~~165,800	~~109,190~~131,660	~~97,730~~118,980	~~-28%~~114,630	-30%
Off-road equipment	~~55,770~~15,900	~~53,680~~17,840	~~41,470~~14,960	~~45,040~~14,940	~~-19%~~14,400	-9%
Solid waste generation	22,180	16,580	15,~~850~~860	17,890	~~-19%~~21,910	-1%
~~Point sources~~		~~7,390~~	~~7,390~~	~~11,610~~	~~14,230~~	~~93%~~
Landfill	7,370	6,670	6,030	5,800	~~-21%~~4,180	-43%
Rail	4,350	4,480	4,~~400~~410	4,520	4%,440	2%
Water and wastewater	2,520	2,~~370~~380	2,220	1,~~800~~810	~~-29%~~1,670	-34%
Land use and sequestration	-1050	-1,050	-1,050	-1,040	-1040	-1%
Total	**~~660,600~~**666,410	**~~646,920~~**651,450	**~~590,850~~**592,010	**~~541,960~~**533,730	~~-18%~~520,410	-22%

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Sector	2005 ($MTCO_2e$)		2010 ($MTCO_2e$)		2015 ($MTCO_2e$)	2017 ($MTCO_2e$)	2019 ($MTCO_2e$)	~~Percent~~Percentage Change, 2005 to ~~2017~~2019
Informational Item								
Point sources	7,390	7,390	11,610	14,230	18,090	145%		

~~*Note: Due to rounding, totals may not equal the sum of the component parts.*~~

~~Table 5: San Mateo 2005-2017 Community-Wide Emissions (Per-Capita)~~

~~Sector~~	~~2005 ($MTCO_2e$ per-capita)~~	~~2010 ($MTCO_2e$ per-capita)~~	~~2015 ($MTCO_2e$ per-capita)~~	~~2017 ($MTCO_2e$ per-capita)~~	~~Percent Change, 2005 to 2017 *~~
~~On-road transportation~~	~~3.02~~	~~2.96~~	~~2.76~~	~~2.60~~	~~-14%~~
~~Commercial/industrial built environment~~	~~1.52~~	~~1.35~~	~~1.18~~	~~0.83~~	~~-45%~~
~~Residential built environment~~	~~1.46~~	~~1.41~~	~~1.07~~	~~0.94~~	~~-35%~~
~~Off-road equipment~~	~~0.60~~	~~0.55~~	~~0.41~~	~~0.44~~	~~-27%~~
~~Solid waste generation~~	~~0.24~~	~~0.17~~	~~0.16~~	~~0.17~~	~~-27%~~
~~Point sources~~	~~0.08~~	~~0.76~~	~~0.11~~	~~0.14~~	~~74%~~
~~Landfill~~	~~0.08~~	~~0.07~~	~~0.06~~	~~0.06~~	~~-29%~~
~~Rail~~	~~0.05~~	~~0.05~~	~~0.04~~	~~0.04~~	~~-6%~~
~~Water and wastewater~~	~~0.03~~	~~0.02~~	~~0.02~~	~~0.02~~	~~-36%~~
~~**Total**~~	~~**7.1**~~	~~**6.7**~~	~~**5.8**~~	~~**5.2**~~	~~**-26%**~~

Note: Due to rounding, totals may not equal the sum of the component parts.

Figure 1:

Table 5: San Mateo 2005 and 2019 Community Emissions (Per-Capita)

	2005	2019
$MTCO_2e$ per-capita	7.14	4.98

GREENHOUSE GAS INVENTORIES, ~~FORECAST~~FORECASTS, AND REDUCTION TARGETS

Table 6: San Mateo ~~2017, 2020~~2019, 2030, 2040, and ~~2050~~2045 Growth Indicators

Indicator	~~2017~~2019 Value	~~2020~~2030 Value	~~2030~~2040 Value	~~2050~~ 2045 Value	~~Percent~~Percentage Change, ~~2005–2050~~ 2019–2045
Population~~Households~~	~~38,950~~104,599	~~43,040~~129,210	~~48,180~~156,585	~~53,630~~172,370	~~38~~65%
Households~~Jobs~~	~~63,200~~39,771	~~62,570~~49,260	59,843	65,960	66~~,510~~%
Jobs~~Population~~	~~103,470~~61,232	~~109,670~~69,400	~~123,200~~77,760	~~143,600~~82,310	~~39~~34%
Service population[1]	~~166,670~~165,831	~~172,240~~198,610	~~189,710~~234,345	~~213,140~~254,680	~~28~~54%

[1] *Service population is the sum of the residential population and the number of jobs.*

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San Mateo Community-Wide BAU GHG Emissions Sector Totals ~~(Absolute)~~

Sector	~~2017~~ 2019 ($MTCO_2e$)	~~20202030~~ ($MTCO_2e$)	~~20302040~~ ($MTCO_2e$)	~~20502045~~ ($MTCO_2e$)	Percentage Change, ~~2017–20502019–2045~~
On-road transportation	~~269,100~~276,560	~~295,560~~308,930	~~329,970~~351,730	~~366,190~~375,310	36%
Commercial/industrial built environment	~~85,840~~83,660	~~80,420~~93,710	~~85,050~~104,010	~~88~~109,610	~~3~~31%
Residential built environment	~~97,730~~114,630	141,960~~101,270~~	~~113,360~~172,460	~~126,~~190,110	~~29~~66%
Off-road equipment	~~45,040~~14,400	~~37,470~~23,770	~~44,100~~26,620	~~38,420~~30,360	~~-15~~111%
Solid waste generation	~~17,890~~21,910	~~18,490~~26,240	~~20,360~~30,960	~~22,880~~33,650	~~28~~54%
~~Point sources~~	~~14,230~~	~~14,230~~	~~14,230~~	~~14,230~~	~~0%~~
Landfill	~~5,800~~4,180	~~5,460~~4,470	~~4,470~~3,660	3,~~000~~310	-~~48~~21%
Rail	4,~~520~~440	~~4,660~~5,220	~~56~~,080	~~5,650~~6,560	~~25~~48%
Water and wastewater	1,~~800~~670	1,~~860~~990	2,~~050~~340	2,~~300~~540	~~28~~53%
Land use and sequestration	-1,040	-1,050	-1,050	-1,050	0%
Total	**~~541,960~~520,400**	**~~559,420~~605,240**	**~~618,670~~696,810**	**~~667,470~~750,400**	**~~23~~44%**
Percentage Change from 2005	-22%	~~3~~-9%	~~14~~5%	~~23~~13%	
Informational Item					
Point sources	18,090	18,090	18,090	18,090	0%

Note: Due to rounding, totals may not equal the sum of the component parts.

GREENHOUSE GAS INVENTORIES, ~~FORECAST~~FORECASTS, AND REDUCTION TARGETS

~~Table 7: San Mateo Community-Wide BAU GHG Emissions Sector Totals (Per-Capita)~~

~~Sector~~	~~2017 ($MTCO_2e$ per-capita)~~	~~2020 ($MTCO_2e$ per-capita)~~	~~2030 ($MTCO_2e$ per-capita)~~	~~2050 ($MTCO_2e$ per-capita)~~	~~Percentage Change, 2017–2050~~
~~On-road transportation~~	~~2.60~~	~~2.69~~	~~2.68~~	~~2.55~~	~~-2%~~
~~Commercial/industrial built environment~~	~~0.83~~	~~0.73~~	~~0.69~~	~~0.62~~	~~-26%~~
~~Residential built environment~~	~~0.94~~	~~0.92~~	~~0.92~~	~~0.87~~	~~-7%~~
~~Off-road equipment~~	~~0.44~~	~~0.34~~	~~0.36~~	~~0.28~~	~~-39%~~
~~Solid waste generation~~	~~0.17~~	~~0.17~~	~~0.17~~	~~0.16~~	~~-8%~~
~~Point sources~~	~~0.14~~	~~0.13~~	~~0.12~~	~~0.10~~	~~-28%~~
~~Landfill~~	~~0.06~~	~~0.05~~	~~0.04~~	~~0.02~~	~~-63%~~
~~Rail~~	~~0.04~~	~~0.04~~	~~0.04~~	~~0.04~~	~~-10%~~
~~Water and wastewater~~	~~0.02~~	~~0.01~~	~~002~~	~~0.02~~	~~-8%~~
~~Total~~	**~~5.2~~**	**~~5.1~~**	**~~5.0~~**	**~~4.6~~**	**~~-11%~~**
~~Percentage Change from 2005~~	**~~-26%~~**	**~~-28%~~**	**~~-29%~~**	**~~-34%~~**	

~~Note: Due to rounding, totals may not equal the sum of the component parts.~~

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Table 8: Calculation Process for State-Recommended Targets

	2030	2050
1990 emissions level	431 million $MTCO_2e$	431 million $MTCO_2e$
Emissions target	260 million $MTCO_2e$ (established in Scoping Plan)	86 million $MTCO_2e$ (estimated, 80 percent below 431 million $MTCO_2e$)
Statewide population projection	43,939,250	49,077,801
Target per-capita (direct calculation)	5.9 $MTCO_2e$ per-capita	1.8 $MTCO_2e$ per-capita
Target per-capita (set in Scoping Plan)	6.0 $MTCO_2e$ per-capita	2.0 $MTCO_2e$ per-capita

Table 9: Calculation Process for Per-Capita Targets

	2030	2050
Projected emissions with inapplicable sectors removed *	190.7 million $MTCO_2e$ †	57 million $MTCO_2e$ ‡
Statewide population projection	43,939,250	49,077,801
Per-capita target	4.3 $MTCO_2e$ per-capita	1.2 $MTCO_2e$ per-capita

** The inapplicable sectors are Industrial, Oil and Gas Extraction, Petroleum Refining, Agriculture, and Non-Energy GHGs (e.g. refrigerants and emissions from cement production).*

† From the State's 2030 Scoping Plan Pathways scenario.

‡ Estimated by reducing all sectors of the State's 1990 emissions inventory by 80 percent, consistent with the 2050 statewide goal.

