CLIMATE SMART
SAN JOSE
LIVING BETTER TODAY FOR TOMORROW

Pathway to

CARBON NEUTRALITY BY 2030

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EXECUTIVE SUMMARY

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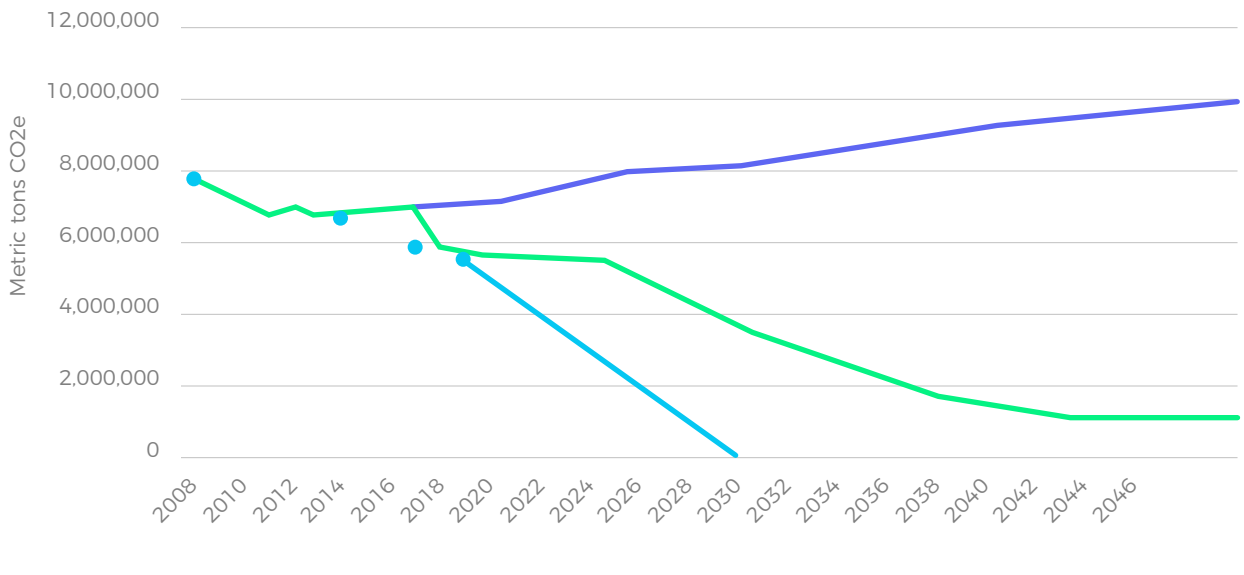
As scientists continue to emphasize the need for rapid and far-reaching action to slow climate change, San José has begun to feel the impacts of climate change in the form of wildfires, drought, and extreme heat. Acknowledging the need for accelerated action, in November 2021 San José City Council set an aspirational goal for San José to become carbon neutral by 2030. This goal builds on the already ambitious goals in the City of José's ("City") climate action plan, Climate Smart San José ("Climate Smart"), and sets an example for other cities around the world. This Pathway to Carbon Neutrality by 2030 ("Pathway") recommends strategies and supporting actions to accelerate the City's Climate Smart work and put San José on a course to carbon neutrality by 2030.

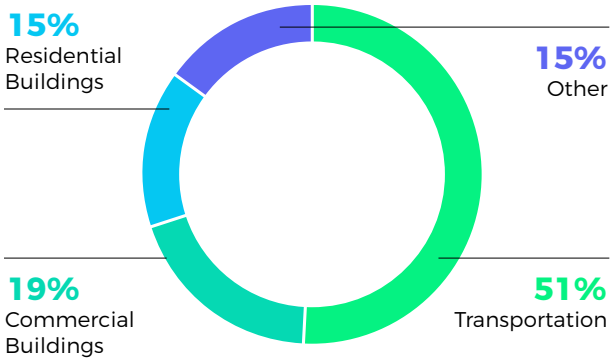


Eighty-five percent of San José's communitywide greenhouse gas (GHG) emissions come from transportation and buildings, and this first iteration of the Pathway focuses on carbon neutrality for those sectors.

Based on staff assessment of local data and existing programs and policies at the state, regional, and City levels, the Pathway includes priority near-term (1-2 fiscal years) actions supporting the following four key strategies:

- Move to zero-emission vehicles
- Reduce the miles we travel in our vehicles by at least 20 percent
- Switch our appliances from fossil fuel to electric
- Power our community with 100 percent carbon-neutral electricity

San José Communitywide GHG Emissions (2019)



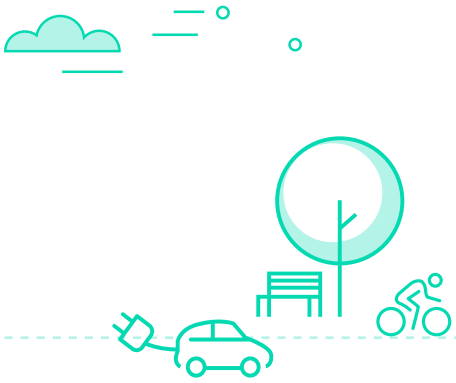
It also includes priority actions to help the City lead by example by reducing GHG emissions from municipal operations. In addition, this document provides an overview of available, potential, and needed resources, and describes how progress will be tracked and this Pathway will be updated over time.

Though the focus of this Pathway is on reducing GHG emissions, its ultimate aim is for San José to become a better, stronger and more resilient community and to improve life for San José residents. Reaching this goal will require the involvement and engagement of all parts of the San José community, including San José's historically marginalized communities, low-income residents, seniors, disabled residents, and struggling families. While the strategies identified are data-based, the City will need to seek extensive community input to guide and refine the actions advancing those strategies so that they can be supported by and supportive of the San José community.

01 INTRODUCTION

PURPOSE

Climate change is a daunting problem that will not be solved without action from many participants around the world. San José's GHG emissions are a small piece of total global emissions. Setting a goal and a plan for reducing San José's communitywide GHG emissions will not solve the global problem, but doing so will make an impact by setting an example for others. California and its cities lead the world in climate action. As one of the largest cities in California and the country, where San José leads, others follow. By setting ambitious goals and laying out strong plans to achieve them, San José is helping accelerate climate action around the world, as well as within its community.



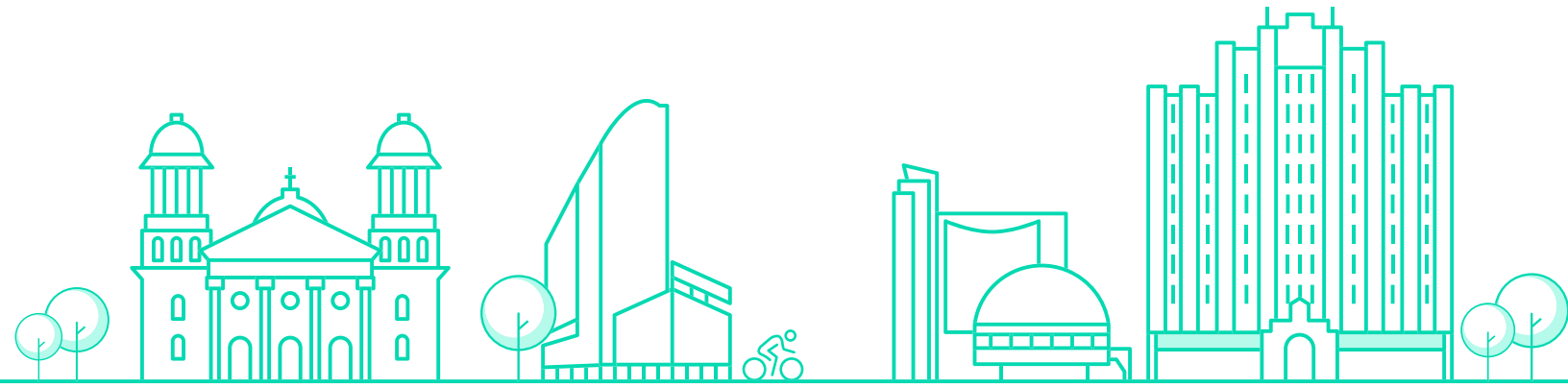
In 2018, City Council approved the City's climate action plan, Climate Smart San José, which includes ambitious targets to reduce GHG emissions by 2050 in alignment with the Paris climate agreement. Climate Smart identifies strategies to reach those targets while also improving residents' quality of life, with a focus on San José's community-identified priorities of safety, health, freedom, community, and positive experiences (known as the "Good Life 2.0"). In November 2021, given the latest climate science from the Intergovernmental Panel on Climate Change (IPCC)[1] and going beyond Climate Smart goals, San José City Council adopted a resolution setting an aspirational goal for San José to be carbon neutral by 2030. Being carbon neutral would mean reducing the community's net GHG emissions (from our transportation, buildings, grid-supplied energy, industry, and treatment of waste), in a given year, to zero.

With the Carbon Neutral Resolution adoption, Council directed staff to return with a specific strategy for the acceleration of work in Climate Smart San José needed to put our community firmly on a path to achieve our carbon neutrality goal by 2030. This document presents key strategies and recommends focused short-term (next 1-2 fiscal years) supporting actions to kick-start this initiative. It is important to note that this Pathway is considered a living document since many things can, and likely will, change in the coming years. Similarly, it is important to acknowledge that this document is not meant to be an all-encompassing plan to address all community priorities – many actions not included here are being addressed through separate City efforts (e.g., climate resiliency and increasing the urban tree canopy).
We will need to be both focused and thoughtful in order to reach our carbon neutral by 2030 goal in a way that improves life for people throughout our community.

