

ROADMAP TO

2030 CARBON NEUTRALITY

FOR COUNTY OPERATIONS

SEPTEMBER 2023

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EXECUTIVE SUMMARY

The impacts of climate change are already being felt throughout Santa Clara County: From the Coyote Creek flooding in 2017, to the 2020 SCU Lightning Complex fire, the September 2020 and 2022 heat events, and the extreme drought conditions, followed by flooding from record-breaking storm events and atmospheric rivers in recent months.

The scientific evidence today is unequivocal. Climate change is a threat to human wellbeing and the health and existence of the planet. It is predicted that just nine years are left before global warming exceeding 1.5 degrees Celsius becomes likely, pushing the planet over a tipping point, beyond which we would experience much more destructive storms and flooding, heat waves, wildfires and drought.

The County is well positioned to take action to minimize the impact of its own operations on the climate. Solutions that protect the climate, such as making the switch to clean energy, and building and fleet electrification, also save taxpayer dollars over time, reduce air pollution, and improve public health. In response to the accelerating climate risks and to align with the state of California and other local jurisdictions that are already accelerating efforts, **the County will strive to achieve carbon neutrality in County operations by 2030 – fifteen years earlier than the current goal of 2045.**

The County has determined a clear path forward to achieve this, including many foundational strategies that are already underway to secure implementing funding. The Office of Sustainability (OOS) and Facilities and Fleet (FAF) Department have assessed the feasibility, potential actions, and costs to accelerate the County’s carbon neutrality goal for operations. Key actions range in cost from \$50,000 to \$19.8 million. The Roadmap to 2030 Carbon Neutrality highlights opportunities to leverage County General Funds to take advantage of upcoming State and Federal grant and funding opportunities, e.g., federal Inflation Reduction Act funds and roughly \$48 million in state climate funding in the Governor’s 2021/2022 budget. The solutions presented in this report bring the County’s own operations in line with its mission to secure a livable future for the community.

CARBON NEUTRALITY BY 2030 GOALS

To achieve carbon neutrality by 2030, the County will need to eliminate or decrease emissions across four key sectors and supplement emissions reduction with carbon offsets to achieve net zero carbon dioxide emissions. The percent of carbon offsets needed from carbon removal/sequestration may vary based on the County’s progress towards achieving neutrality across the four sectors: buildings and facilities, employee commute, vehicle fleet and solid waste.

Figure 1 shows the primary objective and goal for each sector associated with County operations.

EMISSION SECTOR AND GOAL	2030 OBJECTIVE
Buildings and Facilities Decarbonize existing County facilities portfolio.	Reduce natural gas use by 50%
Employee Commute Reduce emissions associated with employee commutes.	Cut employee commute carbon emissions by 74%
Fleet Electrification Electrify and right-size County fleet vehicles.	Cut fleet carbon emissions by 75%
Solid Waste and Materials Divert achievable waste from County operations.	Divert 100% of organic waste
Carbon Sequestration Achieve reduction in emissions through carbon sequestration and purchase of offsets.	Complete studies and establish sequestration targets and plan by 2024 (Interim objective)

IMPLEMENTATION PLAN

The Roadmap to 2030 Carbon Neutrality provides a strategic approach the County will undertake to achieve its carbon neutrality goal for County operations. The Roadmap will be adjusted and updated based on technological advancements, completion of studies, estimated costs, and overall progress. Table 1 presents immediate next steps that need to be taken for the key implementation actions.