GREENHOUSE GAS INVENTORIES, ~~FORECAST~~FORECASTS, AND REDUCTION TARGETS

~~Table 10:San Mateo CAP Emission Targets (2020 – 2050)~~

	~~2020~~	~~2030~~	~~2050~~
~~Absolute ($MTCO_2e$)~~	~~561,510~~	~~529,760~~	~~172,310~~
~~Per-capita ($MTCO_2e$ per-capita)~~	~~5.1~~	~~4.3~~	~~1.2~~

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~~Table 11:~~Table 7:San Mateo Emissions with ~~2020~~ CAP Implementation (~~2020 – 2050~~2030 – 2045)

	~~2020~~	2030	~~20502045~~
Projected Emission level	~~501,110~~311,990 $MTCO_2e$ ~~(4.6 $MTCO_2e$ per-capita)~~	~~358,610~~80,550 $MTCO_2e$ ~~(2.9 $MTCO_2e$ per-capita)~~	~~173,080 $MTCO_2e$ (1.2 $MTCO_2e$ per-capita)~~
Target	~~561,510~~339,880 $MTCO_2e$	~~4.3~~84,970 $MTCO_2e$ ~~per-capita~~	~~1.2 $MTCO_2e$ per-capita~~
Target achieved?	Yes	Yes	~~Yes~~
Gap to target	~~-60,400~~27,890 $MTCO_2e$	~~-1.4~~,420 $MTCO_2e$ ~~per-capita~~	~~0 $MTCO_2e$ per-capita~~

~~Table 12:~~Table 8: Reductions from CAP Measures (~~2020 – 2050~~2030 – 2045)

Measure	~~2030~~2020	~~2040~~2030	~~2050~~2045
BE 1: All-electric new construction	-~~880~~21,070	-~~4,640~~38,450	-~~7,420~~47,250
BE 2: All-electric existing buildings	-~~620~~102,210	-~~13,950~~184,610	-~~85,960~~221,260
RE 1: Peninsula Clean Energy	-~~380~~160	-~~1,060~~170	-~~-~~0
RE 2: Renewable energy systems for new and existing residences	-~~60~~70	-~~170~~160	-~~-~~0
RE 3: Renewable energy systems for new and existing nonresidential buildings	-~~10~~60	-~~70~~90	-~~-~~0
EE 1: Residential energy efficiency retrofits	-~~410~~6,160	-~~6,030~~7,020	-~~17,860~~6,790
EE 2: Nonresidential energy efficiency retrofits	-~~840~~3,800	-~~9,930~~8,860	-~~17,040~~13,380
EE 3: Residential tree planting	~~-<~~Less than -10	~~-<~~Less than -10	~~-<~~Less than-10
ME 1: Energy efficiency for new municipal buildings	Supportive (no measurable GHG reductions)		
ME 2: Energy efficiency at existing municipal buildings	-~~0~~10	-~~20~~30	-~~70~~40
ME 3: All-electric municipal buildings	-~~0~~130	-~~110~~200	-~~210~~270
CF 1: Electric vehicle charging infrastructure	-~~2,650~~24,420	-~~29,630~~49,390	-~~71,150~~69,780
CF 2: Electric vehicle education and outreach	-~~980~~4,910	-~~17,050~~8,030	-~~17,120~~12,360
CF 3: Clean city fleet	-~~30~~130	-~~170~~200	-~~420~~270
CF 4: Clean fuel and vehicle emissions	-~~20~~4,210	-~~3,130~~16,920	-~~7,000~~26,360
ST 1: Bicycle mode share	-~~40~~80	-~~240~~170	-~~670~~180
ST 2: Pedestrian mode share	-~~390~~110	-~~760~~120	-~~1,110~~130
ST 3: Micromobility and shared mobility	Supportive (no measurable GHG reductions)		
ST 4: Public transit service	-~~830~~3,610	-~~9,130~~5,660	-~~25,110~~6,910
ST 5: Commuter programs	~~0~~Less than -10	-~~130~~70	-~~3,420~~160
ST 6: Transportation Demand Management	-~~60~~2,010	-~~2,330~~7,950	-~~8,460~~13,410
ST 7: Transit-oriented development	-~~160~~10,200	-~~990~~18,920	-~~2,370~~23,700

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Measure	20302020	20402030	20502045
SW 1: Composting program	-9501,030	-12,6501,710	-141,850
SW 2: Expanded recycling service	-8106,070	-5,3607,730	-8,530820
SW 3: Waste awareness and source reduction	-4202,080	-1,9104,050	-5,510590
WW 1: Water efficiency retrofits for existing buildings	-20170	-100300	-230360
WW 2: Water-efficient landscaping	-<Less than -10	-<-10	0
WW 3: Water efficiency in new construction	0Less than -10	-<-10	-1020
OR 1: Alternative fuel lawn and garden equipment	0-3,660	-2007,130	-1,1409,890
Total	**-10,560196,360**	**-119,760367,960**	**-295,660468,780**

Note: Due to rounding, totals may not equal the sum of the component parts.

~~Table 13:~~Table 9:San Mateo Community-Wide GHG Emissions Reductions from State Programs

Policy	20202030 Emissions ($MTCO_2e$)	20302040 Emissions ($MTCO_2e$)	20502045 Emissions ($MTCO_2e$)
Forecasted emissions	559,420605,240	618,670696,810	667,470750,400
Clean Car Standards-[1]	-20,05055,030	-91,85095,730	-130,530109,680
Renewables Portfolio Standard	-2804,720	-5,38015,330	-46,30039,860
Title 24	-9809,380	-7,26032,480	-14,67041,790
~~Local Carbon Fuel Standard~~ [2]SB 1383	-2,7703,760	3,260-4,430	-2,8504,820
~~Innovative Clean Transit~~	~~-0~~	~~-30~~	~~-220~~
Total reductions from existing State programs	-24,08072,890	-107,780147,970	-194,570196,150
Emissions with existing State programs	**535532,340**	**510,880548,840**	**472,900554,260**

~~*1: Includes reductions from the Low Carbon Fuel Standard for transportation fuels*~~
~~*2: Reductions from off-road equipment fuel only.*~~
Note: Due to rounding, totals may not equal the sum of the component parts.

~~Table 14:~~Table 10:Emissions Reductions from Local and Regional Programs

Policy	~~2020~~2030 GHG Emissions ($MTCO_2e$)	~~2040~~2030 GHG Emissions ($MTCO_2e$)	~~2050~~2045 GHG Emissions ($MTCO_2e$)	
Emissions with Existing State Programs	**~~535~~532,340**	**~~510,880~~548,840**	**~~472,900~~554,260**	
Peninsula Clean Energy	-~~19,810~~20,000	-~~28,730~~13,750	0	
Energy efficiency retrofits	-~~50~~30	-30	-30	
Solar energy installations	-~~100~~20	-10	0	
~~Caltrain shuttles~~Municipal energy retrofits	-~~20~~160	-~~10~~160	-~~10~~160	
~~Electric vehicle adoption~~		~~-3,420~~	~~0~~	~~0~~
Public access EV chargers	~~-300~~	~~-300~~	~~-300~~	
Transportation Demand Management	-~~270~~220	-~~210~~200	-~~180~~190	
Caltrain electrification (planned)	~~0~~-3,560	-~~3,450~~4,200	-~~3,880~~4,560	
~~Sustainable Solutions Turnkey program (planned)~~		~~0~~	~~-60~~	~~-60~~
Total reductions from existing and planned local and regional programs	-23,~~700~~990	-~~32,470~~18,330	-4,~~120~~940	

CHAPTER 4

Policy	20202030 GHG Emissions ($MTCO_2e$)	20402030 GHG Emissions ($MTCO_2e$)	20502045 GHG Emissions ($MTCO_2e$)
Emissions with existing and planned local and regional programs	**511,640508,380**	**478,350530,510**	**468,720549,320**

Note: Due to rounding, totals may not equal the sum of the component parts.

Table 15:Table 11:Emissions with Existing and Planned Efforts

Policy	20202030	20402030	20502045
2005 (baseline) emissions ($MTCO_2e$)	660,600666,430	660,600666,430	660,600666,430
Emissions with existing and planned programs ($MTCO_2e$)	511,640508,380	478,350 (3.9 $MTCO_2e$ per-capita)530,510	468,720 (3.3 $MTCO_2e$ per-capita)549,320
Percent below baseline emissions	-2324%	-2820%	-2918%

BE 1: All-electric new construction

	20302020	20402030	20502045
GHG reduction ($MTCO_2e$)	8821,070	4,64038,450	7,42047,250

BE 2: All-electric existing buildings

	20302020	20402030	20502045
GHG reduction ($MTCO_2e$)	620102,210	13,950184,610	85,960221,260

RE 1: Peninsula Clean Energy

	20302020	20402030	20502045
GHG reduction ($MTCO_2e$)	380160	1,060170	0

RE 2: Renewable energy systems for new and existing residences

	20302020	20402030	20502045
GHG reduction ($MTCO_2e$)	6070	170160	0

RE 3: Renewable energy systems for new and existing nonresidential buildings

	20302020	20402030	20502045
GHG reduction ($MTCO_2e$)	1060	7090	0

EE 1: Residential energy efficiency retrofits

	20302020	20402030	20502045
GHG reduction ($MTCO_2e$)	4106,160	6,0307,020	17,8606,790

EE 2: Nonresidential energy efficiency retrofits

	20302020	20402030	20502045
GHG reduction ($MTCO_2e$)	8403,800	9,9308,860	17,04013,380

EE 3: Residential tree planting

	20302020	20402030	20502045
GHG reduction ($MTCO_2e$)	Less than 10	Less than 10	Less than 100

ME 1: Energy efficiency for new municipal buildings

	20302020	20402030	20502045
GHG reduction ($MTCO_2e$)	Supportive	Supportive	Supportive

CHAPTER 4

ME 2: Energy efficiency at existing municipal buildings

	20302020	20402030	20502045
GHG reduction ($MTCO_2e$)	010	2030	7040

ME 3: All-electric municipal buildings

	20302020	20402030	20502045
GHG reduction ($MTCO_2e$)	0130	110200	210270

CF 1: Electric vehicle charging infrastructure

	20302020	20402030	20502045
GHG reduction ($MTCO_2e$)	2,65024,420	29,63049,390	71,15069,780

CF 2: Electric vehicle education and outreach

	20302020	20402030	20502045
GHG reduction ($MTCO_2e$)	9804,910	17,0508,030	17,12012,360

CF 3: Clean City fleet

	20302020	20402030	20502045
GHG reduction ($MTCO_2e$)	30130	170200	420270

CF 4: Clean fuel and vehicle emissions

	20302020	20402030	20502045
GHG reduction ($MTCO_2e$)	204,210	3,13016,920	7,00026,360

ST 1: Bicycle mode share

	20302020	20402030	20502045
GHG reduction ($MTCO_2e$)	4080	240170	670180

ST 2: Pedestrian mode share

	20302020	20402030	20502045
GHG reduction ($MTCO_2e$)	390110	760120	1,110130

ST 3: Micromobility and shared mobility

	20302020	20402030	20502045
GHG reduction ($MTCO_2e$)	Supportive	Supportive	Supportive

ST 4: Public transit service

	20302020	20402030	20502045
GHG reduction ($MTCO_2e$)	8303,610	9,1305,660	25,1106,910

ST 5: Commuter programs

	20302020	20402030	20502045
GHG reduction ($MTCO_2e$)	0Less than 10	13070	3,420160

ST 6: Transportation Demand Management

	20302020	20402030	20502045
GHG reduction ($MTCO_2e$)	602,010	2,3307,950	8,46013,410

ST 7: Transit-oriented developments

	20302020	20402030	20502045
GHG reduction ($MTCO_2e$)	16010,200	99018,920	2,37023,700

CHAPTER 4

SW 1: Composting program

	20302020	20402030	20502045
GHG reduction ($MTCO_2e$)	9501,030	12,65001,710	141,850

SW 2: Expanded recycling service

	2020203	20302040	20502045
GHG reduction ($MTCO_2e$)	6,070810	7,7305,360	8,8208,530

SW 3: Waste awareness and source reduction

	20302020	20402030	20502045
GHG reduction ($MTCO_2e$)	4202,080	1,91004,050	5,510590

WW 1: Water efficiency retrofits for existing buildings

	20302020	20402030	20502045
GHG reduction ($MTCO_2e$)	20170	100300	230360

WW 2: Water-efficient landscaping

	20302020	20402030	20502045
GHG reduction ($MTCO_2e$)	Less than 10	Less than 10	Less than 100

WW 3: Water efficiency in new construction

	20302020	20302040	20502045
GHG reduction ($MTCO_2e$)	0Less than 10	Less than 10	1020

OR 1: Clean fuel lawn and garden equipment

	20302020	20402030	20502045
GHG reduction ($MTCO_2e$)	03,660	2007,130	1,14009,890

~~Table 16:~~Table 12:~~Absolute~~ GHG Emissions Reductions by Measure Topic, ~~2020-2050~~2030-2045 ($MTCO_2e$)

	~~2030~~2020	~~2030~~2040	~~2050~~2045
Building electrification	-~~1,500~~123,280	-~~18,590~~223,060	-~~94,380~~268,510
Renewable energy	-~~450~~290	-~~1,300~~420	-~~0~~
Energy efficiency	-~~1,250~~9,960	-15,~~960~~880	-~~34,900~~20,170
Municipal energy efficiency and electrification	-~~0~~140	-~~130~~230	-~~280~~310
Clean fuels	-~~3,680~~33,670	-~~49,980~~74,540	-~~95,690~~108,770
Sustainable transportation	-~~1,480~~16,010	-~~13,580~~32,890	-~~41,140~~44,490
Solid waste	-~~29~~,180	-~~19,920~~13,490	-~~28,890~~16,260
Water and wastewater	-~~20~~170	-~~100~~320	-~~240~~380
Off-road equipment	-~~0~~3,660	-~~200~~7,130	-~~1,140~~9,890
Total	**-~~10,560~~196,360**	**-~~119,760~~367,960**	**-~~295,660~~468,780**

Note: Due to rounding, totals may not equal the sum of the component parts.