[1]IPCC, 2022: Climate Change 2022: Impacts, Adaptation, and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [H.-O. Pörtner, D.C. Roberts, M. Tignor, E.S. Poloczanska, K. Mintenbeck, A. Alegría, M. Craig, S. Langsdorf, S. Löschke, V. Möller, A. Okem, B. Rama (eds.)]. Cambridge University Press. In Press.

OUR VISION

San José will become a better, stronger and more resilient community by accelerating climate action and achieving carbon neutrality by 2030.



Reaching carbon neutrality will be a transformative process for our city. In 2030, we envision San José as a world-leading green city whose residents are living the Good Life 2.0 - with high-quality jobs, comfortable, healthy homes and workplaces powered by reliable clean electricity, and many clean, safe, and easy-to-use transportation options to get around town. The City recognizes that without special effort, the benefits of this vision may not reach all members of our community. To guide our pathway, the City's vision toward carbon neutrality by 2030 includes the following two core components:

1. Engaging our community throughout the process.

The City's carbon neutrality planning is a living process and needs community input at every stage to guide San José's transition to carbon neutrality. The City envisions carrying out this work in a way that is open, transparent, proactive in gathering input from many different parts of the community, and responsive to what we hear.

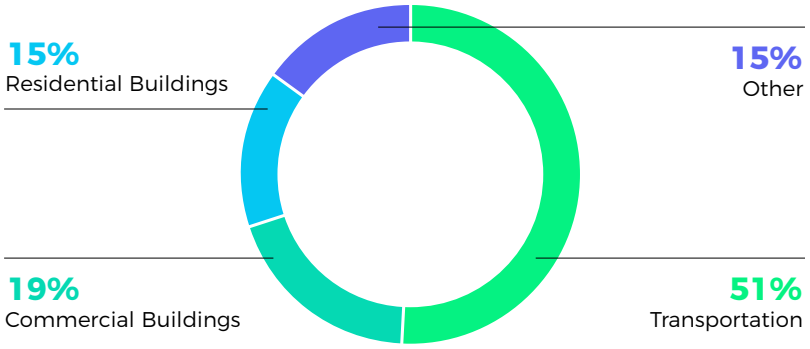
2. Making all voices heard.

Historically marginalized communities are hit first and worst by the impacts of climate change and often have the fewest resources and support to recover from extreme weather events, emergencies, loss of energy or road closures, flooding and other impacts[2]. Given this, the City commits to engaging all of the community, prioritizing historically marginalized communities, low-income residents, seniors, disabled residents, and struggling families, to include diverse perspectives and ensure that all are included in the benefits of this transition and not made more vulnerable by it. Success in achieving San José's carbon neutrality goal depends on the support of all of the community.

[2]Goldstein, Benjamin, Dimitrios Gounaridis, and Joshua P. Newell. "The Carbon Footprint of Household Energy Use in the United States." Proceedings of the National Academy of Sciences 117, no. 32 (August 11, 2020): 19122–30. https://doi.org/10.1073/pnas.1922205117.

OUR FOCUS AREA

In April 2022, the IPCC issued its Sixth Assessment Report that flagged the need for nations to reduce their fossil fuel usage much faster to avoid calamitous overheating of the planet. As shown in Image 1, 85 percent of San José's communitywide GHG emissions come from two areas – transportation and buildings.



Given San José's GHG emissions profile, the Pathway will focus on the following three key areas:

1. Transportation. San José can build upon its existing transportation plans, policies and programs to further accelerate the use of zero-emission vehicles, active transportation (e.g., walking and biking) and shared services (e.g., car sharing and public transit). This work can include land-use planning that supports reduced vehicle miles traveled (VMT) and increases mode shift, investments in transit, bike, and pedestrian infrastructure, programs and policies to encourage behavior change by residents and workers, and programs and policies to support electric vehicles (EVs) and smart and shared mobility options. This work builds on Climate Smart strategies 2.1, 2.3, 2.4, 3.1, and 3.3.

2. Buildings. San José's Natural Gas Infrastructure Prohibition Ordinance requires all-electric new construction, with limited exceptions. The City can help accelerate an all-electric transition by supporting energy efficiency improvements in its existing building stock. This work can include consumer and contractor education and training, incentives, and turnkey upgrade programs, and builds on Climate Smart strategies 2.2 and 3.2.

3. Power Source. San José Clean Energy (SJCE), managed by the City's Community Energy Department (CED), can move from its current 95 percent carbon-neutral[3] to a 100 percent carbon-neutral base power product by 2030 to provide a clean source of power for current and future electric buildings and transportation. The portfolio will likely include some natural gas resources to maintain reliability, but any natural gas production will be offset by carbon-free energy. This work builds on Climate Smart strategy 1.1.

The remaining sources of our GHG emissions are being addressed by separate efforts and can be incorporated into future versions of this Pathway.

[3]SJCE's current 95 carbon-neutral goal is based on a typical weather year. Weather, particularly snowpack and drought, determines hydropower supplies. Hydropower is a prominent carbon-neutral power source in California.

THE DEVELOPMENT PROCESS

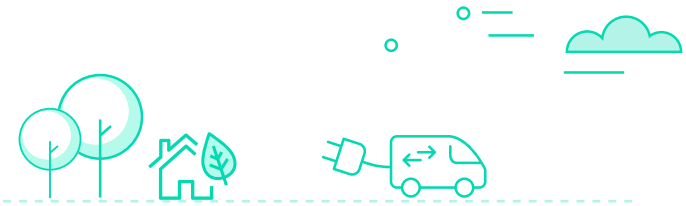
This Pathway was developed using a two-phase approach – Discovery and Planning—with an overview of each provided below.

DISCOVERY PHASE

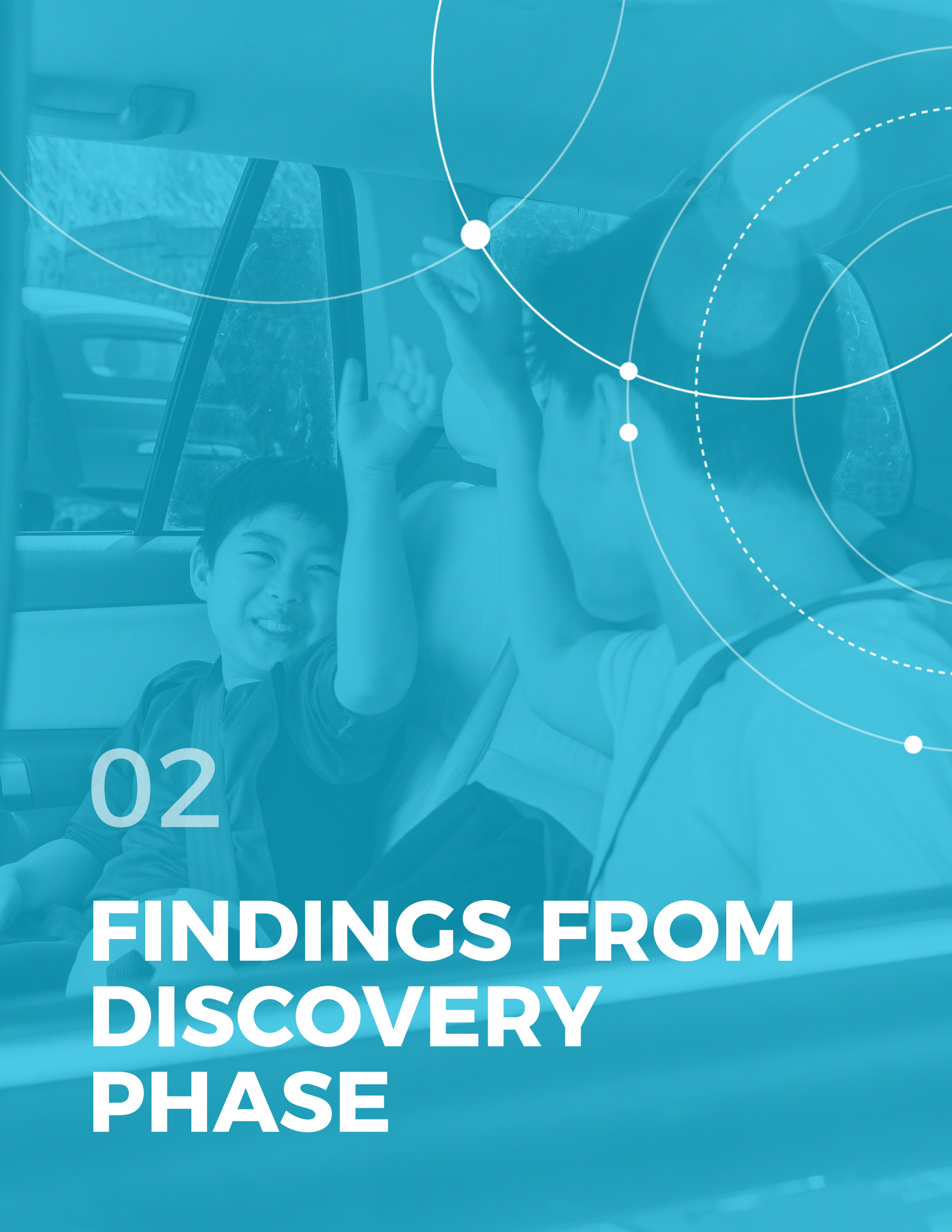
In this phase, staff **examined** available data that provided insights into our GHG emissions and what we are already doing (goals, plans, policies, and programs) statewide, regionally and at the City that brings us toward our carbon neutrality goal.