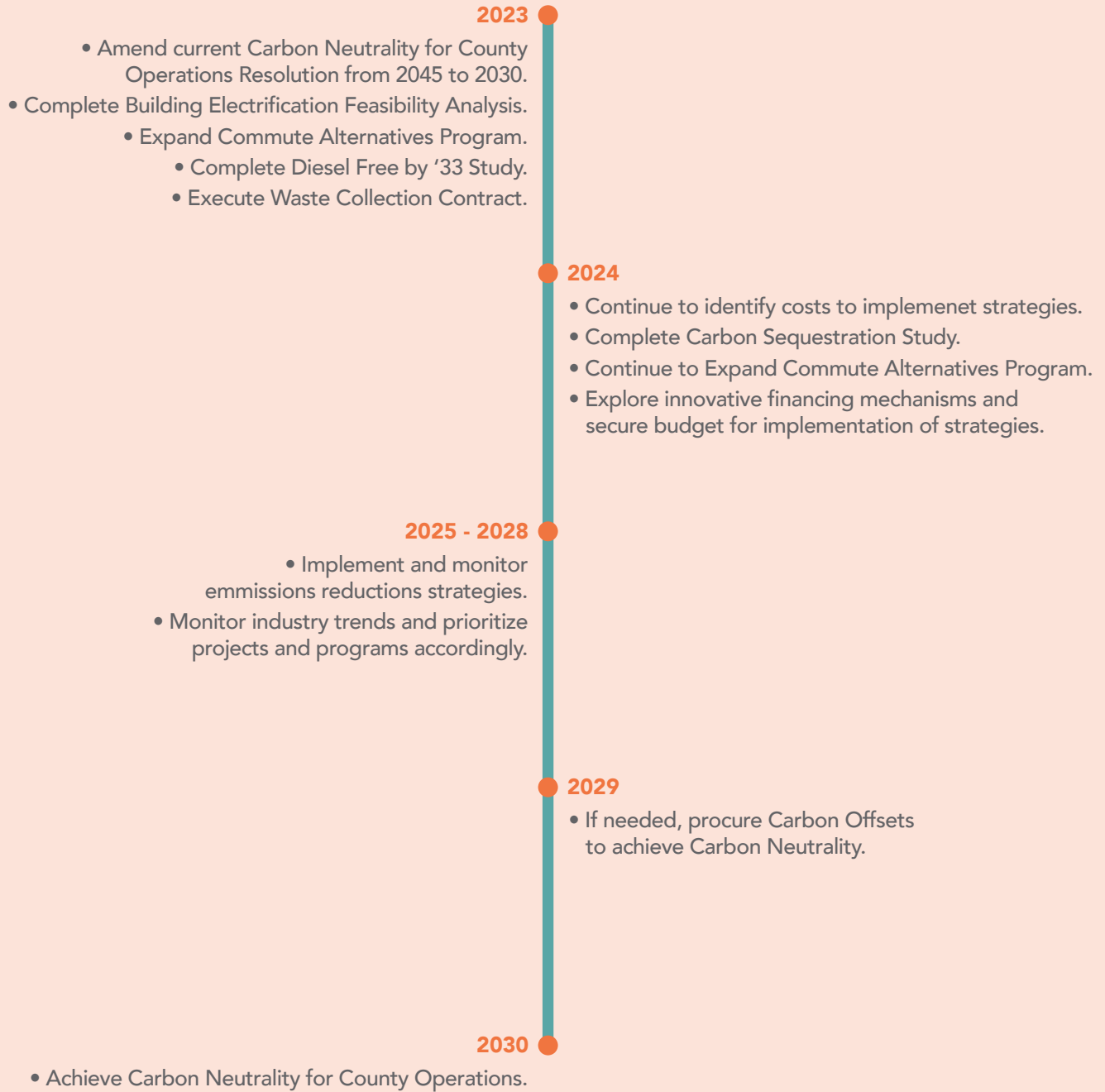
Table 1: Next Steps for Key Actions

KEY ACTIONS	NEXT STEPS FOR KEY ACTIONS
Buildings and Facilities	
Purchase Bio-Gas for Existing Fuel Cells	Explore market options to procure biogas for fuel cell generators to determine availability and validate cost information.
Development and Implementation of VMC Chiller Electrification Project	Conduct a sub-metering study in Fiscal year (FY) 24 to validate costs/feasibility for Valley Medical Center Chiller Electrification Project.
Employee Commute	
Offer telework for eligible employees	Continue to implement County's existing telecommute policy for eligible employees.
Offer transit subsidies of up to \$150/month for employees (estimated 2,500 participants)	Identify and secure funding for providing transit subsidies
Deploy a commute platform that provides a one-stop-shop for trip planning and transportation programs for employees	Establish an agreement for an Employee Commute Platform service in FY 24.
Continue operating the Santa Clara Valley Medical Center shuttle service	Recommend extending the SCVMC shuttle service.
Continue EV charging expansion across County facilities	Assess which County facilities to expand electric vehicle charging stations for employee vehicles.
County Fleet	
Continue EV charging expansion across County facilities	Work with PG&E on a program that would result in 26 electric vehicle charging ports installed at six different site locations in 2024 and 2025.
Replace all light-duty vehicles at end of life with zero emission vehicles.	Analyze zero emissions vehicle and equipment offerings that will meet County light-duty fleet needs and develop replacement plan.
Switch equipment and medium and heavy-duty vehicles to a diesel free source.	Complete Diesel Free by '33 study in FY24.
Waste	
Improve waste diversion, including recycling and organics collection in all County facilities.	Execute waste collection contract for County owned and operated facilities in Q3 2023. Set up organics collection at County facilities, including hospitals.
Carbon Sequestration	
Complete carbon stock baseline study and carbon sequestration implementation plan.	Review consultant scope of work and execute contract.

Figure 2 presents a timeline for the key implementation actions through 2030.

ROADMAP TO 2030 CARBON NEUTRALITY

FOR COUNTY OPERATIONS



THE CLIMATE CRISIS IN SANTA CLARA COUNTY

The climate has already warmed by 1.1 degrees Celsius (about 2° F), which is the hottest the Earth has been in 100,000 years. Humans are the cause of this temperature rise, which is mostly driven by burning fossil fuels for transportation and energy. It is predicted that just nine years are left before global warming exceeding 1.5 degrees Celsius becomes likely, pushing the planet over a tipping point, beyond which we would experience much more destructive storms and flooding, heat waves, wildfires and drought. The impacts of climate change are already being felt throughout Santa Clara County. A few examples are detailed below.

EXTREME HEAT

An extreme heat event in August and September 2022 saw maximum temperatures go up to 109° F in San Jose, beating the old record of 108° F set in 2017. Out of the 11-day heat wave, 9 days reached maximum temperatures of 90° F or higher. There were 16 potentially heat-related fatalities under investigation. The event resulted in the loss of power at Valley Medical Center (VMC) at Bascom and VMC – O'Connor.

An extreme heat day is a day where temperature reaches over 90° F. Based on the climate projections from the County's Silicon Valley 2.0 (SV 2.0) Tool, Santa Clara County is projected to experience up to 13 extreme heat days and up to 55 warm nights per year by mid-century. However, the rate at which climate change is occurring and impacts are intensifying is already outpacing projections. For example, Santa Clara County experienced 21 extreme heat days in 2022. For comparison, the 30-year average (from 1980-2005) is 4 extreme heat days per year.

62% of the total County population is currently exposed to extreme heat conditions. At least 42% of the exposed population have moderate to high social vulnerability. This is due to having five or more existing socio-economic and demographic attributes. Attributes include low income, race and ethnicity, housing situation, food and transit access, and health conditions such as asthma or heart disease. Approximately 60,000



people within moderate socially vulnerable communities in South County jurisdictions, like Morgan Hill and Gilroy, could be exposed to more frequent extreme heat events (above 108° F) by mid-century.