~~Table 17: Per-Capita GHG Emissions Reductions by Measure Topic, 2020-2050 ($MTCO_2e$ Per-Capita)~~

	~~2020~~	~~2030~~	~~2050~~
~~Building electrification~~	~~-0.01~~	~~-0.15~~	~~-0.65~~
~~Renewable energy~~	~~-<0.01~~	~~0.01~~	~~-0~~
~~Energy efficiency~~	~~-0.01~~	~~-0.13~~	~~-0.24~~
~~Municipal energy efficiency and electrification~~	~~-0~~	~~-<0.01~~	~~-<0.01~~
~~Clean fuels~~	~~-0.03~~	~~-0.41~~	~~-0.67~~
~~Sustainable transportation~~	~~-0.01~~	~~-0.11~~	~~-0.29~~
~~Solid waste~~	~~-0.02~~	~~-0.16~~	~~-0.20~~
~~Water and wastewater~~	~~-<0.01~~	~~-<0.01~~	~~-<0.01~~
~~Off-road equipment~~	~~-<0.01~~	~~-<0.01~~	~~-0.01~~
~~Total~~	**~~-0.10~~**	**~~-0.97~~**	**~~-2.06~~**

~~Note: Due to rounding, totals may not equal the sum of the component parts.~~

~~Table 18:~~Table 13: CAP Implementation Work Plan

Measure	Measure	~~2020~~2030 GHG Reduction ($MTCO_2e$)	~~2040~~2030 GHG Reduction ($MTCO_2e$)	~~2050~~2045 GHG Reduction ($MTCO_2e$)	City Staff Time	Time Frame	Lead Department(s)
BE 1	All-electric new construction	-~~880~~21,070	-~~4,640~~38,450	-~~7,420~~47,250	Medium	Near-term	City Manager's Office, Community Development
BE 2	All-electric existing buildings	-~~620~~102,210	-~~13,950~~184,610	-~~85,960~~221,260	High	Near-term	City Manager's Office, Community Development
RE 1	Peninsula Clean Energy	-~~380~~160	-~~1,060~~170	-~~-~~0	Low	Immediate	City Manager's Office
RE 2	Renewable energy systems for new and existing residences	-~~60~~70	-~~170~~160	-~~-~~0	Medium	Immediate	City Manager's Office, Community Development
RE 3	Renewable energy systems for new and existing nonresidential buildings	-~~10~~60	-~~70~~90	-~~-~~0	Medium	Immediate	City Manager's Office, Community Development
EE 1	Residential energy efficiency retrofits	~~--410~~-6,160	-~~6,030~~7,020	-~~17,860~~6,790	High	Near-term	City Manager's Office, Community Development
EE 2	Nonresidential energy efficiency retrofits	-~~840~~3,800	-~~9,930~~8,860	~~--17,040~~-13,380	High	Near-term	City Manager's Office, Community Development
EE 3	Residential tree planting	Less than -10	Less than -10	Less than -10	Low	Mid-term	City Manager's Office, Parks and Recreation

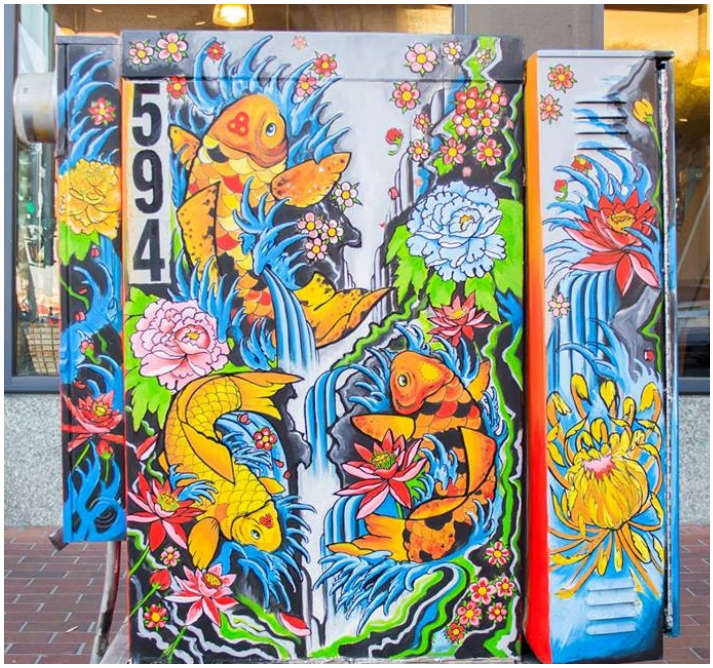
Measure	Measure	~~2020~~2030 GHG Reduction ($MTCO_2e$)	~~2040~~2030 GHG Reduction ($MTCO_2e$)	~~2050~~2045 GHG Reduction ($MTCO_2e$)	City Staff Time	Time Frame	Lead Department(s)
ME 1	Energy efficiency for new municipal buildings	Supportive	Supportive	Supportive	Medium	Mid-term	City Manager's Office, Public Works
ME 2	Energy efficiency at existing municipal buildings	-~~0~~10	-~~20~~30	-~~70~~40	Medium	Near-term	City Manager's Office, Public Works
ME 3	All-electric municipal buildings	-~~0~~130	-~~110~~200	-~~210~~270	Medium	Long-term	City Manager's Office, Public Works
CF 1	Electric vehicle charging infrastructure	-~~2,650~~24,420	-~~29,630~~49,390	-~~71,150~~69,780	High	Immediate	City Manager's Office, Community Development, Public Works
CF 2	Electric vehicle education and outreach	-~~980~~4,910	-~~17,050~~8,030	-~~17,120~~12,360	High	Immediate	City Manager's Office, Community Development
CF 3	Clean City fleet	-~~30~~130	-~~170~~200	-~~420~~270	Low	Near-term	Public Works
CF 4	Clean fuel	-~~20~~4,210	-~~3,130~~16,920	-~~7,000~~26,360	Medium	Long-term	City Manager's Office, Community Development, Public Works

Works Cited

Measure	Measure	~~2020~~2030 GHG Reduction ($MTCO_2e$)	~~2040~~2030 GHG Reduction ($MTCO_2e$)	~~2050~~2045 GHG Reduction ($MTCO_2e$)	City Staff Time	Time Frame	Lead Department(s)
ST 1	Bicycle mode share	-~~40~~80	-~~240~~170	-~~670~~180	Medium	Mid-term	Community Development, Public Works
ST 2	Pedestrian mode share	-~~390~~110	-~~760~~120	-~~1,110~~130	Low	Near-term	Community Development, Public Works
ST 3	Micromobility and shared mobility	Supportive	Supportive	Supportive	Low	Near-term	City Manager's Office, Public Works
ST 4	Public transit service	-~~830~~3,610	-~~9,130~~5,660	-~~25,110~~6,910	Medium	Near-term	City Manager's Office, Public Works
ST 5	Commuter programs	~~-~~0	-~~130~~70	-~~3,420~~160	High	Mid-term	City Manager's Office, Community Development, Public Works
ST 6	Transportation Demand Management	-~~60~~2,010	-~~2,330~~7,950	-~~8,460~~13,410	Medium	Immediate	Community Development, Public Works
ST 7	Transit-oriented development	-~~160~~10,200	-~~990~~18,920	-~~2,370~~23,700	Low	Near-term	Community Development

IMPLEMENTATION

Measure	Measure	~~2020~~2030 GHG Reduction ($MTCO_2e$)	~~2040~~2030 GHG Reduction ($MTCO_2e$)	~~2050~~2045 GHG Reduction ($MTCO_2e$)	City Staff Time	Time Frame	Lead Department(s)
SW 1	Composting program	-~~950~~1,030	-~~12,650~~1,710	-~~14~~1,850	High	Immediate	Public Works
SW 2	Expanded recycling service	-~~810~~6,070	-~~5,360~~7,730	-8,~~530~~820	High	Near-term	Public Works
SW 3	Waste awareness and source reduction	-~~420~~2,080	-~~1,910~~4,050	-5,~~510~~590	Medium	Near-term	City Manager's Office, Public Works
WW 1	Water efficiency retrofits for existing buildings	-~~20~~170	-~~100~~300	-~~230~~360	Medium	Mid-term	Public Works
WW 2	Water-efficient landscaping	Less than -10	Less than -10	Less than -10	Low	Near-term	Public Works
WW 3	Water efficiency in new construction	~~-~~0	~~Less than~~ -10	-~~10~~20	Medium	Mid-term	Community Development
OR 1	Alternative fuel lawn and garden equipment	-~~0~~3,660	-~~200~~7,130	-~~1,140~~9,890	Medium	Mid-term	City Manager's Office, Parks and Recreation



Appendix 1:

Technical Appendix: Methods and Assumptions

Emissions Factors

Table 1-1:Emissions Coefficients for CAP Measures

Source	2005	~~2017~~2019	~~2030~~2020	~~2040~~2030	~~2050~~2045	Source
$MTCO_2e$ per mile driven (with Pavley)	0.000464	0.~~0003800~~00392	0.~~0003540~~00312	0.~~0002740~~00277	0.~~0002440~~00269	EMFAC ~~2017~~2021
$MTCO_2e$ per Caltrain passenger mile	0.~~0043700~~04371	0.~~0027780~~02506	0.~~0027780~~00629	0.~~0027780~~00627	0.~~0027780~~00626	Caltrain, US Community Protocol
$MTCO_2e$ per kWh (PCE)	-	0.~~0000640~~00045	0.~~0000220~~00000	0.000000	0.000000	PCE, US EPA
$MTCO_2e$ per kWh (PG&E)	0.000223	0.~~0001830~~00002	0.~~0001830~~00002	0.~~0001330~~00001	0.000000	PG&E, US EPA