PLANNING PHASE

In this phase, building upon the Discovery Phase work, staff **identified and assessed** potential acceleration strategies and **recommended** Acceleration Strategies in each of the three key areas to jumpstart the City's efforts towards our carbon neutral by 2030 goal.



This Pathway reflects staff's research, planning, and insights given available resources, building upon the extensive research, analysis, and community engagement that the City has already completed to-date to inform existing Climate Smart transportation, building, and power source initiatives (summarized in Appendix 1) and the existing Climate Smart plan. The next steps toward a carbon neutrality goal will be refining the strategies and actions in this Pathway and establishing timelines for implementation with additional technical analysis and community input. The City is committed to moving forward thoughtfully, with a focus on maximizing return on investment, and with strong community support.



02

FINDINGS FROM DISCOVERY PHASE

FINDINGS FROM DISCOVERY PHASE

This section provides relevant data and information on goals, plans, policies, and programs relevant to our efforts – providing a context for the recommended acceleration strategies identified in the Planning Phase (Section 3).

What the Data Tells Us

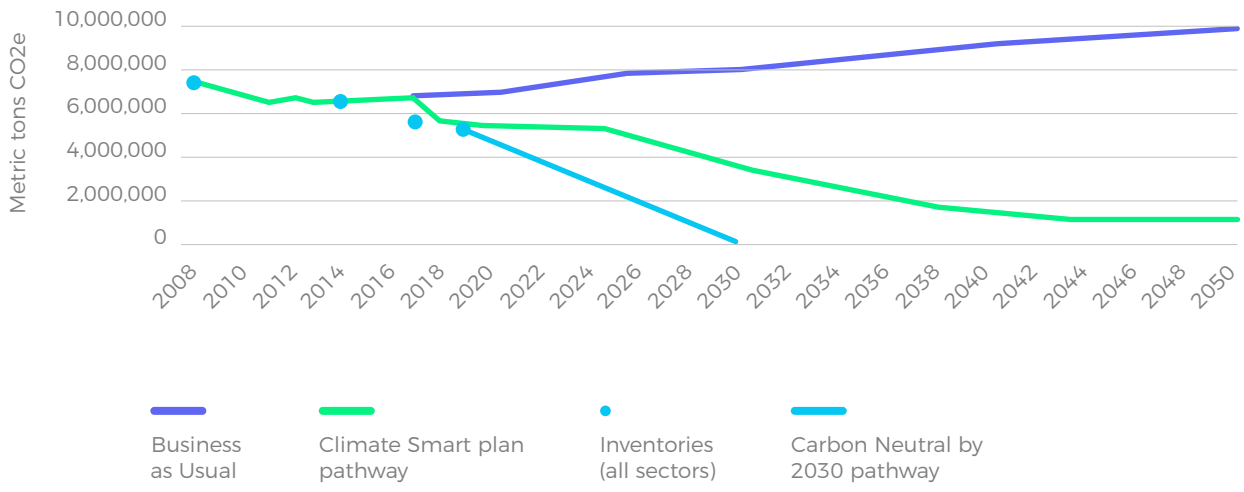
San José's communitywide GHG inventories show that our GHG emissions have decreased over time, but are not decreasing at a rate quick enough to reach carbon neutrality by 2030 without additional efforts (see Image 2).

To achieve carbon neutrality, San José needs to eliminate 5.4 million metric tons of carbon dioxide equivalent (MT CO2e) emissions annually – an amount that would cover the entire city in a blanket of carbon dioxide approximately 20 feet thick.

Key Data Takeaways

Staff collected and analyzed available data for insights into San José's GHG emissions (see Appendix 2). Key takeaways from the data are summarized on the next page.

Image 2: San José GHG Emissions – Pathways and Inventories



TRANSPORATION

- Primary focus should be on converting passenger vehicles and then trucks and commercial vehicles to electric.
- To achieve carbon neutrality by 2030, the City will need to significantly accelerate the pace of EV adoption and corresponding EV charging infrastructure.
- Reducing VMT to Climate Smart's current reduction goal would require significant focus now through 2030, and the choices that are made (e.g., development, capital/grant improvements) during that time will have lasting VMT and GHG effects.
- Given the timescale needed for VMT reductions, the majority of GHG emissions reductions through 2030 from the transportation sector will be need to come from the move to zero-emission vehicles.

BUILDINGS

- Primary focus should be on electrifying space and water heating equipment in residential buildings.
- Existing programs and incentives can support building energy efficiency and electrification.
- Low-income communities, in particular, will require significant assistance to fully electrify their homes.
- Solar and the replacement of appliances at their end-of-life can significantly improve the economics of home electrification.

POWER SOURCE

- SJCE already offers a low-carbon base power product and continues to grow its renewable content.
- Maintaining SJCE's current customer base and potentially seeking to bring more direct access (commercial and industrial) customers to SJCE's service can support San José's carbon neutral by 2030 goal.
- It will be important to monitor customer enrollment in GreenValue and evaluate its impact on the carbon neutrality goal.
- Reaching California's 100 percent clean energy goals will require the deployment of utility-scale renewable energy paired with short and long-duration storage and rooftop solar with home energy storage.

MUNICIPAL OPERATIONS

- While municipal operations are a small percentage of communitywide GHG emissions, they are within the City's direct control.
- Primary focus should be on employee commutes and buildings and facilities.
- Within buildings and facilities, focus should be on the Airport's central utility plant.
- Municipal operations can move to 100 percent carbon-neutral electricity quickly through SJCE.

WHAT THE CITY AND OTHERS ARE ALREADY DOING

The State of California, the Bay Area region, and the City are leaders in their climate action policies, programs and achievements. The state, region, and City have all already taken significant steps towards carbon neutrality:

- At the state level, California set a carbon neutral by 2045 goal in 2018. In July 2021, Governor Newsom directed California state agencies to accelerate California's progress to its climate goals with a new 2035 carbon neutrality goal. With this direction, the California Air Resources Board (CARB) and California Public Utilities Commission (CPUC) are evaluating pathways for the state to achieve carbon neutrality by the new 2035 goal date. There are also many state laws, executive orders, policies, and funding programs driving GHG emissions reductions in specific sectors, including buildings, transportation, electricity, and solid waste.
- Regionally, agencies including the Metropolitan Transportation Commission (MTC), the Valley Transportation Authority (VTA), and Santa Clara County are developing or have adopted climate action plans or plans that incorporate GHG emissions reduction goals. The Bay Area Regional Energy Network (BayREN) provides programs and significant incentives to encourage increased building energy efficiency and electrification, and the Bay Area Air Quality Management District (BAAQMD) is considering a phase-out approach to the sale of natural gas appliances.
- San José was the first city of its size to approve a climate action plan in alignment with the Paris climate agreement, establish a community choice aggregation program (SJCE) to provide its community with cleaner power, require all-electric new construction, and adopt a carbon neutral by 2030 goal. In addition, the City's Envision 2040 General Plan supports smart, transit-oriented growth and densification and the City offers rapid, online permits for solar panels, and EV chargers. The City has developed plans to support VMT reduction, active mobility, and more expansive and equitable access to electric and shared vehicles. The City has also adopted an ordinance to require all-electric new construction and offers incentives, education, and information to support home energy efficiency and building and vehicle electrification.

Appendix 1 provides a summary of both completed and planned statewide, regional and City plans, policies and programs in the three key areas, providing the background for the identification of strategies the City can employ to leverage, build upon, and fill any important gaps in existing plans, policies and programs to accelerate San José's progress towards its climate goals.

03

RECOMMENDED ACCELERATION STRATEGIES

RECOMMENDED ACCELERATION STRATEGIES

While San José's communitywide GHG inventories show that our GHG emissions are decreasing over time and the City has taken significant action already, we will need to significantly accelerate progress to reach a carbon neutral by 2030 goal.

Scenario analyses conducted by ICLEI – Local Governments for Sustainability (ICLEI), provided as part of the City's participation in the global Race to Zero initiative, found that San José could reach carbon neutrality for electricity, buildings, and transportation by 2030 (see Image 3) by implementing the following four very aggressive strategies:

1. Getting to 100% carbon-neutral electricity

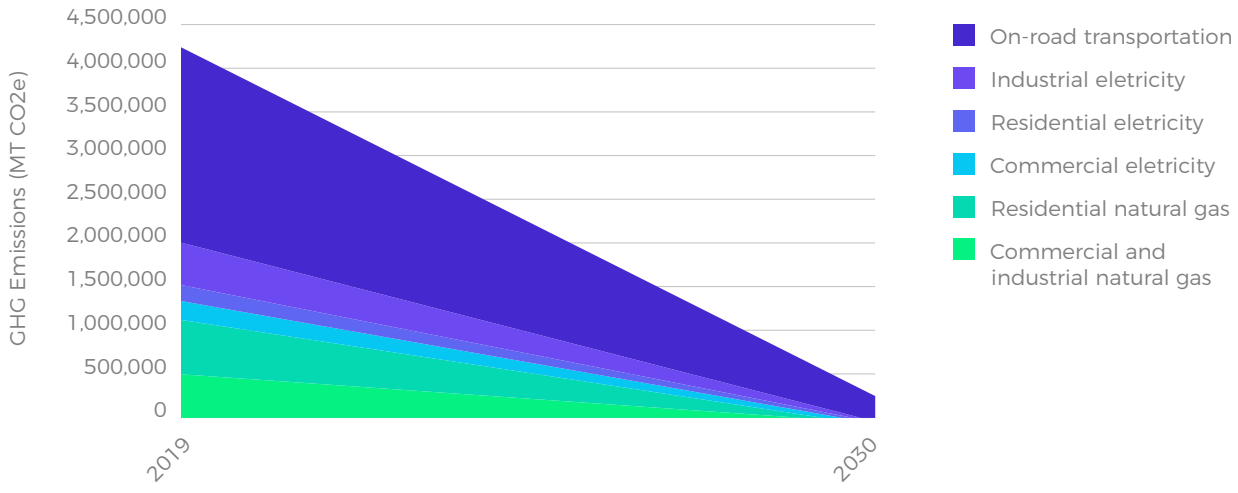
2. Reducing total VMT by between 15 and 50 percent from 2019 levels (decrease required depends on level of EV adoption)

3. Getting to between 79 and 88 percent EVs (increase required depends on level of VMT reduction)

4. Starting in 2023, retrofitting 14.3 percent of currently existing residential and commercial buildings to be all-electric each year

In all of these scenarios, GHG emissions for these three sectors combined are reduced to about 227,000 MT CO2e total – which could be balanced out by carbon capture and sequestration options (as explained in more detail in Appendix 4).