EXTREME STORMS AND FLOODING

Atmospheric river events and heavy rains in January and February 2017 caused flooding and evacuations. Particularly devastating was the Coyote Creek flooding, which required the evacuation of 14,000 residents (including some evacuations by boat¹) and caused approximately \$73 million in property damage to homes and businesses.²

More recently, the atmospheric river storm events in late December 2022 and January 2023 brought record amounts of rainfall, flooding, high winds, power outages, mudslides, road closures, and evacuation warnings. It was the second wettest three-week stretch in the Bay Area since 1849.³ Los Gatos received 21 inches of rain in January, which is 300% more than the average. The events caused approximately \$14 million in public infrastructure damage in Santa Clara County. These events occurred after three years of drought in Santa Clara County, with record-dry conditions seen in 2022.⁴

¹ <https://www.valleywater.org/sites/default/files/2017%20Flood%20Report.pdf>

² <https://www.spur.org/news/2018-05-31/after-coyote-creek-san-jose-ready-future-floods>

³ <https://valleywaternews.org/2023/01/25/water-being-released-from-anderson-dam-to-maintain-3-7-storage-level/>

⁴ <https://www.valleywater.org/drought>



As these events have already demonstrated, Santa Clara County is projected to experience extremely dry periods followed by extremely wet periods. Based on estimates from SV 2.0, by mid-century, there is projected to be up to a 30% increase in extreme storm events and coastal flooding due to 1-2 feet of sea level rise and strong winds pushing ocean or bay water further onshore from those more extreme storms.

A 100-year flood refers to a flood event that has a 1% or 1 in 100 chance of occurring in any given year and can be described as a significant flood. Of the total population exposed to the 100-yr flood, over 81,000 residents have moderate to high social vulnerability. This is due to having five or more existing socio-economic and demographic attributes. Attributes include low income, race and ethnicity, housing situation, food and transit access, and health conditions such as asthma or heart disease.

However, residents do not have to live in a special hazard flood zone to be impacted by flooding events. Flooding can impact infrastructure and services that residents all use in their daily lives, such as roads and transit, as well as less visible but essential facilities such as electrical substations, wastewater treatment plants, and stormwater and sanitary sewers infrastructure.

WILDFIRE

The most recent major wildfire in Santa Clara County was the SCU Lightning Complex fires in August 2020,

caused by record heat, dry conditions, and lightning strikes. The fires burned over 165,000 acres in Santa Clara County alone. CAL FIRE spent over \$77 million in suppression and repair costs, and the County incurred over \$4 million in damage repair costs for roads, bridges, parks, and recreational facilities and debris removal. In total, the fire burned over 396,000 acres across five counties and took 46 days to contain.⁵ Santa Clara County is projected to experience increasing frequency, duration, and extent of wildfires.

Slightly more than 1% of the total County population is currently exposed to wildfire conditions. By late-century, 2.2% of the County population will be exposed. At least 19% of the exposed population have moderate social vulnerability and face increased risk to climate impacts due to factors such as low income, race and ethnicity, food and transit access, and health conditions such as asthma or heart disease.

However, Santa Clara County residents do not have to live in or close to wilderness areas to be impacted by wildfire events. Wildfires can impact infrastructure and services that residents use in their daily lives, such as roads and transit, as well as less visible but essential facilities such as electrical substations, major transportation thoroughfares, and communication transmission lines.

⁵ <https://www.fire.ca.gov/incidents/2020/8/16/scu-lightning-complex/>

THE SOLUTION: ACHIEVE CARBON NEUTRALITY BY 2030

The scientific evidence today is unequivocal: climate change is a threat to human wellbeing and the health and existence of the planet. Without immediate intervention to protect the climate, the crisis will accelerate to irreversible and catastrophic conditions globally.

To meet the urgency of the climate crisis, the State of California has a carbon neutrality target of 2045. However, the State continues to evaluate pathways to achieve carbon neutrality earlier to accelerate California's progress toward its nation-leading climate goals.

The County can contribute to minimizing the scale and impact of climate change in the Bay Area by leading with efforts to greatly reduce local carbon emissions.

This would require the County of Santa Clara to amend its current carbon neutrality resolution for County operations by 2045 to 2030 to accelerate solutions to the climate crisis and protect our most vulnerable clients.

Achieving carbon neutrality requires the County to produce zero net carbon emissions. "Zero net emissions" are achieved when the greenhouse gas emissions that are generated are equal to the emissions that are removed from the atmosphere.

Carbon neutrality in County operations can be reached by:

- Eliminating 100% of carbon emissions from County facilities, fleet, and systems; or
- Reducing emissions to the greatest extent feasible and offsetting any remaining emissions with carbon sequestration practices and/or the purchase of carbon offsets.



By setting more aggressive goals than the State of California to achieve carbon neutrality in County operations by 2030, the County of Santa Clara will demonstrate its leadership and commitment towards mitigating the effects of climate change and call attention to a sense of urgency and bold steps that are needed on climate action. Additionally, this will also make the County one of the leaders in the Bay Area region to adopt such a goal (along with the City of San Jose, the City of Berkeley, and San Mateo County).

The solutions presented in this Roadmap demonstrate fiscal responsibility of public funds in the long run. According to a study by the National Institute of Building Sciences⁶, future costs of responding and rebuilding from climate disasters are estimated to be **six times higher** than the cost to invest in climate mitigation and preparedness today.