APPENDIX 1

Source	2005	~~2017~~2019	~~2030~~2020	~~2040~~2030	~~2050~~2045	Source
$MTCO_2e$ per kWh (direct access)	0.~~0003620~~00057	0.~~0001910~~00212	0.~~0001840~~00152	0.~~0001320~~00095	0.000000	CEC, US EPA
$MTCO_2e$ per kWh (weighted community average)	0.~~0002240~~00160	0.~~0000970~~00054	0.~~0000370~~00010	0.~~0000120~~00006	0.000000	PCE, PG&E, CEC, US EPA
$MTCO_2e$ per therm	0.~~0053120~~05292	0.~~0053120~~05319	0.~~0053120~~05319	0.~~0053120~~05319	0.~~0053120~~05319	US Community Protocol
$MTCO_2e$ per ton of waste	0.~~1928032~~07521	0.~~2104212~~53266	0.~~2104212~~36134	0.~~2104212~~36134	0.~~210421~~236134	CARB Landfill Emissions Tool v1.3

TECHNICAL APPENDIX: METHODS AND ASSUMPTIONS

Peninsula Clean Energy

GHG Reduction

	~~2030~~2020	~~2040~~2030	~~2050~~2045
Emissions reduction ($MTCO_2e$)	~~19,840~~20,000	~~28,730~~13,750	0

Performance Indicators

	~~2030~~2020	~~2040~~2030	~~2050~~2045
Electricity supplied by PCE (kWh)	~~470,663,200~~495,153,490	~~495,509,370~~487,569,650	~~496,143,950~~501,096,050
PCE electricity supplied to ~~ECO 100~~ECO100 customers (kWh)	~~10,550,640~~27,614,500	~~10,550,640~~27,614,500	~~10,550,640~~27,614,500

Energy~~ ~~~efficiency retrofits

Activity and GHG Reductions

	~~2030~~2020	~~2040~~2030	~~2050~~2045
Electricity savings (kWh)	~~716,330~~136,470	~~716,330~~136,470	~~716,330~~136,470
Natural gas savings (therms)	~~-860~~5,910	~~-860~~5,910	~~-860~~5,910
Emissions reduction ($MTCO_2e$)	~~50~~30	30	30

Solar energy installation

Activity and GHG Reduction

	~~2030~~2020	~~2040~~2030	~~2050~~2045

APPENDIX 1

Electricity savings (kWh)	~~3,592,650~~5,695,620	~~3,592,650~~5,695,620	~~3,592,650~~5,695,620
Emissions reduction ($MTCO_2e$)	~~100~~20	10	0

~~Caltrain shuttles~~

Municipal energy-efficiency retrofits

Activity and GHG Reduction

	~~2030~~2020	~~2030~~2040	~~2050~~2045
~~VMT~~Electricity savings (kWh)	~~47,740~~1,831,170	~~47,740~~1,831,170	~~47,740~~1,831,170
Natural gas savings (therms)	22,870	22,870	22,870
Emissions reduction ($MTCO_2e$)	~~20~~160	~~10~~160	~~10~~160

Public-access EV chargers

GHG Reduction

	2030	2040	2045
Emissions reduction ($MTCO_2e$)	Less than 10	Less than 10	Less than 10

Performance Indicators

	2030	2040	2045
Net increase in EV VMT	258,720	258,720	258,720
Net increase in electricity use (kWh)	87,960	87,960	87,960

~~**Performance Indicators**~~

	~~2020~~	~~2030~~	~~2050~~
~~Annual ridership increase~~	~~3,910~~	~~3,910~~	~~3,910~~
~~Average trip length (miles)~~	~~13.9~~	~~13.9~~	~~13.9~~

APPENDIX 1

Electric vehicle adoption

GHG Assumptions

	2020	2030	2050
Projected EV adoption rate by State	1.63%	3.92%	5.31%

GHG Reduction

	2020	2030	2050
Emissions reduction ($MTCO_2e$)	3,420	0	0

Performance Indicators

	2020	2030	2050
Projected EV adoption rate (at current levels)	2.02%	2.02%	2.02%
Net increase in EV VMT	9,873,684	0	0
Net increase in electricity use (kWh)	-3,357,050	0	0

Public-access EV chargers

GHG Reduction

	2020	2030	2050
Emissions reduction ($MTCO_2e$)	10	10	10

Performance Indicators

	2020	2030	
Net increase in EV VMT	28,200	28,200	28,200
Net increase in electricity use (kWh)	9,600	9,600	9,600

TECHNICAL APPENDIX: METHODS AND ASSUMPTIONS

Transportation Demand Management

Activity and GHG Reduction

	~~2020~~2030	2040~~2030~~	~~2050~~2045
Transportation savings (VMT)	~~752,750~~725,620	~~753,390~~700,370	~~733,700~~687,710
Emissions reduction ($MTCO_2e$)	~~270~~190	~~210~~170	~~180~~160

Additional Bicycle Lanes

Activity and GHG Reduction

	2030	2040	2045
VMT savings	97,990	111,570	119,050
Emissions reduction ($MTCO_2e$)	30	30	30

Performance Indicators

	2030	2040	2045
Additional bicycle lanes (miles)	6.4	6.4	6.4

~~Composting~~

~~Activity and GHG Reduction~~

	~~2020~~	~~2030~~	~~2050~~
~~Waste savings (tons)~~	~~4,090~~	~~4,090~~	~~4,090~~
~~Emissions reduction ($MTCO_2e$)~~	~~1,800~~	~~1,800~~	~~1,800~~

APPENDIX 1

Caltrain electrification

Activity and GHG Reduction

	~~2020~~2030	2040~~2030~~	~~2050~~2045
Electricity use increase (kWh)	~~0~~11,852,700	~~10,921,680~~11,852,700	~~10,921,680~~11,852,700
Emissions reduction ($MTCO_2e$)	~~0~~3,560	~~3,450~~4,200	~~3,880~~4,560

~~Sustainable Solutions Turnkey program~~

~~Activity and GHG Reduction~~

	~~2020~~	~~2030~~	~~2050~~
~~Electricity savings (kWh)~~	~~0~~	~~1,708,530~~	~~1,708,530~~
~~Natural gas savings (therms)~~	~~0~~	~~10,910~~	~~10,910~~
~~Emissions reduction ($MTCO_2e$)~~	~~0~~	~~60~~	~~60~~

BE 1 All-electric new construction

Assumptions

	~~2020~~2030	~~2030~~2040	~~2050~~2045
Cumulative % of residential construction influenced by energy efficiency reach code:	~~35~~90%	~~35~~95%	~~40~~95%
Cumulative % of office commercial construction influenced by energy efficiency reach code:	~~35~~85%	~~35~~90%	~~35~~95%
Cumulative % of non-office commercial construction influenced by energy efficiency reach code:	~~0~~40%	~~20~~60%	~~35~~90%
Cumulative % new non-residential buildings that are office space:	~~40~~59%	~~40~~64%	~~40~~64%

Activity and GHG reductions

	20302020	20402030	20502045
Electricity savings (kWh)	-441,6508,588,290	-2,386,81015,674,440	-3,903,36019,303,790
Natural gas savings (therms)	167,9703,099,740	874,2305,653,260	1,395,4806,936,870
Emissions reduction ($MTCO_2e$)	88021,070	4,64038,450	7,42047,250

Performance indicators

	20202030	20402030	20502045
Number of all-electric new construction residential housing units	4808,280 new construction residential housing units built all-electric.	2,73019,360 new construction residential housing units built all-electric.	5,52025,500 new construction residential housing units built all-electric.
Square feet of all-electric new construction non-residential buildings	24,560837,280 square feet of new construction non-residential buildings built all-electric.	548,7302,264,130 square feet of new construction non-residential buildings built all-electric.	2,508,8103,424,010 square feet of new construction non-residential buildings built all-electric.

BE 2 All-electric existing buildings

Assumptions

	20302020	20402030	20502045
Cumulative percent of commercial buildings that are office space	4059%	4064%	4064%
Cumulative percent of residential gas equipment reaching end of life replaced with electric due to panel incentive	535%	1040%	2050%

APPENDIX 1

Cumulative percent of residential electrical panel upgrades resulting in EV purchase	~~15~~50%	~~20~~35%	~~25~~20%
Cumulative percent of office gas equipment reaching end of life replaced with electric due to panel incentive	~~5~~70%	~~10~~75%	~~20~~90%
Cumulative percent of office electrical panel upgrades resulting in EV charging installation	~~10~~40%	~~10~~30%	~~15~~20%
Cumulative percent of EV purchases replacing gasoline vehicle	~~99~~98%	~~98~~97%	96%
Cumulative percent of EV purchases replacing diesel vehicle	~~1~~3%	~~2~~3%	4%

Activity and GHG reductions

	2030	2040	2045
Electricity savings (kWh)	-80,105,780	-125,747,100	-133,624,540
Natural gas savings (therms)	5,002,490	11,459,340	17,775,000
Emissions reduction ($MTCO_2e$)	102,210	184,610	221,260

Performance indicators

~~**Activity and GHG reductions**~~

	~~2020~~	~~2030~~	~~2050~~
~~Electricity savings (kWh)~~	~~-444,130~~	~~-9,897,890~~	~~-61,334,800~~
~~Natural gas savings (therms)~~	~~63,350~~	~~1,393,740~~	~~7,855,640~~
~~Emissions reduction ($MTCO_2e$)~~	~~620~~	~~13,950~~	~~85,960~~

Performance indicators

	2020	2030	2050
Existing residential gas to electric HVAC conversions	130 existing residential gas HVAC systems replaced with electric HVAC systems.	2,860 existing residential gas HVAC systems replaced with electric HVAC systems.	16,100 existing residential gas HVAC systems replaced with electric HVAC systems.
Existing residential gas to electric water heating conversions	190 existing residential gas water heaters replaced with electric HVAC systems.	4,280 existing residential gas water heaters replaced with electric HVAC systems.	24,150 existing residential gas water heaters replaced with electric HVAC systems.
Existing residential gas to electric clothes drying conversions	190 existing residential gas clothes dryers replaced with electric clothes dryers.	4,280 existing residential gas clothes dryers replaced with electric clothes dryers.	24,150 existing residential gas clothes dryers replaced with electric clothes dryers.
Existing residential gas to electric cooking conversions	160 existing residential gas ranges and ovens replaced with electric ranges and ovens.	3,430 existing residential gas ranges and ovens replaced with electric ranges and ovens.	19,320 existing residential gas ranges and ovens replaced with electric ranges and ovens.
Existing residential electrical panel upgrades	340 existing residential electrical panels upgraded.	7,430 existing residential electrical panels upgraded.	41,860 existing residential electrical panels upgraded.
Square feet of existing offices receiving gas to electric HVAC conversions	32,560 square feet of existing office buildings replace existing gas HVAC systems with electric HVAC systems.	716,370 square feet of existing office buildings replace existing gas HVAC systems with electric HVAC systems.	4,037,710 square feet of existing office buildings replace existing gas HVAC systems with electric HVAC systems.
Square feet of existing offices receiving gas to electric water heating conversions	48,840 square feet of existing office buildings replace existing gas water heaters with electric water heaters.	1,074,550 square feet of existing office buildings replace existing gas water heaters with electric water heaters.	6,056,560 square feet of existing office buildings replace existing gas water heaters with electric water heaters.