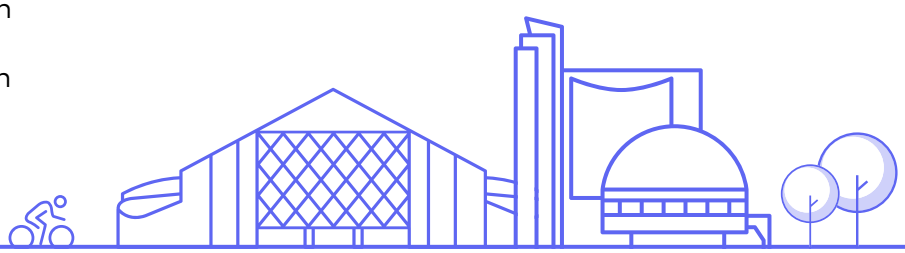
Image 3: ICLEI GHG Emissions Scenario Analysis



The Climate Smart plan includes nine strategies to reduce communitywide GHG emissions and water use. Given limited resources and time, the City must focus and scale existing Climate Smart efforts to achieve a carbon neutrality goal. This Pathway does not establish any new policies or mandates. It recommends four key strategies, based on the strategies in the Climate Smart plan, to create a prioritized body of work for the City to accelerate the community's movement to carbon neutrality. Given the close goal timeline, the actions within each of the strategies in this Pathway are identified for the near term, within the next two fiscal years.

As these strategies are deployed and staff measure and report on progress, staff will need to regularly update the actions within each of the recommended acceleration strategies (see Measuring and Reporting on Progress section for details).

Additional analysis and community engagement will be necessary in the creation of specific programs and policies supporting the four strategies. Additional funding will also be necessary for establishment of new work and future scaling of successful programs, and staff will pursue federal, state and other funding opportunities. Appendix 3 provides details, including a description, equity components, available resources, and the potential for scaling given additional resources, on the supporting actions identified within each of the recommended acceleration strategies.



STRATEGY 1: MOVE TO ZERO-EMISSION VEHICLES

With SJCE providing 100 percent carbon-neutral electricity to San José (see Strategy 4), our community can significantly reduce GHG emissions from the transportation sector by accelerating the shift to EVs. This strategy builds on ongoing work supporting Climate Smart strategies 2.3 (Create Clean, Personalized Mobility Choices) and 3.3 (Make Commercial Goods Movement Clean & Efficient). To facilitate this transition, the City should expand its efforts to: 1) increase awareness and information about EVs; 2) expand access to EV charging; and 3) reduce other barriers to adoption, including the cost to purchase or access shared EVs. In addition to GHG emissions, shifting to EVs will reduce operational costs for vehicle owners as well as noise and air pollution, including toxic pollutants known or suspected as carcinogens as well as pollutants causing neurological, cardiovascular, respiratory, reproductive and/or immune system damage. Vehicle-related pollution has disproportionally impacted communities of color, who are more likely to live near highways, freight corridors and industrial areas than white Americans. The acceleration actions listed below are intended to leverage existing programs and incentives to boost EV adoption across our communities.

Supporting Actions:

EV1. Increase access to EV charging citywide

EV2. Increase access to EV charging at City facilities

EV3. Implement EV education and awareness programs, with a focus on disadvantaged communities where adoption is the lowest

EV4. Implement and/or promote programs that reduce cost and other barriers to EV ownership and usage

EV5. Secure external funding and resources

STRATEGY 2: REDUCE THE MILES WE TRAVEL IN OUR VEHICLES BY AT LEAST 20 PERCENT

While reducing GHG emissions through vehicle electrification is a vital focus area for addressing San José's transportation sector (see Strategy 1), our community can also significantly reduce GHG emissions by accelerating the switch to alternate, carbon-neutral modes of transportation such as cycling, walking and public transit (known as "mode shift"). The City has already been working to drive mode shift in support of Climate Smart strategies 2.1 (Densify Our City to Accommodate our Future Neighbors), 2.4 (Develop Integrated, Accessible Public Transport Infrastructure), 3.1 (Create Local Jobs in Our City to Reduce VMT), and 3.3 (Make Commercial Goods Movement Clean & Efficient). To facilitate this transition, the City should expand its efforts to: 1) improve infrastructure for bikers and pedestrians; 2) make transit more convenient and easier to use; 3) incentivize modes of transportation other than driving; and 4) densify the city. As with vehicle electrification, mode shifting will reduce noise and air pollution, which disproportionally impact communities of color, who are more likely to live near highways. The acceleration actions listed below are intended to expand and build upon existing programs and policies to boost mode shifting across our communities.

Supporting Actions:

MT1. Build complete and safe streets

MT2. Make more public space for people

MT3. Fill gaps in trails and sidewalks

MT4. Provide lighting improvements

MT5. Provide urban greening

MT6. Provide low-stress bike facilities and slow streets

MT7. Maintain bike and pedestrian infrastructure

MT8. Provide bike storage

MT9. Enhance bike connectivity

MT10. Make signals work better for people walking or biking

MT11. Expand transit service

MT12. Improve existing transit service

MT13. Establish means-based transit fares

MT14. Enhance transit stops

MT15. Provide user-friendly transportation information

MT16. Provide mobile ticketing

MT17. Provide microtransit & on-demand service

MT18. Establish mobility hubs

MT19. Develop and implement Transit-First Policy

MT20. Provide transportation demand management (TDM)

MT21. Implement smart parking and curbside management policies

MT22. Implement transportation impact fees

MT23. Encourage carshare

MT24. Encourage sustainable local deliveries

MT25. Increase affordable housing near transit and growth areas

MT26. Increase local jobs near transit and low-VMT areas

MT27. Support development of Urban Villages with mixed land uses and amenities

MT28. Encourage emerging mobility in equity priority communities

MT29. Secure external funding and resources

STRATEGY 3: SWITCH OUR APPLIANCES FROM FOSSIL FUEL TO ELECTRIC

The use of natural gas in buildings inherently generates GHG emissions, while SJCE can provide carbon-neutral electricity to San José residents and business. The City has already been working to assist in the transition to carbon-neutral buildings in support of Climate Smart strategies 2.2 (Make Homes Efficient & Affordable for Our Residents) and 3.2 (Improve Our Commercial Building Stock). To reach carbon neutrality by 2030, the City can help accelerate the upgrade of natural gas-fueled appliances to all-electric options – with a focus on space and water heating. In addition to reducing GHG emissions, electrification upgrades will improve indoor air quality and increase resilience to heat waves by adding air conditioning to homes that did not previously have it. The acceleration actions listed below are intended to increase the awareness, understanding, and demand for building electrification; streamline the building electrification process and reduce associated costs; support the creation of a high-quality electrification workforce; and leverage existing programs and incentives.

Supporting Actions:

B1. Evaluate Natural Gas Infrastructure Prohibition Ordinance for updates

B2. Evaluate Building Reach Code for updates

B3. Develop and implement a building electrification framework

B4. Initiate electrification upgrade accelerator

B5. Partner to develop an electrification plan for targeted disadvantaged neighborhoods

B6. Provide residential electrification incentives for low-income residents

B7. Support electrification workforce development

B8. Implement Zero Emissions Neighborhood (ZEN) pilot

B9. Support the creation of an online Zero Carbon hub

B10. Leverage existing programs and incentives

B11. Explore opportunities to reduce the cost of building electrification

B12. Explore policy options for existing building electrification

B13. Provide community education and outreach

B14. Secure external funding and resources

B15. Collaborate and partner with other entities with similar carbon neutrality goals to support progress

STRATEGY 4: POWER OUR COMMUNITY WITH 100 PERCENT CARBON-NEUTRAL ELECTRICITY

Given the inherent GHG emissions from natural gas and the subsequent focus on electrifying buildings and transportation, providing 100 percent carbon neutral electricity to those buildings and transportation is vital. SJCE already procures significant renewable and storage capacity for the San José community in support of Climate Smart strategy 1.1 (Transition to a Renewable Energy Future) and will need to continue an aggressive pathway to achieve 100 percent carbon-neutral electricity on an annual basis[4] by 2030. In addition to reducing GHG emissions, SJCE's procurement of energy resources helps bolster grid resiliency and supports new and innovative energy technologies such as long-duration storage and firm clean resources. The acceleration actions listed below are intended to ensure focused planning and progress while maintaining cost competitiveness.