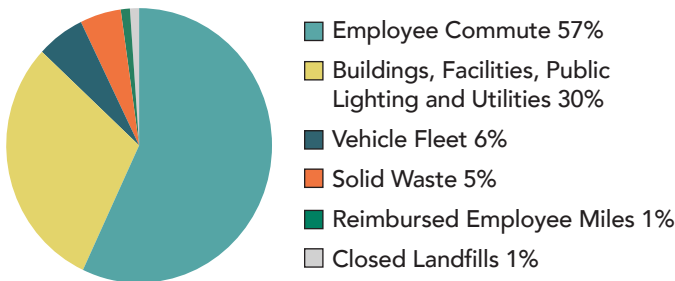
⁶ National Institute of Building Sciences, "Natural Hazard Mitigation Saves Interim Report", available at https://www.fema.gov/sites/default/files/2020-07/fema_mitsaves-factsheet_2018.pdf

CURRENT STATE OF EMISSIONS

2019 EMISSIONS

Using the Local Government Operations Protocol (LGOP) and accounting for the County's local fuel cell and renewable energy generation programs to calculate emissions, the total 2019 County operations greenhouse gas (GHG) emissions were 108,724 metric tons of carbon dioxide equivalent (MTCO₂e). This represents a 18% decrease from 2015 County operations emissions of 132,358 MTCO₂e and an 11 % decrease from baseline year 2010 emissions of 122,696 MTCO₂e.

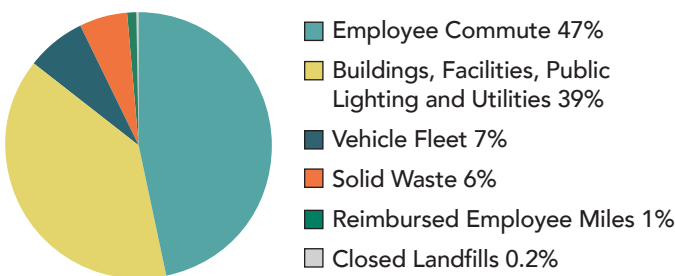
Figure 3 below shows the emissions for each sector.



2020 EMISSIONS

The County completed the 2020 County operations greenhouse gas emissions inventory as part of the County's commitment to climate action and sustainability. The total 2020 County operations emissions were 86,748 MTCO₂e. This represents a 24% decrease from 2019 emissions of 114,737 MTCO₂e, a 34% decrease from 2015 County operations emissions of 132,358 MTCO₂e and a 29% decrease from baseline year 2010 emissions of 122,696 MTCO₂e.

Figure 4 below shows the emissions for each sector.



LESSONS LEARNED FROM THE PANDEMIC

2020 emissions are estimated to be 24% less than 2019 as a result of the continued implementation of the County's Sustainability Master Plan and variations in the County's operations due to the COVID-19 pandemic. The pandemic disrupted normal County operations and resulted in the temporary closure of some community facilities as well as the more intensive use of the County's hospital system. Most significant to emissions reductions was due to 33.7% of County employees working from home during COVID-19 shelter-in-place. As a result, employee commute emissions decreased 38% as compared to 2019.

Although 2020 emissions may not be representative of a normal year of County operations, it does demonstrate the benefits of implementing transportation demand measures, as well as how the intensity of facility use (i.e. reduced hours of operation and limited programming) directly affects activity data and emissions.

KEY ACTIONS AND COSTS

County staff partnered with the ICLEI – Local Governments for Sustainability Team and drew on studies completed by the County to evaluate implementation actions. The actions were examined for the greenhouse

gas reduction potential, associated cost to implement and return on investment (where available) and feasibility. Table 2 below shows the key actions, and associated cost and emissions reduction for each sector.

Table 2: Summary of Key Actions and Costs

SECTOR	KEY ACTIONS	COST	EMMISSIONS REDUCTION
Buildings and Facilities	Purchase Bio-Gas for Existing Fuel Cells	\$1-2 million annually	11%
	Development and Implementation of VMC Chiller Electrification Project	\$9-12 million one-time	
	Priority Building Electrical Capacity Assessments	\$550,000-\$1million	15%
Employee Commute	Telework for eligible employees	\$0	9%
	Transit subsidies of up to \$150/month for employees (estimated 2,500 participants)	\$4.5 million annually	7%
	Contract for a commute platform that provides a one-stop-shop for trip planning and transportation programs	\$234,000 annually	N/A
	Continue EV charging expansion across County facilities	*see County Fleet	*see County Fleet
County Fleet	Continue EV charging expansion across County facilities	*\$33.1 million one-time for 640 charging ports	*29%
	Replace all light-duty vehicles at end of life with zero emission vehicles	Costs to-be determined	<6%
	Complete study for switching equipment and medium and heavy-duty vehicles to a diesel free source	\$132,000 one-time	
Waste	Execute waste collection contract; ensure organics collection and recycling in all County facilities, including County hospitals	\$3.3 million annual base rate with 4% annual increase (funded)	<4%
Carbon Sequestration	Complete carbon stock baseline study and carbon sequestration implementation plan	\$100,000 one-time	TBD

DETAILED SECTOR ANALYSIS AND ACTIONS

BUILDINGS AND FACILITIES

BACKGROUND & ACCOMPLISHMENTS

The buildings and facilities sector accounts for the emissions from energy consumption, as well as greenhouse gas emissions reductions resulting from the County's fuel cells and the purchase and generation of renewable energy certificates. The buildings and facilities sector made up 26% of the County's total county operations emission in 2019. Emissions in the buildings and facilities sector decreased 51% from 2010-2019, and decreased 49% from 2015-2019.

Past accomplishments related to the buildings and facilities sector include:

- Since 2019, one hundred percent of electrical power for County facilities is now sourced from renewable sources.
- Since FY 10-11, FAF has successfully secured over \$60 million in low-cost financing through programs such as Clean Renewable Energy Bonds and Qualified Energy Conservation Bonds, allowing for the implementation of renewable energy and energy efficiency projects. These funds have been used for the purchase and installation of 15.2 megawatts (MW) of solar photovoltaic systems and the deployment of lighting efficiency with controls at some of the County's largest facilities.
- In 2021, the County opened its first all-electric facility, the Vietnamese American Services Center (VASC).
- In 2021, the County approved installation of 12 MW of solar systems at 15 County facilities with accompanying 5 MW of energy storage, saving nearly \$38.9 million in energy costs.
- The County will complete its first Existing Building Electrification Study and Roadmap in 2023.