APPENDIX 1

	2020	2030	2050
Square feet of existing offices receiving gas to electric cooking conversions	39,070 square feet of existing office buildings replace existing gas ranges and ovens with electric ranges and ovens.	859,640 square feet of existing office buildings replace existing gas ranges and ovens with electric ranges and ovens.	4,845,250 square feet of existing office buildings replace existing gas ranges and ovens with electric ranges and ovens.
Square feet of existing offices receiving electrical panel upgrades	60,240 square feet of existing office buildings electrical panels upgraded.	1,325,280 square feet of existing office buildings electrical panels upgraded.	7,469,760 square feet of existing office buildings electrical panels upgraded.
Number of electric vehicles purchased/leased to replace internal combustion engine (ICE) vehicles	60 electric vehicles purchased or leased by residents or commuters to replace internal combustion engine vehicles.	1,720 electric vehicles purchased or leased by residents or commuters to replace internal combustion engine vehicles.	12,450 electric vehicles purchased or leased by residents or commuters to replace internal combustion engine vehicles.
Existing office parking spaces with EV charging:	10 EV charging ports installed at existing office buildings.	270 EV charging ports installed at existing office buildings.	2,240 EV charging ports installed at existing office buildings.
Existing residential parking spaces with EV charging:	50 EV charging ports installed at existing residential buildings.	1,490 EV charging ports installed at existing residential buildings.	10,460 EV charging ports installed at existing residential buildings.

GHG Method

	2030	2040	2045
Existing residential gas to electric HVAC conversions	9,890 existing residential gas HVAC systems replaced with electric HVAC systems.	22,620 existing residential gas HVAC systems replaced with electric HVAC systems.	35,340 existing residential gas HVAC systems replaced with electric HVAC systems.

	2030	2040	2045
Existing residential gas to electric water heating conversions	14,840 existing residential gas water heaters replaced with electric HVAC systems.	33,920 existing residential gas water heaters replaced with electric HVAC systems.	53,000 existing residential gas water heaters replaced with electric HVAC systems.
Existing residential gas to electric clothes drying conversions	7,420 existing residential gas clothes dryers replaced with electric clothes dryers.	16,960 existing residential gas clothes dryers replaced with electric clothes dryers.	26,500 existing residential gas clothes dryers replaced with electric clothes dryers.
Existing residential gas to electric cooking conversions	5,940 existing residential gas ranges and ovens replaced with electric ranges and ovens.	13,570 existing residential gas ranges and ovens replaced with electric ranges and ovens.	21,200 existing residential gas ranges and ovens replaced with electric ranges and ovens.
Existing residential electrical panel upgrades	19,050 existing residential electrical panels upgraded.	43,530 existing residential electrical panels upgraded.	68,020 existing residential electrical panels upgraded.
Square feet of existing offices receiving gas to electric HVAC conversions	5,523,120 square feet of existing office buildings replace existing gas HVAC systems with electric HVAC systems.	12,778,100 square feet of existing office buildings replace existing gas HVAC systems with electric HVAC systems.	19,167,150 square feet of existing office buildings replace existing gas HVAC systems with electric HVAC systems.
Square feet of existing offices receiving gas to electric water heating conversions	8,284,680 square feet of existing office buildings replace existing gas water heaters with electric water heaters.	19,167,150 square feet of existing office buildings replace existing gas water heaters with electric water heaters.	28,750,730 square feet of existing office buildings replace existing gas water heaters with electric water heaters.
Square feet of existing offices receiving gas to electric cooking conversions	6,627,740 square feet of existing office buildings replace existing gas ranges and ovens with electric ranges and ovens.	15,333,720 square feet of existing office buildings replace existing gas ranges and ovens with electric ranges and ovens.	23,000,580 square feet of existing office buildings replace existing gas ranges and ovens with electric ranges and ovens.

APPENDIX 1

	2030	2040	2045
Square feet of existing offices receiving electrical panel upgrades	10,217,770 square feet of existing office buildings electrical panels upgraded.	23,639,490 square feet of existing office buildings electrical panels upgraded.	35,459,230 square feet of existing office buildings electrical panels upgraded.
Number of electric vehicles purchased/leased to replace internal combustion engine (ICE) vehicles	16,750 electric vehicles purchased or leased by residents or commuters to replace internal combustion engine vehicles.	27,780 electric vehicles purchased or leased by residents or commuters to replace internal combustion engine vehicles.	26,150 electric vehicles purchased or leased by residents or commuters to replace internal combustion engine vehicles.
Existing office parking spaces with EV charging:	8,170 EV charging ports installed at existing office buildings.	14,180 EV charging ports installed at existing office buildings.	14,180 EV charging ports installed at existing office buildings.
Existing residential parking spaces with EV charging:	9,520 EV charging ports installed at existing residential buildings.	15,240 EV charging ports installed at existing residential buildings.	13,600 EV charging ports installed at existing residential buildings.

RE I Peninsula Clean Energy

GHG Assumptions

	20302020	20402030	20502045
Percent of residents enrolling in PCE	98%	99%	99.5%
Percent of businesses enrolling in PCE	98%	99%	99.5%
Percent of direct access customers switching to PCE	02%	24%	5%

GHG Reductions

	20302020	20402030	20502045
Emissions reduction ($MTCO_2e$)	380160	1,060170	0

Performance Indicators

	2030	2040	2045
PCE opt-out rate	1.0%	1.0%	0.5%
kWh supplied by ECO 100	32,959,210	43,792,410	55,425,750

GHG Method

~~**Performance Indicators**~~

	~~2020~~	~~2030~~	~~2050~~
~~PCE opt-out rate~~	~~2.0%~~	~~1.0%~~	~~0.5%~~
~~kWh supplied by ECO 100~~	~~15,009,960~~	~~28,976,980~~	~~53,073,310~~

RE 2 Renewable energy systems for new and existing residences

GHG Assumptions

	2030~~2020~~	2030~~2040~~	2050~~2045~~
Percent of existing homes installing solar energy systems	~~4~~15%	~~15~~25%	30%
Percent of existing homes with solar energy systems installing battery storage systems	~~1~~20%	~~20~~35%	50%
Percent of new homes installing battery storage systems	~~2~~25%	~~25~~40%	60%

GHG Reduction

	2020~~2030~~	2040~~2030~~	2050~~2045~~
Emissions reduction ($MTCO_2e$)	~~60~~70	~~170~~160	0

APPENDIX 1

Performance Indicators

	2030	2040	2045
Number of homes built before 2018 with solar panels	4,960	8,540	10,530
Number of total homes (existing and new) with battery energy systems	1,500	12,040	22,710

~~**Performance Indicators**~~

	~~2020~~	~~2030~~	~~2050~~
~~Number of homes built before 2018 with solar panels~~	~~420~~	~~4,700~~	~~10,540~~
~~Number of total homes (existing and new) with battery energy systems~~	~~40~~	~~3,480~~	~~14,650~~

RE 3 Renewable energy systems for new and existing nonresidential buildings

GHG Assumptions

	~~2020~~2030	~~2030~~2040	~~2050~~2045
Percent of existing businesses installing solar energy systems	~~1.5~~6%	~~6~~10%	15%
Percent of existing businesses with solar energy systems installing battery storage systems	~~1~~15%	~~15~~25%	40%

GHG reductions

	~~2030~~2020	~~2030~~2040	~~2050~~2045
Emissions reduction ($MTCO_2e$)	~~10~~60	~~70~~90	0

Performance indicators

	~~2030~~2020	~~2040~~2030	~~2050~~2045
Number of businesses built before 2018 with solar panels	~~10~~180	~~200~~340	~~580~~550
Number of existing businesses with battery energy systems	~~0~~40	~~40~~100	~~250~~240

EE 1 Residential energy efficiency retrofits

Assumptions

	~~2020~~2030	~~2040~~2030	~~2050~~2045
Percent of existing homes conducting standard retrofits (not including fuel-switched homes)	~~2~~15%	~~25~~18%	~~60~~20%
Percent of existing homes retrofitting to current Title 24 standards (not including fuel-switched homes)	~~0~~20%	~~5~~25%	~~20~~30%

Activity and GHG reductions

	2030	2040	2045
Electricity savings (kWh)	9,137,050	7,303,020	6,039,130
Natural gas savings (therms)	903,660	1,030,250	996,860
Emissions reduction ($MTCO_2e$)	6,160	7,020	6,790

~~**Activity and GHG reductions**~~

	~~2020~~	~~2030~~	~~2050~~
~~Electricity savings (kWh)~~	~~935,040~~	~~22,303,130~~	~~63,551,960~~
~~Natural gas savings (therms)~~	~~73,040~~	~~1,120,590~~	~~3,358,020~~
~~Emissions reduction ($MTCO_2e$)~~	~~410~~	~~6,030~~	~~17,860~~

APPENDIX 1

Performance indicators

	20302020	20402030	20502045
Number of homes retrofitted	4002,290 single-family homes and 340 multi-family1,840 multifamily homes undergoing standard retrofits, and 03,060 single-family homes and 0 multi-family2,450 multifamily homes being upgraded to current Title 24 standards	4,7202,540 single-family homes and 42,040 multi-familymultifamily homes undergoing standard retrofits, and 9403,530 single-family homes and 810 multi-family2,830 multifamily homes being upgraded to current Title 24 standards	10,0602,350 single-family homes and 8,620 multi-family1,890 multifamily homes undergoing standard retrofits, and 3,350530 single-family homes and 2,870 multi-family830 multifamily homes being upgraded to current Title 24 standards

EE 2 Nonresidential energy efficiency retrofits

Assumptions

	~~2020~~2030	2040~~2030~~	2050~~2045~~
Percent of existing businesses conducting standard retrofits (not including fuel-switched businesses)	~~3~~25%	40~~35~~%	~~75~~10%
Percent of existing businesses retrofitting to current Title 24 standards (not including fuel-switched businesses)	~~0~~15%	~~5~~40%	~~20~~75%

~~**Activity and GHG Reduction**~~

	~~2020~~	~~2030~~	~~2050~~
~~Electricity savings (kWh)~~	~~3,488,130~~	~~46,736,170~~	~~119,125,610~~
~~Natural gas savings (therms)~~	~~121,600~~	~~1,629,220~~	~~3,203,760~~
~~Emissions reduction ($MTCO_2e$)~~	~~840~~	~~9,930~~	~~17,040~~

Activity and GHG Reduction

	2030	2040	2045
Electricity savings (kWh)	22,252,780	60,968,630	93,592,880
Natural gas savings (therms)	535,400	1,266,570	1,964,000
Emissions reduction ($MTCO_2e$)	3,800	8,860	13,380

Performance Indicators

	2030	2040	2045
Number of businesses retrofitted	590 businesses undergoing standard retrofits, and 360 businesses upgraded to current Title 24 standards.	740 businesses undergoing standard retrofits, and 840 businesses upgraded to current Title 24 standards.	170 businesses undergoing standard retrofits, and 1,300 businesses upgraded to current Title 24 standards.