Supporting Actions:

P1. Develop and implement a ten-year Integrated Resource Plan

P2. Procure a minimum of 204 MWs of storage and renewables

P3. Enroll maximum Disadvantaged Community – Green Tariff Program customers

P4. Support clean energy improvements to natural gas plants

P5. Market to direct access customers to utilize SJCE's service

P6. Increase uptake of TotalGreen service option

P7. Support distributed generation and local resiliency through on-site solar and battery storage and back-up power

LEADING BY EXAMPLE

Although it is a minimal portion of communitywide emissions, the City should demonstrate within its own operations the same commitment to bold climate action that it is seeking from the community. The City can take impactful supporting actions within each of the four carbon neutrality strategies by: 1) moving to a zero-emission fleet, 2) supporting employee commutes via carbon-neutral options, 3) electrifying its buildings, and 4) powering municipal buildings with 100 percent carbon-neutral power.

Supporting Actions:

M1. Switch to TotalGreen electricity

M2. Implement an employee TDM program

M3. Update the Green Fleet Policy

M4. Integrate the City's All-Electric Policy for Municipal Facilities into City processes

M5. Integrate Climate Smart across City government

M6. Secure external funding and resources

The strategies above may not get us all the way to zero emissions by 2030. We can also consider negative emissions strategies as well as developing technologies that may become available in the coming years (see Appendix 4 for Additional Options for Future Consideration).

[4]SJCE will procure enough renewable energy to cover 100% of its customers' usage on an annual basis

PUBLIC ENGAGEMENT

As noted in the Recommended Acceleration Strategies section, refining some of the identified strategies into detailed programs and/or policies will require both targeted and broad community engagement. This engagement should intentionally elicit input from a wide range of stakeholders, including historically marginalized communities, low-income residents, seniors, disabled residents, and struggling families, and seek opportunities to co-create policies and programs. It will also build on the citywide Community Engagement Framework and other resources being developed by the citywide Community Engagement Working Group and the City's Office of Racial Equity.

RESOURCES TO SUPPORT THE WORK

As noted in the Recommended Acceleration Strategies section, there are some resources available – and more expected to come – that can help fund the work described in this Pathway. Both the State of California Proposed Budget and the federal Infrastructure Investment and Jobs Act, which passed in November 2021, are allocating an unprecedented amount of funding for building and transportation electrification and climate resiliency initiatives. City staff should continue to closely monitor and prepare for these opportunities as well as additional funding opportunities anticipated in the near future to support building electrification, energy efficiency, weatherization, EVs and EV charging infrastructure, and transportation mode shifting. Forthcoming funding options known at this time are listed in Appendix 5. City staff should leverage and promote available external resources, incentives, and programs that align with Climate Smart goals to maximize the support available to our community.

In addition to external funding, this work will need sustained and sufficient City budget to be successful. Staff is needed to develop, implement and track success of new programs and policies; to coordinate efforts across City departments; to acquire, manage and report on grant funding; to track and report on overall progress; and to inform and engage the community in the effort to reach carbon neutrality. In addition, non-personal funds are needed to fulfill grant matching requirements, for technical consultants and/or contractor support, to fairly compensate community-based organizations (CBOs) and other stakeholders for their collaboration, for outreach and marketing, and for program development and implementation. Staff will return to City Council to request future budget actions as necessary to pair requests for additional resources with specific policy and program proposals.

The Pathway presented here focuses on GHG emission reductions, but investments in resilience to the impacts of climate change are also needed. The City will develop a resilience and adaptation plan, in FY 22-23 pending budget approval, with actions to protect our community from wildfires, heat, flooding, drought and sea-level rise.

In its evaluation of the costs of taking action to reduce our GHG emissions and increase resilience to the impacts of climate change, the City should also weigh the cost of inaction. Longer delays in reducing our GHG emissions will lead to greater warming and more danger from climate hazards such as floods, fire, and extreme heat; less preparation for those hazards will lead to greater loss of life, health, property and livelihoods.

MEASURING AND REPORTING ON PROGRESS

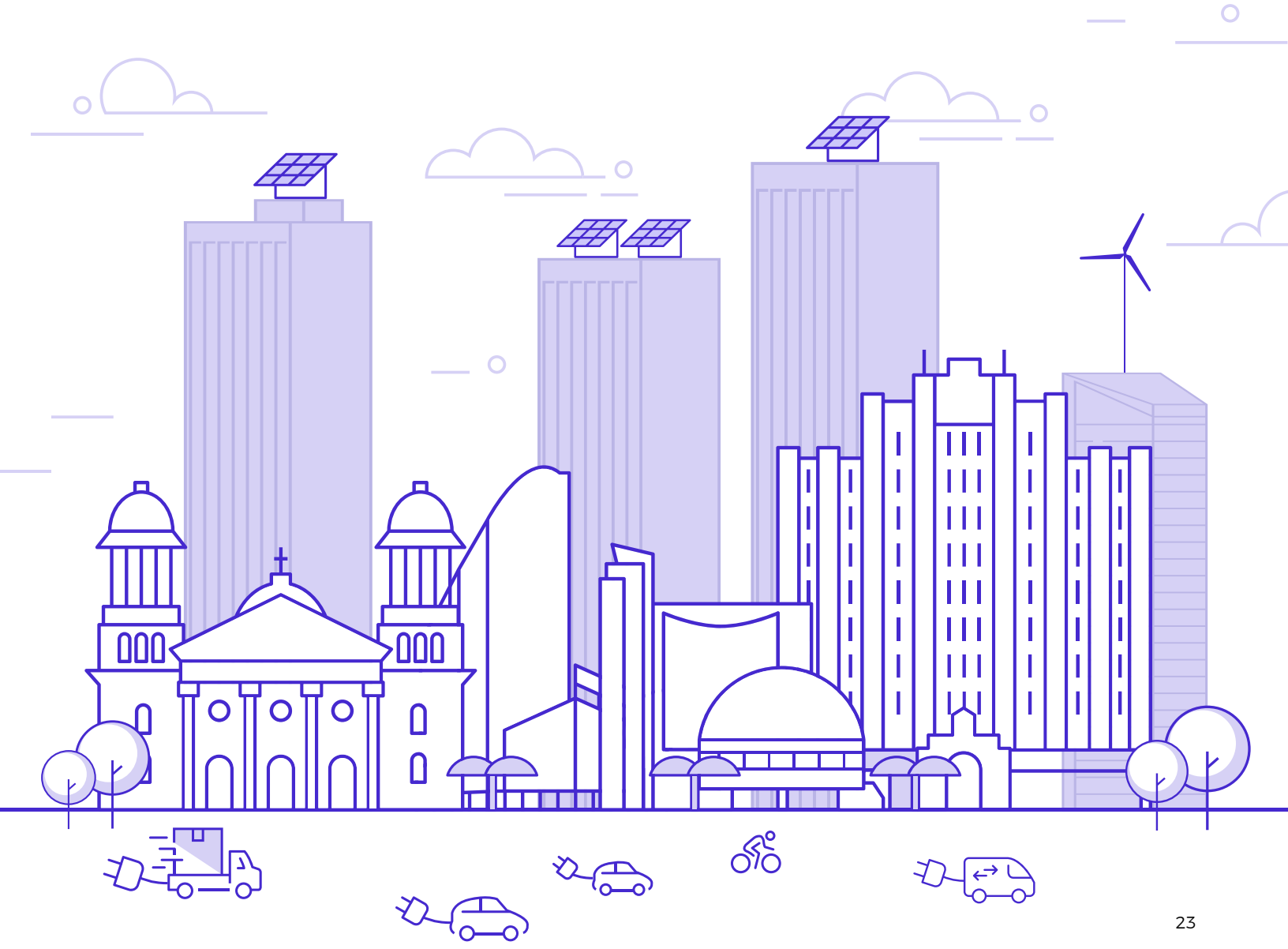
City staff will report progress on this Pathway as part of the existing Climate Smart reporting schedule, which includes:

- Biannual updates to the Transportation and Environment Committee and City Council
- Communitywide and municipal GHG inventories (alternating years)
- Climate Smart dashboard (updated annually)
- Core Service Area annual reporting (DOT, ESD)

In addition, municipal operations updates are provided via the following:

- Annual Fleet Report (Municipal Fleet)
- Biennial Airport Sustainability Report (next report summer 2022)

This Pathway is intended to be evaluated and updated following each biannual communitywide GHG emissions inventory.



04

APPENDICES

APPENDIX 1

SUMMARY OF STATEWIDE, REGIONAL, AND CITY PLANS, POLICIES, AND PROGRAMS

Statewide[5]

Focus Area	Climate-related Plans (approval year)	Climate-related Policies (adoption year)	Climate-related Programs/ Projects (activity year)	Plans, Policies, and/or Programs in Development
Cross-Area	CARB Scoping Plan (next update will be released in 2022) Updated every 4-5 years, assesses progress on the State's GHG reduction goals and lays out a path to achieve them	Executive Order B-55-18 (2018) Established a statewide goal of achieving carbon neutrality no later than 2045		
Transportation	California Zero-Emission Vehicle Market Development Strategy (2021)	Executive Order B-16-12 (2012) Laid the foundation for the state to help bring 1.5 million zero-emission vehicles to California by 2025	CARB California Clean Fuel Reward (2021; ongoing) Offers point-of-sale rebate, in partnership with electric utilities, up to $750 depending on battery capacity for purchases or leases of new EVs	
	Electric Vehicle Charging Station Permitting Guidebook (2019)	AB 544 (2017) Extended California's program to allow certain clean alternative fuel vehicles to use carpool lanes	CARB Clean Vehicle Rebate Project (2016; ongoing) Offers $1,000-$7,000 in rebates for purchases or leases of some EVs, depending on income	

[5]The City acknowledges that there are also federal programs and incentives (e.g., for building energy efficiency, electrification, and onsite solar) that are not currently shown in this Appendix given the state, regional, and local focus.