**BUILDINGS AND FACILITIES
2030 GOALS AND OBJECTIVES**

Given that County facilities already run on 100% renewable electricity, a clear pathway towards emissions reductions is to reduce natural gas, which currently accounts for 92% of emissions for this sector.

ACTIONS

Table 3 below shows the actions that will have to be taken to reduce emissions from building energy use. Implementing the two key actions in Phase 1 would allow the County to meet its 2030 goal of eliminating half of natural gas use. To fully decarbonize existing facility operations, the County's existing facilities will need to be converted to all-electric, as opportunities arise. The cost to decarbonize the County's entire portfolio is estimated to be \$150-200 million.

2030 GOAL	OBJECTIVE
Decarbonize existing County-owned building stock.	Eliminate half of total natural gas from County owned facilities.
Construct all-electric new County buildings.	Update reach codes to limit exemptions and construct no new gas using facilities unless operationally necessary.

Table 3: Building and Facilities Sector Actions • Phase 1

ACTION	DESCRIPTION	COST ESTIMATE	CURRENT STATUS
Phase 1: Key Actions to Meet 2030 Goals			
Purchase biogas for existing fuel cells	Procure biogas for existing fuel cell generators that currently operate on natural gas.	~\$1-2 million annually (not funded)	Exploring market options to determine availability and validate cost information.
Development and implementation of VMC Chiller Electrification Project	Install electric chillers to run instead of the absorption chillers. This will provide large natural gas savings of up to about 2.3 million therms/year (about 75% of campus usage).	~\$9-12 million, one-time (\$100K for study funded, remaining not funded)	Will require an additional sub-metering study to confirm hot water usage and validate costs/feasibility. Study planned for FY 24.
Priority Building Electrical Capacity and System Adaptation Assessments	Conduct electrical capacity and system adaption assessments for the 12 other high natural gas using County facilities.	\$550,000-\$1million one-time cost for assessments	Will require identifying high priority sites and securing general funds.

Table 3: Building and Facilities Sector Actions • Phase 2

ACTION	DESCRIPTION	COST ESTIMATE	CURRENT STATUS
Phase 2: Supportive Actions			
Electrify Domestic Hot Water and Heaters at end of life	Before replacing gas equipment, invest in adapting buildings to optimize their compatibility with all-electric systems.	~\$3-6 million (not funded)	Exploring implementation opportunities as they arise.
Update the Green Building Policy for County Government Buildings	Update current policy to require all new County owned facilities to be built all-electric and include resiliency features, where feasible.	\$100,000 (not funded)	Ongoing
Prohibit New Natural Gas Infrastructure	Identify alternatives to natural gas equipment to ensure that no new natural gas infrastructure will be installed in County facilities. Exemptions allowed under certain circumstances include 24 hour operated facilities such as those under OSHPD 1 and 3 jurisdiction, as well as correctional facilities.	TBD	Exploring opportunities, where feasible and will not interrupt critical operations.
Ensure new County construction is all-electric, to the extent feasible	In addition to electrifying existing County facilities, the County will need to minimize or eliminate natural gas infrastructure in new construction.	TBD	Exploring opportunities, where feasible and will not interrupt critical operations.
Implement New Renewable Energy Projects	FAF is currently working to develop 12 megawatts (MWs) of new County solar projects and 4 MWs of battery storage. Over a 20-year period, the project is projected to provide approximately \$41 million in utility savings, or an average of \$2 million in annual savings.	(\$2,000,000)	Ongoing
Manage and Optimize Existing Renewable Energy Assets	Optimizing the performance of existing County assets will ensure the County is taking full advantage of the environmental and cost savings benefits they provide.	\$100,000 annual (funded)	Ongoing
Establish a Retro-Commissioning Program	Retro-commissioning is the process by which a facility's operations is audited in order to identify and address inefficiencies, resulting in energy and cost savings that is expected to exceed the cost to implement such a program.	\$300,000 annual (funded)	Ongoing
Conduct Energy and Water Audits every five years	Ongoing energy and water audits will ensure the County is optimizing its operations, minimizing use of energy and water and taking advantage of the most advanced technology available on the market.	\$200,000 annual (not funded)	Ongoing
Renewable Energy Purchases	To supplement the County's renewable energy and energy efficiency measures, as necessary, the County will continue to purchase renewable energy and renewable energy certificates from local Community Choice Energy programs. It should be noted that the price of purchased renewable energy can be highly volatile. Also, the funding increase to achieve 100% renewable energy status has been approved by the Board.	\$900,000 annual (funded)	Ongoing

EMPLOYEE COMMUTE

BACKGROUND & ACCOMPLISHMENTS

Employee commutes represents the largest source of emissions for the County's municipal operations. Prior to the COVID-19 pandemic, employee commutes represented 61 percent of emissions in 2019. The Administration will be analyzing employee commute emissions again in 2023. Based on the recommendations from the 2019 Transportation Demand Management (TDM) study, through the actions listed below, the County will be able to reduce employee commute emissions by 85 percent by 2030. Eliminating all emissions associated with employee commutes will be dependent on how fast public transit agencies can fully electrify their vehicles and how fast County employees switch to electric or hydrogen vehicles.

Past accomplishments related to employee commutes include:

- Continuing to provide the VTA SmartPass Program
- Installing 304 Electric Vehicle (EV) charging station ports
- Implementing the Santa Clara Valley Medical Center (SCVMC) shuttle



- Implementing Pre-Tax Commuter Benefits
- Completed a transportation demand management study for County employees

EMPLOYEE COMMUTE 2030 GOALS AND OBJECTIVES

ACTIONS

Table 4 on page 16 shows the actions that will have to be taken to reduce emissions from employee commutes.