APPENDIX 1

~~Performance Indicators~~

	2020	2030	2050
~~Number of businesses retrofitted~~	~~120 businesses undergoing standard retrofits, and 0 businesses upgraded to current Title 24 standards.~~	~~1,600 businesses undergoing standard retrofits, and 200 businesses upgraded to current Title 24 standards.~~	~~2,870 businesses undergoing standard retrofits, and 770 businesses upgraded to current Title 24 standards.~~

EE 3 Residential tree planting

Assumptions

	~~2030~~2020	~~2030~~2040	~~2050~~2045
Percent of households with shade trees	~~2~~10%	~~10~~25%	35%

Activity and GHG reduction

	~~2030~~2020	~~2030~~2040	~~2050~~2045
Electricity savings (kWh)	~~174,760~~793,560	~~874,610~~1,889,740	~~3,064,110~~2,837,540
Emissions reduction ($MTCO_2e$)	Less than 10	Less than 10	~~Less than 10~~0

~~**Performance Indicators**~~

	~~2020~~	~~2030~~	~~2050~~
~~Number of households with shade trees~~	~~860~~	~~4,820~~	~~18,770~~

Performance Indicators

	2030	2040	2045
Number of households with shade trees	4,240	13,130	22,330

APPENDIX 1

ME 2 Energy efficiency at existing municipal buildings

Assumptions

	~~2030~~2020	~~2030~~2040	~~2050~~2045
Percent of existing municipal square footage retrofitted	~~0~~10%	~~10~~25%	35%

Note that these retrofits go beyond those included as part of the Sustainable Solutions Turnkey program, as those are already accounted for as a planned action.

Activity and GHG Reductions

	~~2030~~2020	~~2030~~2040	~~2050~~2045
Electricity savings (kWh)	~~21,240~~67,260	~~106,200~~168,140	~~371,700~~235,400
Natural gas savings (therms)	~~740~~1,860	~~3,700~~4,640	~~12,960~~6,500
Emissions reduction ($MTCO_2e$)	~~Less than~~ 10	~~20~~30	~~70~~40

~~Performance Indicators~~

	~~2030~~	~~2040~~	~~2045~~
~~Square footage of retrofitted municipal buildings~~	~~9,440~~	~~23,610~~	~~33,050~~

~~Performance Indicators~~

	~~2020~~	~~2030~~	~~2050~~
~~Square footage of retrofitted municipal buildings~~	~~3,970~~	~~19,830~~	~~69,390~~

ME 3 All-electric municipal buildings

Assumptions

	~~2020~~2030	~~2030~~2040	~~2050~~2045
Cumulative building area of existing municipal building/s electrified (square feet):	~~0~~40,000	~~40~~60,000	80,000

TECHNICAL APPENDIX: METHODS AND ASSUMPTIONS

	~~2020~~2030	~~2030~~2040	~~2050~~2045
Cumulative number of police stations & fire stations electrified:	0	0	1
Cumulative building area of new municipal building/s electrified (square feet):	~~0~~40,000	~~40~~60,000	80,000

APPENDIX 1

Activity and GHG Reductions

	2030	2040	2045
Electricity savings (kWh)	-157,380	-236,070	-314,760
Natural gas savings (therms)	19,760	29,640	39,520
Emissions reduction ($MTCO_2e$)	130	200	270

Performance Indicators

	2030	2040	2045
Square feet of existing municipal building/s electrified:	40,000 square feet of existing municipal buildings retrofitted to all-electric.	60,000 square feet of existing municipal buildings retrofitted to all-electric.	80,000 square feet of existing municipal buildings retrofitted to all-electric.

~~**Activity and GHG Reductions**~~

	~~2020~~	~~2030~~	~~2050~~
~~Electricity savings (kWh)~~	~~0~~	~~-157,380~~	~~-314,760~~
~~Natural gas savings (therms)~~	~~0~~	~~19,760~~	~~39,520~~
~~Emissions reduction ($MTCO_2e$)~~	~~0~~	~~110~~	~~210~~

~~**Performance Indicators**~~

	~~2020~~		~~2030~~	~~2050~~
	~~Square feet of existing municipal building/s electrified:~~	~~0 square feet of existing municipal buildings retrofitted to all-electric.~~	~~40,000 square feet of existing municipal buildings retrofitted to all-electric.~~	~~80,000 square feet of existing municipal buildings retrofitted to all-electric.~~
Number of police stations & fire stations electrified:	0 existing police stations or fire stations retrofitted to all-electric.	0 existing police stations or fire stations retrofitted to all-electric.	1 existing police stations or fire stations retrofitted to all-electric.	
Square feet of new municipal building/s electrified:	~~0~~40,000 square feet of new municipal buildings built all-electric.	~~40~~60,000 square feet of new municipal buildings built all-electric.	80,000 square feet of new municipal buildings built all-electric.	

APPENDIX 1

CF 1 Electric vehicle charging infrastructure

Assumptions

	~~2020~~2030	~~2040~~2030	~~2050~~2045
Cumulative average square feet of new commercial building space per parking spot	300	300	300
~~Cumulative target~~Target percent of new workplace parking to have EV charger installed	~~10~~20%	~~13~~20%	~~17~~25%
~~Cumulative target~~Target percent of new multi-unit dwelling residents with EV charger access	~~8~~15%	~~16~~25%	~~22~~30%
~~Cumulative target~~Target percent of new single-family homes to have EV charger outlet installed	~~0~~15%	~~50~~25%	~~70~~35%
Cumulative percent commercial buildings that are office space with parking	~~40~~59%	~~40~~64%	~~40~~64%
Cumulative average square feet of existing commercial building space per parking spot	600	600	600
~~Cumulative target~~Target percent of existing workplace parking to have EV charger installed	~~1~~7%	~~10~~8%	~~15~~10%
~~Cumulative target~~Target percent of existing multi-unit dwelling residents with access to EV charging	~~1~~7%	~~10~~8%	~~15~~10%
Cumulative target additional public parking spaces with EV charging	~~2~~38	~~30~~55	60
Cumulative percent of EV purchases that replace a gasoline vehicle	~~99~~98%	~~98~~97%	96%
Cumulative percent of EV purchases that replace a diesel vehicle	~~1~~2%	~~2~~3%	4%
Target percent of heavy-duty vehicle converted to EV	5%	20%	25%

Activity and GHG Reduction

	2030	2040	2045
Electricity savings (kWh)	-22,561,870	-36,502,430	-51,974,960
Emissions reduction ($MTCO_2e$)	24,420	49,390	69,780

Performance Indicators

	2030	2040	2045
New non-residential parking spaces with EV charging	1,570 EV charging ports installed at new non-residential buildings.	3,160 EV charging ports installed at new non-residential buildings.	5,010 EV charging ports installed at new non-residential buildings.
New multi-unit dwelling residential parking spaces with EV charging	810 EV charging ports installed at new multi-family residential buildings.	3,380 EV charging ports installed at new multi-family residential buildings.	5,290 EV charging ports installed at new multi-family residential buildings.
New single-family residential parking spaces with EV charger outlet	680 EV charging outlets installed at new single-family residential buildings.	1,970 EV charging outlets installed at new single-family residential buildings.	3,600 EV charging outlets installed at new single-family residential buildings.
Existing non-residential parking spaces with EV charging	1,540 EV charging ports installed at existing non-residential buildings.	2,100 EV charging ports installed at existing non-residential buildings.	2,770 EV charging ports installed at existing non-residential buildings.
Existing multi-unit dwelling residential parking spaces with EV charging	1,850 EV charging ports installed at existing multi-family residential buildings.	2,570 EV charging ports installed at existing multi-family residential buildings.	3,530 EV charging ports installed at existing multi-family residential buildings.
Existing additional public parking spaces with EV charging	38 EV charging ports installed at existing public locations.	60 EV charging ports installed at existing public locations.	60 EV charging ports installed at existing public locations.

APPENDIX 1

	2030	2040	2045
Number of light-duty electric vehicles purchased or leased	5510 light-duty electric vehicles purchased or leased	10,840 light-duty electric vehicles purchased or leased.	16,110 light-duty electric vehicles purchased or leased

~~Activity and GHG Reduction~~

	2020	2030	2050
~~Electricity savings (kWh)~~	~~-2,557,760~~	~~-27,826,150~~	~~-64,649,830~~
~~Emissions reduction ($MTCO_2e$)~~	~~2,650~~	~~29,630~~	~~71,150~~

~~Performance Indicators~~

	2020	2030	2050
~~New non-residential parking spaces with EV charging~~	~~150 EV charging ports installed at new non-residential buildings.~~	~~2,700 EV charging ports installed at new non-residential buildings.~~	~~10,810 EV charging ports installed at new non-residential buildings.~~
~~New multi-unit dwelling residential parking spaces with EV charging~~	~~80 EV charging ports installed at new multi-family residential buildings.~~	~~1,060 EV charging ports installed at new multi-family residential buildings.~~	~~2,320 EV charging ports installed at new multi-family residential buildings.~~
~~New single-family residential parking spaces with EV charger outlet~~	~~0 EV charging outlets installed at new single-family residential buildings.~~	~~1,310 EV charging outlets installed at new single-family residential buildings.~~	~~2,910 EV charging outlets installed at new single-family residential buildings.~~
~~Existing non-residential parking spaces with EV charging~~	~~170 EV charging ports installed at existing non-residential buildings.~~	~~2,040 EV charging ports installed at existing non-residential buildings.~~	~~4,350 EV charging ports installed at existing non-residential buildings.~~
~~Existing multi-unit dwelling residential~~	~~210 EV charging ports installed at existing~~	~~2,380 EV charging ports installed at existing multi-~~	~~3,980 EV charging ports installed at existing multi-~~

~~parking spaces with EV charging~~	~~multi-family residential buildings.~~	~~family residential buildings.~~	~~family residential buildings.~~
~~Existing additional public parking spaces with EV charging~~	~~2 EV charging ports installed at existing public locations.~~	~~30 EV charging ports installed at existing public locations.~~	~~60 EV charging ports installed at existing public locations.~~
~~Number of electric vehicles purchased/ leased to replace ICE vehicles~~	~~570 electric vehicles purchased or leased by residents or commuters to replace internal combustion engine vehicles.~~	~~7,800 electric vehicles purchased or leased by residents or commuters to replace internal combustion engine vehicles.~~	~~20,040 electric vehicles purchased or leased by residents or commuters to replace internal combustion engine vehicles.~~

CF 2 Electric vehicle education and outreach

Assumptions

	~~2020~~2030	~~2030~~2040	~~2050~~2045
Target percent of total community Transportation Network Company (TNC) VMT from electric vehicles	~~2~~30%	~~60~~45%	~~90~~60%
Target percent total community VMT from electric vehicles	~~4.5~~30%	~~30~~60%	~~74~~70%

APPENDIX 1

Activity and GHG Reduction

	2030	2040	2045
Electricity savings (kWh)	-4,334,040	-6,786,810	-10,211,980
Emissions reduction ($MTCO_2e$)	4,910	8,030	12,360

Performance Indicators

	2030	2040	2045
Annual additional VMT travelled by EV TNCs	17,528,180 vehicle miles travelled by internal combustion engine transportation network companies vehicles replaced with electric vehicles.	30,375,160 vehicle miles travelled by internal combustion engine transportation network companies vehicles replaced with electric vehicles.	45,704,900 vehicle miles travelled by internal combustion engine transportation network companies vehicles replaced with electric vehicles.