	The Climate Action Plan for Transportation Infrastructure (2021)	AB 739 (2017) Required at least 15 percent of specified heavy-duty vehicles newly purchased by state agencies to be zero-emission beginning in 2025, and at least 30 percent of those vehicles to be ZEV beginning in 2030	CARB Drive Clean Assistance Program (ongoing) Offers up to $5,000 as a point-of-sale incentive for purchase or lease of new or used EVs by income-qualified households. Also offers grants for at home charging and portable chargers	
		AB 630 (2017) Codified a clean-car program that benefits low-income residents by helping them replace high-polluting vehicles with cleaner and more efficient vehicles	CARB Clean Vehicle Assistance Program (Closed as of 4/14/21; additional funds may be added in 2022) Offered $4,500-5,000 as a point-of-sale incentive for purchase or lease of new or used EVs by income-qualified households	
		Executive order B-48-18 (2018) Orders all state entities to work with private sector to put five million zero-emission vehicles on the road by 2030 and install 250,000 EV charging stations by 2025		

		Executive Order N-79-20 (2020) Requires all new vehicles sold in CA to be zero-emission by 2035 for passenger vehicles and 2045 for commercial trucks/ vans		
		CARB Innovative Clean Transit Regulation (2018) Sets a statewide goal for public transit agencies to gradually transition to 100 percent zero-emission bus fleets by 2040, starting by purchasing only zero-emission buses by 2029		
		CARB Proposed Advanced Clean Cars II Regulations (2022) Would require 35 percent of all new car purchases by 2026 and 100 percent by 2035 to be electric, hydrogen-powered, or plug-in hybrids		
		SB 743 (2013) Requires agencies to measure transportation impacts in California for new development projects using VMT		

Buildings		Assembly Bill 3232 (2018) Requires the State to assess the potential for California to reduce building-related emissions by at least 40 percent below 1990 levels by 2030	Building Initiative for Low-Emissions Development (BUILD; 2021) Provides building electrification incentives for low-income residential projects that build new housing, repurpose existing buildings for housing, or do major renovations on existing housing through 2023	
		Building Energy Efficiency Standards (also known as "Title 24"; 2022; updated every three years) Incentivizes all-electric new construction, energy efficiency, and solar	Technology and Equipment for Clean Heating (TECH; 2021) Provides building electrification incentives for existing homes through 2023	
			Switch is On campaign (2020, ongoing) Encourages building electrification and provides online tools to find available all-electric products, rebates and incentives, and qualified contractors	
			Low-Income Weatherization Program (LIWP; ongoing)	
			Weatherization Assistance Program (WAP; ongoing)	

			Low Income Home Energy Assistance Program (LIHEAP; ongoing)	
Power Source		Renewable Portfolio Standard (last updated 2018) Requires load serving entities to be 60 percent renewable by 2030	Grid Alternatives (ongoing) Offers no-cost solar to low-income households	
		Senate Bill 100 (2018) Establishes a goal for 100 percent of California's electricity to be supplied by carbon-neutral resources by 2045	Solar on Multifamily Affordable Housing (SOMAH; ongoing) Provides financial incentives for installing photovoltaic solar systems on multifamily affordable housing in California	

Regional

Focus Area	**Climate-related Plans** (approval year)	**Climate-related Policies** (adoption year)	**Climate-related Programs/ Projects** (activity year)	**Plans, Policies, and/or Programs in Development**
Cross-Area	Not applicable			
Transportation	Bay Area Plug-in Electric Vehicle Readiness Plan (2013)		BAAQMD Clean Cars for All (2019; ongoing) Allows turn-in of old vehicles for a rebate toward a new or used hybrid, plug-in hybrid, battery, or hydrogen fuel EV, prepaid card for public transit or e-bikes, and/or EV charger	

	Santa Clara VTA Sustainability Plan (2020) Sets 2040 GHG emissions goals to reduce emissions 60 percent from 2009 levels by 2025 and 90 percent by 2040	VTA zero-emission fleet goal (2022) Aim to have 100 percent zero-emissions buses by 2036	Silicon Valley Regional Intelligent Transportation Systems (ongoing)	
	Plan Bay Area 2050 (2021) Long-range plan charting the course for the future of the nine-county San Francisco Bay Area focused on four key elements — housing, the economy, transportation and the environment		Acterra's Karl Knapp GoEV Program (ongoing) Supports the transition to EVs	
	VTA Transit Oriented Communities Playbooks (2019)		VTA Better Bus Stops Program (2020; ongoing) Funds amenities at bus stops improving the rider experience	
	VTA Transit Passenger Environment Plan (2016) Defines VTA's approach to designing and improving bus stops			

Buildings			BayREN Energy-efficiency and Electrification Incentives (2020; ongoing) In 2021, BayREN rebates supported 381 single-family home upgrades and 2,085 multifamily unit upgrades in San José – 53 percent and 90 percent of all rebates paid out in the county, respectively.	BAAQMD Draft Amendments to Rule 9-4 and Rule 9-6 (2021) These amendments would ban the sale of NOx-emitting furnaces (as of 2029) and water heaters/boilers (as of 2027 for small water heaters and 2031 for large water heaters), meaning that only all-electric equipment could be sold
			PG&E rebates, financing, and resources to support energy efficiency (ongoing)	
Power Source	Not applicable			

City of San José

Focus Area	Climate-related Plans (approval year)	Climate-related Policies (adoption year)	Climate-related Programs/ Projects (activity year)	Plans, Policies, and/or Programs in Development
Cross-Area	Climate Smart San José (2018)	Carbon Neutrality by 2030 Resolution (2021)	City Council memo template update to include evaluation of Climate Smart conformance (2019)	Pathway to Carbon Neutrality by 2030 (2022)
	SJCE Programs Roadmap (2021)		Electrification Expo (2019)	Zero-Emissions Neighborhood pilot development (ZEN; 2021, ongoing)
	Envision San José 2040 General Plan (last updated 2022)		Climate Smart Challenge online platform (2020, ongoing)	

	Greenhouse Gas Reduction Strategy (within General Plan; last updated 2020)		GoGreen Teams Pilot (2021, ongoing)	
Transportation	Electric Mobility Roadmap (2019)	Council Policy 5-1 (Transportation Analysis) (2018)	Drive Electric (2021) Limited-time discount by four San José dealerships on the purchase of several EV models	Parking and Transportation Demand Management Ordinance Update (2022)
	Better Bike Plan 2025 (2020)	Complete Street Design Standards and Guidelines (2018)	Drive Forward (2021) Program offering financial counseling and EV education	Transit First Policy (2022)
	Emerging Mobility Action Plan (2022)	One-Way Vehicle Sharing Policy (2021)	California Electric Vehicle Infrastructure Project (CALeVIP; 2020-2023) Offers incentives for EV charging infrastructure	Council Policy 5-1 (Transportation Analysis) Update (2022)
	East San José Multimodal Transportation Improvement Plan (En Movimiento; 2021)	Municipal: Green Fleet Policy (2007) and Vehicle Replacement Policy (last updated in 2021)	Began amassing credits from the City's EV chargers via the states Low Carbon Fuel Standard program (2021; ongoing)	Move San José Plan (2022)
	Vision Zero Action Plan (2020)		LED Streetlight Conversion Program (2009; ongoing)	Downtown Transportation Plan (2022)
	Green Stormwater Infrastructure Plan (2018)		Commercial freight strategic planning (2021; ongoing)	West San José Multimodal Transportation Improvement Plan (2022)

	Trail Master Plans (various)		Walk n' Roll (ongoing) Program to increase the number of kids who walk and bike to school	One-Way Vehicle Sharing Regulations (2022)
			Municipal: City Employee Smart Pass Program, Pre-tax Commuter Benefits Program, and Green Trip Challenge	Walk Safe San José Plan (2024)
				North San José Multimodal Transportation Improvement Plan (2025)
				BART Silicon Valley route (TBD)
				Berryessa BART Multimodal Transportation Improvement Plan (TBD)
				Municipal: City Employee Bikeshare Subsidy Program (TBD)
Buildings		Building Reach Code (2019)	Silicon Valley Energy Watch (2004-2020) Energy efficiency programs	Building Electrification Framework (2022)
		Natural Gas Infrastructure Prohibition (2020, 2021)	Heat Pump Water Heater Rebate Program (2019-2021)	SJCE Energy Efficiency Programs (2022-2025)

		Energy and Water Building Performance Ordinance (BPO) (2018) Requires owners of nonresidential and multifamily buildings 20,000 square feet and larger to annually report energy and water use.		
		Municipal: Natural Gas Infrastructure for Municipal Facilities policy (2019) Applicable to new construction and existing buildings that undergo major renovation, retrofit, or remodel with some exemptions		
Power Source	Integrated Resource Plan (2020)		SJCE formed (2018)	SJCE Integrated Resource Plan (2022)
			Disadvantaged Community – Green Tariff Program (2021)	SJCE investment: 100 MW of solar, 10 MW of battery storage in Fresno County (2022)
			SJCE investment: 225 MW of wind in New Mexico (2021)	SJCE investment: 100 MW of solar in Kern County (2022)
			SJCE investment: 62 MW of renewable energy, delivered 6 a.m. to 10 p.m. daily, in Kern County (2021)	SJCE investment: Up to 25 MW of long-duration storage in Kern County (2026)

			Municipal: Environmental Service Department Wastewater and Municipal Water Operations Moved to TotalGreen/100 percent Renewable service option for FY 2021-2022.	