2030 GOAL

Reduce emissions associated with employee commutes.

OBJECTIVE

Achieve a 74% reduction in emissions associated with employee commutes by implementing additional TDM programs and EV charging stations.

Table 4: Employee Commute Sector Actions • Phase 1

ACTION	DESCRIPTION	COST ESTIMATE	CURRENT STATUS
Phase 1: Key Actions			
Telecommute	Offer telework for eligible employees (up to 2 days a week), and track rate of teleworking, GHG emissions saved, and actions needed to expand teleworking.	\$0	The County has an existing telecommute policy. This action is ongoing.
VTA SmartPass Program	Continue extending the VTA SmartPass agreement to provide free passes to all employees.	\$358,233 annually (funded)	The County has offered the VTA SmartPass, formerly the Eco Pass, to all employees for many years. This action is funded and ongoing.
Pre-Tax Commuter Benefits	Continue providing Pre-Tax Commuter Benefits through Navia Benefits. This measure has no fiscal implications as employees cover the costs of the administrative fees of \$3.50/month.	\$0	Pre-Tax Commuter Benefits were implemented in 2019. This action is ongoing.
Commute Platform	Contract for a Commute Platform that provides a one-stop-shop for trip planning, all available transportation programs, GHG tracking, and behavioral change tools to better facilitate alternative transportation for employees.	\$234,000 annually	This action item has a funding source, and the Administration will be working on establishing an Agreement for this service in CY 2023.
Electric Vehicle Charging Stations	The County currently provides 304 level II charging ports at 13 County facilities. The County will continue to expand the electric vehicle charging station network for fleet vehicles, employees, and the public.	\$33.1 million	A funding source has not yet been identified. The Administration is currently assessing which County facilities to expand EV charging stations. Staff will also pursue grant funding to reduce capital costs to the County.
Transit Subsidies	Provide transit subsidies of up to \$150/month for employees. This measure is expected to have up to 2,500 participants.	\$4.5 million annually (not funded)	A funding source has not yet been identified.
SCVMC Shuttle	The SCVMC shuttle, implemented in 2021, provides a free, nonstop shuttle service from Diridon Station to the SCVMC campus for County employees and the public.	\$156,000 annually (funded)	This action item has a funding source, and the Administration will recommend extending this service.

Table 4: Employee Commute Sector Actions • Phase 2

ACTION	DESCRIPTION	COST ESTIMATE	CURRENT STATUS
Phase 2: Supportive Actions			
Carpool	Through a commuter platform, provide an incentive of \$3/trip, or up to \$60/person/month, for employees who carpool. It is estimated that 500 employees would participate in this program.	\$360,000 annually (not funded)	A funding source has not yet been identified. Also, this action item cannot begin until a commute platform vendor is under contract with the County.
Commuter Shuttles	Provide short-distance commuter shuttles to large County facilities that don't already have great access to public transit.	\$1.1 million annually (not funded)	A funding source has not yet been identified.
Bike Share	Fully subsidize a bike share membership at \$100/employee/year. 460 employees are expected to use this measure.	\$46,000 annually (not funded)	A funding source has not yet been identified.

COUNTY FLEET

BACKGROUND & ACCOMPLISHMENTS

The third largest contributor to total emissions is the County's vehicle fleet, which accounted for 6% of emissions in 2019 and 7% in 2020. Based on the findings of the Greening County Fleet and Operations Study, the County can increase its alternate fuel vehicle (AFV) percentage to 75% by 2035. Achieving 100% AFV will be dependent on the market availability of AFVs to meet the operational needs of County fleet vehicles, such as pursuit rated vehicles for the Sherriff's Office, and off-road vehicles for Parks & Recreation, and Roads & Airports departments. However, as the vehicle industry trends towards electrification, the County might have the opportunity to see a 75% AFV fleet or higher by 2030.

Past accomplishments related to fleet electrification include:

- Board adopted Low Emission Vehicle Procurement Policy that gives preference to the acquisition of fuel efficient and the lowest emission vehicles available.
- 21% of total County fleet vehicles are electric, hybrid electric, or run on alternative fuels.
- Installed 152 electric vehicle charging stations with 304 charge ports at County facilities for employees and public.
- Completed the Greening County Fleet and Operations Study in October 2020.



**COUNTY FLEET
2030 GOALS AND OBJECTIVES**

ACTIONS

Table 5 below shows actions that will have to be taken to electrify and reduce emissions from the County fleet.

2030 GOAL	OBJECTIVE
Increase electric vehicle charging stations at County owned facilities for County fleet vehicles.	Achieve a total of 1,000 level 2 and DC fast chargers by 2030.
Right-size and purchase zero-emission vehicles for all County light-duty vehicles.	Replace 75% of light duty fleet vehicles with zero-emission vehicles by 2030.
Electrify medium/heavy-duty vehicles for regulatory compliance and reduce the use of diesel fuel.	

Table 5: Fleet Sector Actions • Phase 1

ACTION	DESCRIPTION	COST ESTIMATE	CURRENT STATUS
Phase 1: Key Actions to Meet 2030 Goals			
Expand EV charging infrastructure	Continue EV charging expansion across all existing County owned facilities, and follow reach codes for all County new construction and renovations.	\$33.1 million one-time for 640 ports (not funded)	Estimating charging infrastructure needs for County fleet. Working on securing grant funding to install additional EV chargers.
Phase in EVs into light duty fleet	Replace all internal combustion engine light-duty vehicles at end of life with zero emission vehicles.	\$63.8 million one-time (not funded)	Analyzing zero emissions vehicle and equipment offerings that will meet County needs. Reviewing vehicles at end of life on a case-by-case basis for EV replacement.
Plan for Diesel Free by '33	Complete a study that provides a plan for how the County can switch all equipment and medium and heavy-duty vehicles to a diesel free source by 2033 while still meeting departmental operational needs.	\$132K one-time (funded)	Professional agreement has been executed and project will kickoff by end of Q1 2023.