~~**Activity and GHG Reduction**~~

	~~2020~~	~~2030~~	~~2050~~
~~Electricity savings (kWh)~~	~~-885,200~~	~~-16,127,620~~	~~-16,697,140~~
~~Emissions reduction ($MTCO_2e$)~~	~~980~~	~~17,050~~	~~17,120~~

~~**Performance Indicators**~~

	~~2020~~	~~2030~~	~~2050~~
~~Annual additional VMT travelled by EV TNCs~~	~~0 vehicle miles travelled by internal combustion engine transportation network companies vehicles replaced with electric vehicles.~~	~~44,448,380 vehicle miles travelled by internal combustion engine transportation network companies vehicles replaced with electric vehicles.~~	~~74,729,990 vehicle miles travelled by internal combustion engine transportation network companies vehicles replaced with electric vehicles.~~

~~Number of electric vehicles purchased/leased to replace ICE vehicles due to education/outreach/incentives~~	~~200 electric vehicles purchased or leased by residents or commuters to replace internal combustion engine vehicles.~~	~~1,440 electric vehicles purchased or leased by residents or commuters to replace internal combustion engine vehicles.~~	~~0 electric vehicles purchased or leased by residents or commuters to replace internal combustion engine vehicles.~~

APPENDIX 1

CF 3 Clean City fleet

GHG Assumptions

	~~2020~~2030	~~2030~~2040	~~2050~~2045
Percent of City vehicles replaced with EVs	~~3~~25%	~~25~~45%	60%
Percent of City vehicles fueled by biomethane	~~7~~15%	~~15~~20%	25%

Activity and GHG Reductions

	~~2030~~2020	~~2040~~2030	~~2050~~2045
Electricity savings (kWh)	-~~11,640~~105,540	-~~135,510~~212,500	-~~353,720~~319,750
Emissions reduction ($MTCO_2e$)	~~30~~130	~~170~~200	~~420~~270

~~Performance Indicators~~

	2030	2040	2045
Fleet EV VMT	610,020	1,250,360	1,779,020
Fleet biomethane VMT	366,010	555,720	741,260

~~Performance Indicators~~

	~~2020~~	~~2030~~	~~2050~~
~~Fleet EV VMT~~	~~69,210~~	~~643,920~~	~~1,715,120~~
~~Fleet biomethane VMT~~	~~161,480~~	~~386,350~~	~~714,630~~

CF 4 Clean fuel

GHG Assumptions

	~~2020~~2030	~~2030~~2040	~~2050~~2045
Target % total community VMT from hydrogen vehicles	~~0.01~~8%	~~1.5~~30%	~~3.5~~45%

Activity and GHG Reductions

	2030	2040	2045
Electricity savings (kWh)	-2,186,300	-8,413,180	-13,430,770
Emissions reduction ($MTCO_2e$)	4,210	16,920	26,360

Performance Indicators

~~**Activity and GHG Reductions**~~

	~~2020~~	~~2030~~	~~2050~~
~~Electricity savings (kWh)~~	~~-53,540~~	~~-6,526,280~~	~~-14,423,210~~
~~Emissions reduction ($MTCO_2e$)~~	~~20~~	~~3,130~~	~~7,000~~

~~**Performance Indicators**~~

	~~2020~~	~~2030~~	~~2050~~
~~Number of hydrogen vehicles purchased/ leased to replace ICE vehicles due to education, outreach, or incentives~~	~~5 hydrogen fuel cell vehicles purchased or leased by residents or commuters to replace internal combustion engine vehicles.~~	~~800 hydrogen fuel cell vehicles purchased or leased by residents or commuters to replace internal combustion engine vehicles.~~	~~1,960 hydrogen fuel cel~~

APPENDIX 1

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	2030	2040	2045
Number of heavy-duty hydrogen vehicles purchased or leased	260 hydrogen fuel heavy-duty cell vehicles purchased or leased .	1,110 hydrogen fuel cell heavy-duty vehicles purchased or leased .	1,770 hydrogen fuel cell heavy-duty vehicles purchased or leased .

ST 1 Bicycle mode share

GHG Assumptions

	~~2020~~2030	~~2030~~2040	~~2050~~2045
Additional miles of bike lanes	~~1.3~~22	~~10~~45.2	~~30~~45.2

Activity and GHG Reduction

	2030	2040	2045
Travel savings (VMT)	300,960	704,120	751,370
Emissions reduction ($MTCO_2e$)	80	170	180

Performance Indicators

	2030	2040	2045
Total miles of bike lanes	78	101	101

~~**Activity and GHG Reduction**~~

	~~2020~~	~~2030~~	~~2050~~
~~Travel savings (VMT)~~	~~106,930~~	~~874,290~~	~~2,742,520~~
~~Emissions reduction ($MTCO_2e$)~~	~~40~~	~~240~~	~~670~~

APPENDIX 1

~~Performance Indicators~~

	2020	2030	2050
~~Total miles of bike lanes~~	~~58~~	~~67~~	~~87~~

ST 2 Pedestrian mode share

Activity and GHG Reduction

	~~2030~~2020	~~2030~~2040	~~2050~~2045
Travel savings (VMT)	~~1,159,460~~436,590	~~2,853,720~~497,160	~~4,650,540~~530,520
Emissions reduction ($MTCO_2e$)	~~390~~110	~~760~~120	~~1,110~~130

ST 4 Public transit service

GHG Assumptions

	~~2020~~2030	~~2030~~2040	~~2050~~2045
Bus ~~commute share~~coverage	~~3~~15%	~~5~~20%	~~10~~20%
Percent increase in Caltrain ~~ridership~~service	~~6~~25%	~~87~~40%	~~263~~50%

Activity and GHG Reduction

	2030	2040	2045
Electricity savings (kWh)	-10,253,31	-23,468,340	-31,189,470
Travel savings (VMT)	13,770,100	23,451,790	29,098,510
Emissions reduction ($MTCO_2e$)	3,610	5,660	6,910

Performance Indicators

	2030	2040	2045
Bus commute share	15%	20%	20%
Average Caltrain daily ridership in San Mateo	8,070	12,900	15,720

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~~**Activity and GHG Reduction**~~

	~~2020~~	~~2030~~	~~2050~~
~~Electricity savings (kWh)~~	~~-668,490~~	~~-9,447,930~~	~~-28,739,580~~
~~Travel savings (VMT)~~	~~2,395,930~~	~~33,318,340~~	~~102,835,750~~
~~Emissions reduction ($MTCO_2e$)~~	~~830~~	~~9,130~~	~~25,110~~

~~**Performance Indicators**~~

	~~2020~~	~~2030~~	~~2050~~
~~Bus commute share~~	~~3%~~	~~5%~~	~~10%~~
~~Average Caltrain daily ridership in San Mateo~~	~~4,230~~	~~7,440~~	~~14,490~~

ST 5 Commuter programs

GHG Assumptions

	~~2020~~2030	~~2030~~2040	~~2050~~2045
Percent of existing employers (pre-2006) participating in TDM	~~0~~5%	~~5~~20%	30%
Average trip reduction from voluntary TDM participation, beyond other CAP measures	~~0~~8%	~~8~~30%	40%

Activity and GHG Reduction

	2030	2040	2045
Travel savings (VMT)	15,290	278,640	669,000
Emissions reduction ($MTCO_2e$)	Less than 10	70	160

Performance Indicators

	2030	2040	2045

Existing (pre-2006) businesses participating in TDM efforts	130	540	810

~~Activity and GHG Reduction~~

	~~2020~~	~~2030~~	~~2050~~
~~Travel savings (VMT)~~	~~0~~	~~466,240~~	~~13,987,130~~
~~Emissions reduction ($MTCO_2e$)~~	~~0~~	~~130~~	~~3,420~~

~~Performance Indicators~~

	~~2020~~	~~2030~~	~~2050~~
~~Existing (pre-2006) businesses participating in TDM efforts~~	~~0~~	~~210~~	~~1,250~~

ST 6 Transportation Demand Management

GHG Assumptions

	~~2020~~2030	~~2030~~2040	~~2050~~2045
Percent of new developments subject to TDM rules	90%	~~95~~90%	~~95~~90%
Average trip reduction from new development subject to TDM rules, beyond other CAP measures	~~6.25~~10%	~~10~~15%	~~40~~20%

~~Activity and GHG Reduction~~

	~~2020~~	~~2030~~	~~2050~~
~~Travel savings (VMT)~~	~~167,920~~	~~8,500,890~~	~~34,636,730~~
~~Emissions reduction ($MTCO_2e$)~~	~~60~~	~~2,330~~	~~8,460~~

APPENDIX 1

Activity and GHG Reduction

	2030	2040	2045
Travel savings (VMT)	7,646,580	32,944,170	56,484,350
Emissions reduction ($MTCO_2e$)	2,010	7,950	13,410

Performance Indicators

	2030	2040	2045
Service population in new development (2018 and later) subject to the TDM ordinance	29,940	65,680	86,010

~~**Performance Indicators**~~

	~~2020~~	~~2030~~	~~2050~~
~~Service population in new development (2018 and later) subject to the TDM ordinance~~	~~2,910~~	~~20,410~~	~~43,870~~

ST 7 Transit-oriented development

GHG Assumptions

	~~2020~~2030	~~2030~~2040	~~2050~~2045
Percent of new units in areas supporting transit-oriented development	~~90~~95%	95%	95%
Percent of new nonresidential square footage in areas supporting transit-oriented development	~~85~~90%	90%	90%

Activity and GHG Reduction

	2030	2040	2045
Travel savings (VMT)	38,865,630	78,398,130	99,833,910
Emissions reduction ($MTCO_2e$)	10,200	18,920	23,700

Performance Indicators

	2030	2040	2045
New development in TOD zones	9,610 households and 7,350 employees	20,330 households and 14,880 employees	26,520 households and 18,970 employees

~~**Activity and GHG Reduction**~~

	~~2020~~	~~2030~~	~~2050~~
~~Travel savings (VMT)~~	~~464,110~~	~~3,605,900~~	~~9,695,490~~
~~Emissions reduction ($MTCO_2e$)~~	~~160~~	~~990~~	~~2,370~~

~~**Performance Indicators**~~

	~~2020~~	~~2030~~	~~2050~~
~~New development in TOD zones~~	~~3,680 households and 0 employees~~	~~8,770 households and 2,980 employees~~	~~13,940 households and 5,710 employees~~

SW 1 Composting program

GHG Assumptions

	~~2020~~2030	~~2030~~2040	~~2050~~2045
Residential composting participation rate	~~55~~90%	~~90~~93%	95%
Nonresidential composting participation rate	~~10~~85%	~~80~~88%	90%

APPENDIX 1

~~**Activity and GHG Reduction**~~

	~~2020~~	~~2030~~	~~2050~~
~~Waste savings (tons)~~	~~2,190~~	~~28,910~~	~~33,910~~
~~Emissions reduction ($MTCO_2e$)~~	~~950~~	~~12,650~~	~~14,850~~

Activity and GHG Reduction

	2030	2040	2045
Waste savings (tons)	2,350	3,900	4,220
Emissions reduction ($MTCO_2e$)	1,030	1,710	1,850

Performance Indicators

	2030	2040	2045
Composting participation levels	47,270 households and 3,890 businesses	59,020 households and 4,510 businesses	66,800 households and 4,880 businesses

~~**Performance Indicators**~~

	~~2020~~	~~2030~~	~~2050~~
~~Composting participation levels~~	~~23,670 households and 410 businesses~~	~~43,360 households and 3,510 businesses~~	~~50,940 households and 4,120 businesses~~

SW 2 Expanded recycling service

GHG Assumptions

	~~2020~~2030	~~2030~~2040	~~2050~~2045
Target diversion rate	~~75~~85%	~~85~~88%	90%

Activity and GHG Reduction

	2030	2040	2045
Waste savings (tons)	9,860	12,570	14,330
Emissions reduction ($MTCO_2e$)	6,070	7,730	8,820

Performance Indicators

	2030	2040	2045
Total tons of recyclables recovered (curbside bins only)	22,450	27,420	30,480