APPENDIX 2

FINDINGS BY FOCUS AREA

Transportation Findings

Data for the transportation sector shows that:

- Nearly 90 percent of transportation emissions come from "on-road" sources (see Image 4).
- Of those on-road emission: 43 percent is from passenger vehicles. Heavy-duty and light-duty trucks represent about 20 percent each (see Image 5).
- As of the end of 2021, there were about 720,000 vehicles registered in San José, about 35,000 (or 5 percent) of which were EVs (either plug-in hybrids or fully electric).
- From 2016 to 2021, EV ownership in San José has grown by an average of 27 percent year over year (excluding 2020, when car sales were disrupted by COVID). Continued growth at this rate would lead to 42 percent EV adoption by 2030. To reach an accelerated 90 percent EV goal by 2030, EV adoption would need to grow by 38 percent year over year until 2030. (See Image 6)
- To meet Climate Smart's current GHG reduction targets, the City's Electric Mobility Roadmap projected that San José would need to increase the percentage of EVs to 14 percent by 2025, or 105,000 vehicles, and would need approximately 5,500 EV chargers to support them.

Image 4: San José Transportation GHG Emissions (2019)

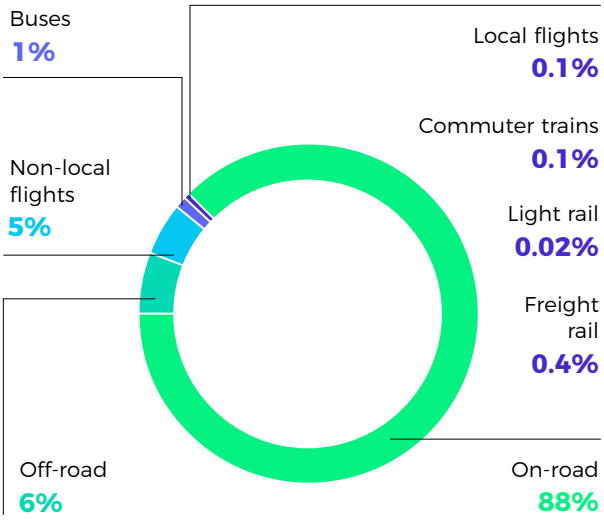
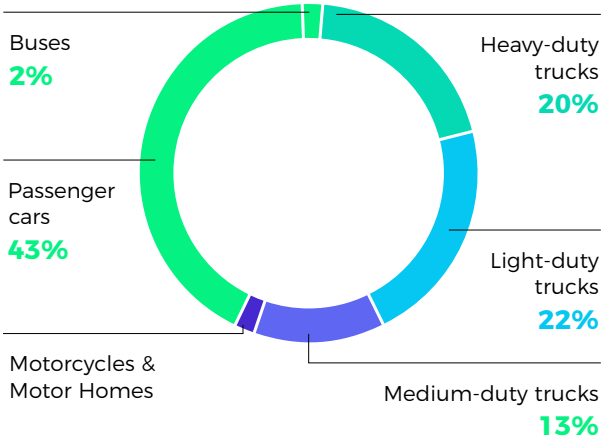


Image 5: San José On-road GHG Emissions (2019)



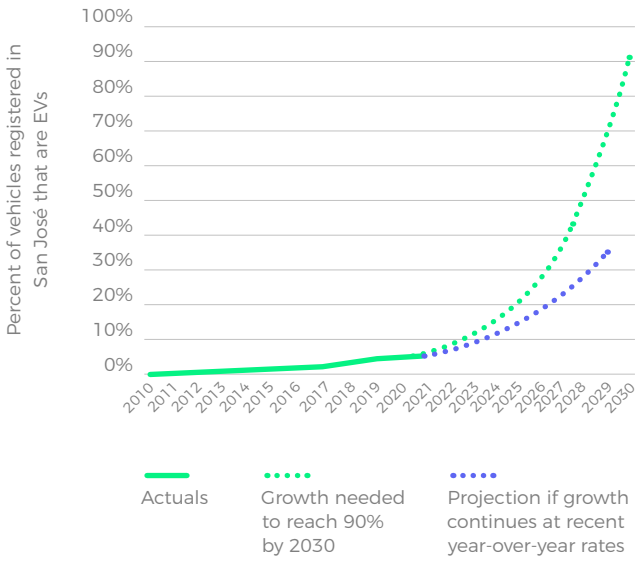
[6]California Energy Commission (2022). California Energy Commission Zero Emission Vehicle and Infrastructure Statistics. Data last updated April 29, 2022. Retrieved May 2, 2022 from http://www.energy.ca.gov/zevstats.

[7]California Energy Commission (2022). California Energy Commission Zero Emission Vehicle and Infrastructure Statistics. Data last updated April 29, 2022. Retrieved May 2, 2022 from http://www.energy.ca.gov/zevstats.

- If the City were to achieve 90 percent EV ownership (including both battery electric and plug-in hybrid vehicles) by 2030, approximately 702,000 EVs would be registered in the city.

  To support these EVs, San José would need approximately 62,000 publicly accessible chargers to support them: 60,000 Level 2 chargers at workplaces (58%) and other public facilities (42%) as well as 2,000 fast chargers.[8]
- As of April 2022, there were 1,826 EV chargers installed in the city, of which 254 were owned and operated by the City.
- EV charging infrastructure is significantly cheaper to install at the time of new construction versus as a retrofit.[9]
- From 2008 to 2019, total annual VMT decreased by 100 million miles each year, while VMT per service population per day decreased by 0.3 miles each year. If the same rate of decrease continues, total annual VMT will decrease by 18 percent by 2030 and VMT per service population per day will decrease by 31 percent by 2030.[10]
- Significant mode shift will require infrastructure upgrades (e.g. bicycle lanes, street upgrades) which typically take 3-5 years to complete, assuming funding is available.

Image 6: Percentage of EV Ownership in San José



Key Transportation Sector Takeaways:

- Primary focus should be on converting passenger vehicles and and then trucks and commercial vehicles to electric.
- Reducing VMT to Climate Smart's current reduction goal would require significant focus now through 2030, and the choices that are made (e.g. development, capital/ grant improvements, etc.) during that time will have lasting VMT and GHG effects.
- Given the timescale for VMT reductions, the majority of GHG emissions reductions through 2030 from the transportation sector will be need to come from on the move to zero-emission vehicles.
- To achieve carbon neutrality by 2030, the City will need to significantly accelerate the pace of EV adoption and corresponding EV charging infrastructure.

[8]Projections based on ratios recommended by the California Energy Commission and the International Council on Clean Transportation: California Plug-In Electric Vehicle Infrastructure Projections: 2017- 2025, California Energy Commission staff report, March 2018 (https://www.nrel.gov/docs/fy18osti/70893.pdf) xxxi Quantifying the Electric Vehicle Charging Gap Across U.S Markets, January 2019, ICCT, https://theicct.org/sites/default/files/publications/US_charging_Gap_20190124.pdf

[9]Pike, Ed, Kido, Cassidee, and Goldsmith, Hannah. (2019, May 14). Driving Plug-in Electric Vehicle Adoption with Green Building Codes. Forth Webinar. Retrieved from https://www.slideshare.net/eimnaline742/drivingplugin-electric-vehicle-adoption-with-green-building-codes-by-ed-pike-cassidee-kido-and-hannah-goldsmith

[10]City VMT model; Google Environmental Insights Explorer (2022). Retrieved May 12, 2022 from https://insights.sustainability.google/.

Building Findings

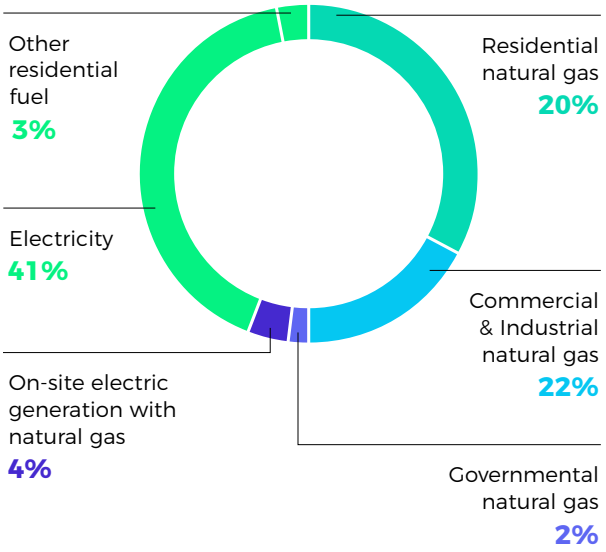
Data for the buildings sector shows that:

- 56 percent of building emissions are from natural gas usage (see Image 7).
- Residential buildings use 63 percent of natural gas used in the city.
- Commercial/industrial buildings are 9 percent of the building stock, but responsible for 33 percent of natural gas use.
- 61 percent of homes in San José are heated with natural gas, and 35 percent with electricity.

  For owner-occupied homes, 75 percent are heated by natural gas and 21 percent by electricity.[11]

  For renter-occupied homes, 43 percent are heated by natural gas and 53 percent by electricity.
- 85 percent of the residential building stock is single-family.
- Approximately 90 percent of residential natural gas usage is from water and space heating.[12]
- The Climate Smart plan calls for 10,000-20,000 homes to be upgraded to be all-electric each year from now until 2040 but reaching zero emissions by 2030 could require accelerating this work to upgrading more than 40,000 homes to be all-electric each year from 2023 until 2030.
- 39,000 households in San José face an energy burden of 10 percent or higher.
- Approximately 80,000 San José households participate in the California Alternate Rates for Energy (CARE) discount program that helps low-income customers pay their energy bills.
- San José currently experiences 45 days on average per year where temperatures reach 85 degrees Fahrenheit or higher[14], and approximately 5 days per year over 97 degrees Fahrenheit (the threshold for activating community cooling centers).[15]
- Approximately 20 percent of single-family and 40 percent of multi-family buildings do not have air conditioning.[16]

Image 7: San José Buildings GHG Emissions (2019)



[11]2020 American Community Survey 5-year estimates – Table B25040 HOUSE HEATING FUEL and Table B25117 TENURE BY HOUSE HEATING FUEL

[12]U.S. Energy Information Administration, 2018. 2015 Residential Energy Consumption Survey, Table CE4.5. https://www.eia.gov/consumption/residential/data/2015/c&e/pdf/ce4.5.pdf

[13]2018 data from the American Community Survey, via the Greenlink Equity Map. https://www.equitymap.org/

[14]National Oceanic and Atmospheric Administration National Centers for Environmental Information Local Climatological Data, 2017-2021. Retrieved May 10, 2022 from https://www.ncdc.noaa.gov/cdo-web/datatools/lcd

[15]Data from Department of Parks, Recreation and Neighborhood Services; average number of annual Cooling Center activation days for 2015-2021.