Table 5: Fleet Sector Actions • Phase 2

ACTION	DESCRIPTION	COST ESTIMATE	CURRENT STATUS
Phase 2: Supportive Actions			
Optimize existing fleet	Implement recommendations from County fleet study to re-assign zero emission vehicles to departments with highest mileage and access to EV charging. Coordinate with departments to find opportunities to reduce their fleets.	TBD	Collecting data and overnight parking locations to identify vehicles that can be replaced with EVs without compromising service delivery models.
Establish zero emission motor pools	Establish zero emission motor pools at County facilities that have many employees (i.e. SSA) and that have staff that regularly use mileage reimbursement.	\$240K - \$1M one-time, \$150K annually (not funded)	Identifying technology providers that can support remote motor pools. Planning for a pilot with one provider.
Maximize use of telematics and install on all fleet vehicles	Increase use of telematics reports to improve driver behavior, lower fuel use, and use granular utilization data to ensure the correct zero emissions vehicle design purchased will meet department operational and duty cycle needs.	\$469K one-time, \$225K annually (not funded)	Telematics are installed on 577 County fleet vehicles, and need to be installed in 938 additional vehicles.
Pilot technologies for medium and heavy-duty vehicles	Pilot technologies as available in Parks and Roads and Airports Department fleets and secure state funding.	TBD	Parks staff attending convention to learn about new technologies for medium and heavy duty EVs.
Plan for fleet maintenance facilities safety and operational upgrades	Complete a study that evaluates necessary safety and operational design changes at four fleet maintenance facilities to service and repair medium and heavy-duty zero-emissions vehicles.	\$125K (not funded)	Touring facilities at EV dealerships and transit agencies with electric buses.
Plan for job classification changes	Complete a study of service and repair staff knowledge, skills, and certifications required to work on zero emissions vehicles.	TBD	Gathered preliminary data on trainings and certifications that will be required for County mechanics and technicians.
Plan for public safety power shutoff (PSPS) events and emergency response	Complete a study that evaluates technologies to recharge electric vehicles during an extended PSPS, and plan for at-home charging infrastructure for employees that are first responders and take fleet vehicles home.	TBD	Requires further study

WASTE

BACKGROUND & ACCOMPLISHMENTS

The County has been in contract with Republic Services since 2009 for waste service to County facilities in the cities of San Jose and Milpitas. This contract predates the adoption of the County's Zero Waste Policy for County Facilities and Operations in 2013. Under the Republic Services contract diversion has increased from 17% to 67%. However, this data does not account for facilities outside of San Jose and Milpitas which are serviced by their local jurisdiction's franchised hauler. Facilities and Fleet and Procurement Department have issued a Request for Proposals for a new waste provider to service all County facilities, providing a more uniform program among the facilities in different jurisdictions and allowing the County to better monitor and manage its waste generation and diversion.



WASTE 2030 GOALS AND OBJECTIVES

ACTIONS

Table 6 shows actions that will have to be taken to reduce emissions from the waste sector.

2030 GOAL

Divert achievable waste from County-owned facilities

Reduce disposal of organic waste from County-owned facilities

OBJECTIVE

Divert 100% of achievable waste from County-owned facilities

Implement organics collection in 100% of County facilities (SB 1383 State mandate)

Table 6: Waste Sector Actions • Phases 1 & 2

ACTION	DESCRIPTION	COST ESTIMATE	CURRENT STATUS
Phase 1: Key Actions to Meet 2030 Goals			
Execute contract for Waste Collection of County facilities	Execute contract for waste hauling and processing for all County-owned or operated facilities and improving waste diversion in all facilities served by the contract. Implement new waste program.	\$3.3 million annual base rate with 4% annual increase (funded)	RFP in evaluation stage as of March 2023. Contract execution expected Q3 2023.
Organics Collection and Recycling in all County facilities	Ensure County Facilities comply with SB 1383 requirements for organic waste. Set up organics collection programs in all County facilities.	TBD Rates dependent on RFP process. (funded)	Currently assessing status off all county facilities for infrastructure needed for organics collection.
Organics Collection in Hospitals	Set up organics collection in all County hospitals.	TBD Rates dependent on RFP process. (funded)	Currently assessing status off all county facilities for infrastructure needed for organics collection.
Phase 2: Supportive Actions			
Outreach and Training	Train Building Operations staff on proper collection and sorting. Provide resources and education to County employees on how to reduce waste and properly sort and dispose. Education to department buyers on sustainable procurement policies that support Zero Waste goals.	One-time consulting costs of \$20,000. Recurring budget for County in-house printing and training materials of \$10,000 annually. (not funded)	To be initiated after execution of the new waste contract.
Convert Waste to Energy	Explore options for converting organic waste from County Facilities into energy. Establish waste-to-energy feasibility study or pilot program.	TBD Rates dependent on RFP process. (not funded)	RFP in evaluation stage as of March 2023.
Complete Waste Characterization Study	Complete annual waste characterization study for a range of County facilities such as administration buildings, County parks, hospitals, correctional facilities, etc.	\$100,000 (funded)	Completed
Develop Zero Waste Plan	Develop Zero Waste roadmap in-house or using consultant assistance.	TBD	Not started
Develop purchasing guidelines for County vendors and projects	Work with the County's Sustainable Purchasing Program to develop guidelines for new contracts related to waste service and waste generation.	TBD	Underway