~~**Activity and GHG Reduction**~~

	~~2020~~	~~2030~~	~~2050~~
~~Waste savings (tons)~~	~~1,320~~	~~8,710~~	~~13,860~~
~~Emissions reduction ($MTCO_2e$)~~	~~810~~	~~5,360~~	~~8,530~~

~~**Performance Indicators**~~

	~~2020~~	~~2030~~	~~2050~~
~~Total tons of recyclables recovered (curbside bins only)~~	~~49,430~~	~~61,700~~	~~73,400~~

SW 3 Waste awareness and source reduction

GHG Assumptions

	2020~~2030~~	2040~~2030~~	2050~~2045~~
Decrease in non-organic and non-recyclable waste tonnage	5%	20%	50%

Activity and GHG Reduction

	~~2020~~2030	2040~~2030~~	2050~~2045~~
Waste savings (tons)	~~2,250~~15,420	~~10,200~~30,110	~~29~~41,510
Emissions reduction ($MTCO_2e$)	~~420~~2,080	~~1,910~~4,050	5,~~510~~590

APPENDIX 1

Performance Indicators

	2030	2040	2045
Decrease in non-organic and non-recyclable waste tonnage sent to landfills	15,420	30,110	41,510

~~**Performance Indicators**~~

	2020	2030	2050
~~Decrease in non-organic and non-recyclable waste tonnage sent to landfills~~	~~2,250~~	~~10,200~~	~~29,510~~

WW 1 Water-efficiency retrofits for existing buildings

GHG Assumptions

	~~2020~~2030	~~2040~~2030	~~2050~~2045
Percent of existing homes retrofitting water fixtures	~~10~~50%	~~50~~70%	~~95~~80%
Percent of existing businesses retrofitting water fixtures	~~5~~40%	~~40~~70%	~~95~~80%
Percent of existing homes with greywater systems	~~0~~5%	~~5~~15%	20%
Percent of existing businesses with greywater systems	~~0~~3%	~~3~~10%	15%

Activity and GHG Reduction

	2030	2040	2045
Electricity savings (kWh)	411,310	777,100	914,320
Water savings (millions of gallons)	160	280	340
Emissions reduction ($MTCO_2e$)	170	300	360

Performance Indicators

	2030	2040	2045
Number of water efficiency retrofits	19,890 existing homes and 1,610 existing businesses with water efficiency retrofits.	27,840 existing homes and 2,820 existing businesses with water efficiency retrofits.	31,820 existing homes and 3,230 existing businesses with water efficiency retrofits.
Number of greywater system installations as part of retrofit activities	2,120 homes and 120 businesses with greywater systems installed.	6,360 homes and 400 businesses with greywater systems installed.	8,480 homes and 610 businesses with greywater systems installed.

~~**Activity and GHG Reduction**~~

	2020	2030	2050
~~Electricity savings (kWh)~~	~~38,960~~	~~345,160~~	~~877,710~~
~~Water savings (millions of gallons)~~	~~20~~	~~130~~	~~300~~
~~Emissions reduction ($MTCO_2e$)~~	~~20~~	~~100~~	~~230~~

~~**Performance Indicators**~~

	2020	2030	2050
~~Number of water efficiency retrofits~~	~~3,890 existing homes and 210 existing businesses with water efficiency retrofits.~~	~~19,470 existing homes and 1,670 existing businesses with water efficiency retrofits.~~	~~37,000 existing homes and 3,960 existing businesses with water efficiency retrofits.~~
~~Number of greywater system installations as part of retrofit activities~~	~~0 homes and 0 businesses with greywater systems installed.~~	~~1,950 homes and 120 businesses with greywater systems installed.~~	~~7,790 homes and 620 businesses with greywater systems installed.~~

APPENDIX 1

WW 2 Water-efficient landscaping

GHG Assumptions

	~~2020~~2030	~~2030~~2040	~~2050~~2045
Reduction in total outdoor water use	~~3~~10%	~~10~~20%	25%

~~**Activity and GHG Reduction**~~

	~~2020~~	~~2030~~	~~2050~~
~~Electricity savings (kWh)~~	~~85,940~~	~~315,520~~	~~886,220~~
~~Water savings (millions of gallons)~~	~~60~~	~~220~~	~~610~~
~~Emissions reduction ($MTCO_2e$)~~	~~Less than 10~~	~~Less than 10~~	~~0~~

Activity and GHG Reduction

	2030	2040	2045
Electricity savings (kWh)	374,760	827,380	1,086,620
Water savings (millions of gallons)	260	570	750
Emissions reduction ($MTCO_2e$)	Less than 10	10	0

WW 3 Water efficiency in new construction

GHG Assumptions

	~~2030~~2020	~~2030~~2040	~~2050~~2045
Percent of new homes	~~0~~8%	~~8~~20%	25%

installing greywater systems			
Percent of new businesses installing greywater systems	~~0~~5%	~~5~~15%	20%

Activity and GHG Reduction

	~~2030~~2020	~~2030~~2040	~~2050~~2045
Electricity savings (kWh)	~~0~~7,620	~~5,990~~40,580	~~30,050~~66,320
Water savings (millions of gallons)	~~0~~10	~~Less than 10~~30	~~20~~50
Emissions reduction ($MTCO_2e$)	~~0~~Less than 10	~~Less than~~ 10	10

~~**Performance Indicators**~~

	~~2020~~	~~2030~~	~~2050~~
~~Number of new homes with greywater systems~~	~~0~~	~~740~~	~~3,670~~
~~Number of new businesses with greywater systems~~	~~0~~	~~10~~	~~80~~

Performance Indicators

	2030	2040	2045
Number of new homes with greywater systems	810	4,280	6,980
Number of new businesses with greywater systems	30	160	280

APPENDIX 1

OR 1 Alternative fuel ~~lawn and garden~~off-road equipment

GHG Assumptions

	~~2030~~2020	~~2030~~2040	~~2050~~2045
Percent of landscaping equipment that uses electricity	~~0~~20%	~~8~~45%	~~40~~60%
Percent of other off-road equipment that uses electricity	15%	25%	30%

Activity and GHG Reduction

~~**Activity and GHG Reduction**~~

	~~2020~~	~~2030~~	~~2050~~
~~Electricity savings (kWh)~~	~~0~~	~~-892,140~~	~~-4,460,680~~
~~Emissions reduction ($MTCO_2e$)~~	~~0~~	~~200~~	~~1,140~~

	2030	2040	2045
Electricity savings (kWh)	-2,201,600	-4,633,000	-6,091,990
Emissions reduction ($MTCO_2e$)	3,660	7,130	9,890

Appendix 2:

CAP Measure Key Metrics

City of
San Mateo
Climate Action Plan

APPENDIX 4

~~Table 1-2:~~ Table 2-1: CAP Measure Key Metrics

Measure		Time Frame	Lead Department	Key Metric
BE 1	All-electric new construction	Near-term	City Manager's Office, Community Development	- Number of all-electric new construction residential housing units. - Square feet of all-electric new construction non-residential buildings.
BE 2	All-electric existing buildings	Near-term	City Manager's Office, Community Development	- Number of existing homes with gas to electric HVAC conversions. - Square feet of existing office buildings with gas to electric HVAC conversions. - Number of parking spaces at existing office buildings with EV charging.
RE 1	Peninsula Clean Energy	Immediate	City Manager's Office	- PCE opt-out rate. - kWh supplied by ECO 100
RE 2	Renewable energy systems for new and existing residences	Immediate	City Manager's Office, Community Development	- Number of homes built before 2018 with solar panels. - Number of total homes (existing and new) with battery energy systems.
RE 3	Renewable energy systems for new and existing nonresidential buildings	Immediate	City Manager's Office, Community Development	- Number of businesses built before 2018 with solar panels. - Number of existing businesses with battery energy systems.
EE 1	Residential energy efficiency retrofits	Near-term	City Manager's Office, Community Development	- Number of homes retrofitted.
EE 2	Nonresidential energy efficiency retrofits	Near-term	City Manager's Office, Community Development	- Number of businesses retrofitted.

~~Summary of Community Workshop~~

Measure		Time Frame	Lead Department	Key Metric
EE 3	Residential tree plantings	Mid-term	City Manager's Office, Parks and Recreation	- Number of households with shade trees.
ME 1	Energy efficiency for new municipal buildings	Mid-term	City Manager's Office, Public Works	None – supportive measure.
ME 2	Energy efficiency at existing municipal buildings	Near-term	City Manager's Office, Public Works	- Square footage of retrofitted municipal buildings.
ME 3	All-electric municipal buildings	Long-term	City Manager's Office, Public Works	- Square feet of existing municipal buildings electrified. - Square feet of new municipal buildings electrified.
CF 1	Electric vehicle charging infrastructure	Immediate	City Manager's Office, Community Development, Public Works	- Number of parking spaces at new nonresidential buildings with EV charging. - Number of parking spaces at existing nonresidential buildings (not including offices) with EV charging. - Number of parking spaces at existing multifamily units with EV charging.
CF 2	Electric vehicle education and outreach	Immediate	City Manager's Office, Community Development	- Estimated number of TNCs operating in San Mateo that are EVs. - Number of residents contacted with EV marketing materials.
CF 3	Clean City fleet	Near-term	Public Works	- Fleet EV VMT. - Fleet biomethane VMT.
CF 4	Clean fuel	Long-term	City Manager's Office, Community Development, Public Works	- Number of hydrogen vehicles registered.

APPENDIX 4

Measure		Time Frame	Lead Department	Key Metric
ST 1	Bicycle mode share	Mid-term	Community Development, Public Works	- Total miles of bike lanes.
ST 2	Pedestrian mode share	Near-term	Community Development, Public Works	- Percent ~~of development~~increase in ~~infill locations~~pedestrian sidewalks and pathways.
ST 3	Micromobility and shared mobility	Near-term	City Manager's Office, Public Works	None – supportive measure.
ST 4	Public transit services	Near-term	City Manager's Office, Public Works	- Bus ~~commute share~~network coverage. - ~~Average~~ Caltrain ~~daily ridership~~service frequency.
ST 5	Commuter programs	Mid-term	City Manager's Office, Community Development, Public Works	- Pre-2006 businesses participating in TDM efforts.
ST 6	Transportation Demand Management	Immediate	Community Development, Public Works	- Service population in new development subject to the TDM ordinance.
ST 7	Transit-oriented development	Near-term	Community Development	- New development in TOD zones.
SW 1	Composting program	Immediate	Public Works	- Composting participation levels.
SW 2	Expanded recycling service	Near-term	Public Works	- Total tons of recyclables recovered.
SW 3	Waste awareness and source reduction	Near-term	City Manager's Office, Public Works	- Decrease in non-organic and non-recyclable waste tonnage sent to landfills.
WW 1	Water efficiency retrofits for existing buildings	Mid-term	Public Works	- Number of water efficiency retrofits. - Number of greywater system installations in existing buildings.

Measure		Time Frame	Lead Department	Key Metric
WW 2	Water-efficient landscaping	Near-term	City Manager's Office, Parks and Recreation	- Estimated outdoor water use
WW 3	Water efficiency in new construction	Mid-term	Community Development	- Number of new homes with greywater systems. - Number of new businesses with greywater systems.
OR 1	Alternative fuel lawn and garden equipment	Mid-term	City Manager's Office, Parks and Recreation	- Estimated percent of landscaping equipment that uses electricity. - Estimated percent of non-landscaping equipment that uses electricity.