CARBON SEQUESTRATION AND OFFSETS

BACKGROUND & ACCOMPLISHMENTS

Although the County has laid out an ambitious road-map to greatly reduce emissions from each sector, the amount of emissions reduced will depend on a number of market, technological and economic factors, sometimes beyond its control. To offset remaining emissions, the County will need to rely on carbon sequestration and carbon offsets. Carbon sequestration captures atmospheric carbon and stores it in soils and plants. Practices that sequester carbon typically have other benefits as well, such as flood protection, water conservation, and improved air and water quality. There is growing awareness that these practices offer investable ways to drive carbon capture, protect us from climate change impacts while slowing further warming, support biodiversity, and secure the livelihoods of vulnerable communities' and ecosystem services. The County has over 52,000 acres of parks land that can provide opportunities for carbon sequestration. If there are still emissions remaining after enhancing carbon sequestration, the County can purchase verified carbon offsets to close the remaining emissions gap.

Past accomplishments related to carbon sequestration include:

- Sustainable Landscaping Policy: establishes a structure for planning, designing, installing, maintaining, and managing landscapes in new County construction and rehabilitated projects to reduce waste and recycling materials, nature healthy soils, conserve water, energy and topsoil and protect and enhance wildlife habitat and biodiversity.
- Integrated Pest Management Program: eliminates the use of synthetic fertilizes in County landscaping and maintenance activities and promotes use of organic amendments.
- Tree Planting: work towards a goal established in the Sustainability Master Plan to plant 1,000 trees annually countywide and work with local governments, agencies, and non-profits to build a comprehensive urban forest. To date, 2,048 trees have been planted.
- Habitat Conservation: Parks prescribed burning program to manage non-native vegetation, reduce fuel loading, and promote biodiversity and native vegetation.

CARBON SEQUESTRATION AND OFFSETS 2030 GOALS AND OBJECTIVES

ACTIONS

Table 7 shows actions that will have to be taken to sequester carbon and offset remaining County emissions.

2030 GOAL	OBJECTIVE
Achieve reduction in emissions through carbon sequestration and purchase of offsets.	Interim objective - Complete studies and establish carbon sequestration targets and plan by 2024.

Table 7: Carbon Sequestration Actions • Phases 1 & 2

ACTION	DESCRIPTION	COST ESTIMATE	CURRENT STATUS
Phase 1: Key Actions to Meet 2030 Goals			
Conduct carbon stock baseline study	Provides a static snapshot of current level of carbon stored based on land cover; evaluates how land cover, vegetation, and carbon sequestration have changed over two time horizons, and forecasts out to 2050.	\$50K one-time (budget requested)	Reviewing consultant scope of work
Develop carbon sequestration implementation plan	Evaluate how carbon sequestration is expected to change with increased climate change risks such as drought and wildfire and develop and quantify carbon sequestration strategies.	\$85K one-time (budget requested)	Reviewing consultant scope of work
Phase 2: Supportive Actions			
Secure state funding to pilot sequestration projects	Look into Inflation Reduction Act grant programs and forestry, heat and nature-based grants and apply for funding to implement a pilot sequestration project.	TBD	Not started yet



IMPLEMENTATION

BUDGETING

Table 8 summarizes the cost estimates and funding sources for the Phase 1 key actions for each of the sectors. Some actions are already funded (such as the waste contract base cost), and other actions require funds that have been requested through the FY24 budget process (such as the carbon sequestration studies).

While many of these projects will require investment of County General Funds over the coming years, General Funds will be leveraged to secure funding from external sources such as:

- Public Utility Programs and the Air District for EV charging infrastructure and fleets;
- Federal sources such as the Inflation Reduction Act; and
- State funding sources (nearly \$48 million was allocated by the Governor in 2021 and 2022 to advance the state’s climate agenda).

MONITORING

Actions within this report will be implemented in a phased approach, depending on funding, available technology, and feasibility over the next 8 years.

To monitor the County’s progress towards the 2030 carbon neutrality goal, OOS and FAF will:

- Continue to conduct regular municipal operations GHG inventories every two years;
- Report on the status of actions and progress towards the carbon neutrality target through the County’s Sustainability Annual Report each year; and
- Adjust strategies and targets over time as needed to account for new technologies or emission reduction approaches.



Table 8: Key Actions, Costs and Funding Source

SECTOR	KEY ACTIONS	COST	FUNDING SOURCE
Buildings and Facilities	Purchase Bio-Gas for Existing Fuel Cells	\$1-2 million recurring annual	County General Funds
	Development and Implementation of VMC Chiller Electrification Project	\$9-12 million one-time	County General Funds
Employee Commute	Telework for eligible employees	\$0	N/A
	Transit subsidies of up to \$150/month for employees (estimated 2,500 participants)	\$4.5 million annually	County General Funds
	Contract for a commute platform that provides a one-stop-shop for trip planning and transportation programs	\$234,000 annually	County General Funds
	Extend SCVMC shuttle service	\$156,000 annually	VMC Enterprise Fund
	Continue EV charging expansion across County facilities	\$33.1 million one-time for 640 ports (not funded)*	Public Utility Programs, State Grants, and County General Funds
County Fleet	Continue EV charging expansion across County facilities	*same as above	Public Utility Programs, State Grants, and County General Funds
	Replace all light-duty vehicles at end of life with zero emission vehicles	\$63.8 million one-time	County General Funds
	Complete study for switching equipment vehicles to a diesel free source	\$132,000 one-time	Public Utility Programs and County General Funds
Waste	Execute waste collection contract; Ensure organics collection and recycling in all County facilities, including County hospitals	\$3.3 million annual base rate with 4% annual increase	County General Funds
Carbon Sequestration	Carbon stock baseline study and carbon sequestration implementation plan	\$135,000 one-time	County General Funds

COUNTY OF SANTA CLARA
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