[16]DNV GL Energy Insights USA, Inc. 2020. 2019 California Residential Appliance Saturation Study. California Energy Commission. Publication Number: CEC-200-2021-005-ES.

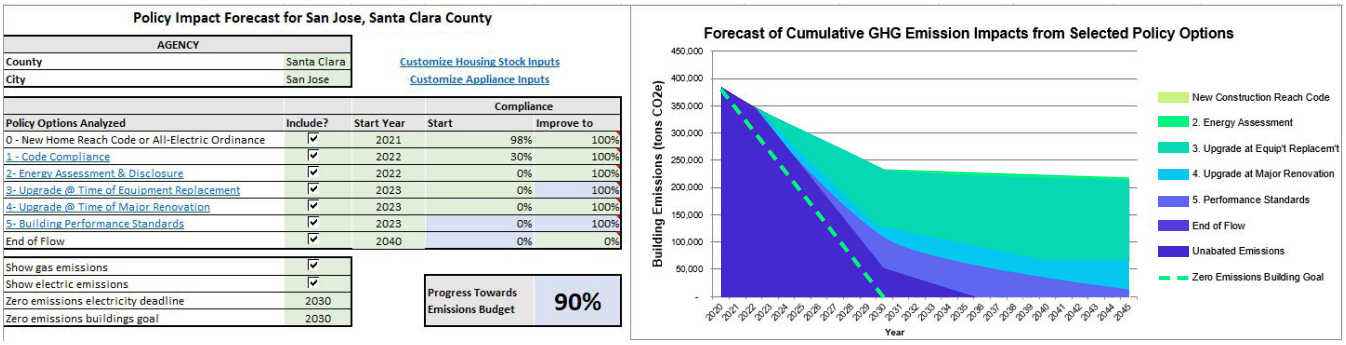
- Furnaces have a life span of approximately 15 years, and air conditioners a life span of about 10 years[17]. Switching to a heat pump HVAC system when gas furnaces reach end-of-life can provide both heating and cooling to homes that did not previously have air conditioning, which is especially important given that the number of high heat days is expected to increase.
- Numerous energy efficiency and electrification programs/incentives exist (summarized in Appendix 1) providing significant low- or no-cost services, particularly to low-income communities, which could be further leveraged to benefit the San José community.
- Pairing building electrification with onsite solar can significantly increase the operational cost savings from building electrification.[18]
- San José already has many all-electric building examples within our own community, including affordable housing developments, such as Quetzal Gardens, and the new Adobe North Tower.

In addition to the above data, the BayREN Policy Calculator[19] offers some insights into the potential impact of several single-family residential building energy efficiency/ electrification policy options. However, even with all of these policy options in place for single-family residential buildings and with very aggressive compliance targets, San José would only reach carbon neutrality for single-family residential buildings in 2036 (see Image 8).

Key Building Sector Takeaways:

- Primary focus should be on electrifying space and water heating equipment in residential buildings.
- Existing programs and incentives can support building energy efficiency and electrification.
- Low-income communities, in particular, will require significant assistance to fully electrify their homes.
- Solar and the replacement of appliances at their end-of-life can significantly improve the economics of home electrification.

Image 8: BayREN Policy Calculator Output, Showing Impact of Single-Family Home Electrification Policy Options on GHG Emissions



Policy Impact Forecast for San Jose, Santa Clara County

AGENCY	
County	Santa Clara
City	San Jose

Customize Housing Stock Inputs
Customize Appliance Inputs

			Compliance	
Policy Options Analyzed	Include?	Start Year	Start	Improve to
0 - New Home Reach Code or All-Electric Ordinance	☑	2021	98%	100%
1 - Code Compliance	☑	2022	30%	100%
2- Energy Assessment & Disclosure	☑	2022	0%	100%
3- Upgrade @ Time of Equipment Replacement	☑	2023	0%	100%
4- Upgrade @ Time of Major Renovation	☑	2023	0%	100%
5- Building Performance Standards	☑	2023	0%	100%
End of Flow	☑	2040	0%	0%

Show gas emissions	☑
Show electric emissions	☑
Zero emissions electricity deadline	2030
Zero emissions buildings goal	2030

Progress Towards Emissions Budget	90%

[17]https://www.energystar.gov/campaign/heating_cooling/replace

[18]Mahone, Amber, Charles Li, Zack Subin, Michael Sontag, Gabe Mantegna, Alexis Karolides, Alea German, and Peter Morris. "Residential Building Electrification in California|Consumer Economics, Greenhouse Gases and Grid Impacts." San Francisco, CA: Energy and Environmental Economics, Inc. (E3), April 2019. https://www.ethree.com/wpcontent/uploads/2019/04/E3_Residential_Building_Electrification_in_California_April_2019.pdf

[19]BayREN, 2021. Local Government Policy Calculator for Existing Single-Family Buildings. https://www.bayren.org/how-adopt-reach-code/addressing-existing-buildings

Power Source Findings

Data for the power source sector shows that:

- San José's community choice aggregation program, SJCE, currently serves 97 percent of the more than 360,000 electricity accounts in San José, with only a 3 percent opt out rate.
- SJCE has invested in more than 500 megawatts (MW) of new renewable energy and reliability resources.
- SJCE's base power product is already 95 percent carbon-neutral.
- SJCE also offers a 100 percent renewable electricity option, TotalGreen, and about 1,500 customers have opted up to this rate.
- With energy prices on the rise and COVID-19 still affecting residents and businesses, SJCE's customers can also now elect to take service under a low-cost product with lower carbon-neutral content called GreenValue (launched in May 2021). To date, more than 1,800 customers are taking advantage of this product. The carbon-neutral content of GreenValue will be 80 percent in 2022.[20]
- In May 2021, SJCE launched the SJ Cares program for income-qualified customers. Customers enrolled in the state's California Alternate Rates for Energy and Family Electric Rate Assistance programs are automatically enrolled and receive more renewable energy (SJCE's standard GreenSource service) for the lowest rates. Beginning March 1, 2022, SJCE offered SJ Cares customers a 5 percent rate discount – the lowest rates in San José.
- About 47 percent of San José's served electricity load is residential, 44 percent is commercial, and 9 percent is industrial.
- About 21 percent of electricity use in San José is from direct access customers, who are commercial and industrial customer that buy their electricity directly from a generation facility rather than from SJCE or PG&E, so the carbon-neutral content of their power is unknown.
- San José has a current Climate Smart bold goal to achieve 1 GW of solar by 2040 and currently has 242 MW of rooftop solar installed through 2021.[21]
- In terms of cost, large-scale solar projects, such as those that SJCE is already investing in, offer economies of scale and lower cost per MW of renewable power added to the grid.

Key Power Source Takeaways:

- SJCE already offers a low-carbon base power product and continues to grow its renewable content.
- Maintaining SJCE's current customer base and potentially seeking to bring more direct access (commercial and industrial) customers to SJCE's service can support San José's carbon-neutral by 2030 goal.
- It will be important to monitor customer enrollment in GreenValue and evaluate its impact on the carbon neutrality goal.
- Reaching California's 100 percent clean energy goals will require the deployment of utility-scale renewable energy paired with short and long-duration storage and rooftop solar with home energy storage.

[20]Based on a typical weather year. Weather, particularly snowpack and drought, determines hydropower supplies. Hydropower is a prominent carbon-neutral power source in California.

[21]California Solar Initiative (2022). California Distributed Generation Statistics. https://www.californiadgstats.ca.gov/downloads/

Municipal Operations Findings (Cross-Sector)

Data for municipal operations shows that:

- GHG emissions from municipal operations are about one percent of total citywide GHG emissions.
- 76 percent of GHG emissions from municipal operations are from the following three sources: Wastewater Treatment (35 percent), Employee Commutes (22 percent), and Buildings & Facilities (19 percent) (see Image 9).
- In the last municipal GHG inventory, two-thirds of emissions from wastewater treatment came from natural gas use in the treatment process. Wastewater treatment emissions are expected to decrease in future as a result of two projects currently underway that will allow the Wastewater Facility to use more low-emissions digester gas and less natural gas.
- For the municipal Buildings & Facilities sector, 56 percent of emissions are from electricity and 44 percent from natural gas (see Image 10).
- The Mineta San José International Airport ("Airport") represents 25 percent (largest single source) of the Buildings & Facilities emissions (see Image 11).
- 94 percent of Airport natural gas usage is from its central utility plant (i.e. heating/boilers), which will need to be retrofitted or upgraded to meet future demands.
- The total cost to move all of the remaining City operations electricity accounts to SJCE's TotalGreen (100 percent renewable) service option would be approximately $980,000 and would save approximately 3,900 MT CO2e, representing five percent of total municipal GHG emissions.

Image 9: 2018 Municipal Operations GHG Emissions

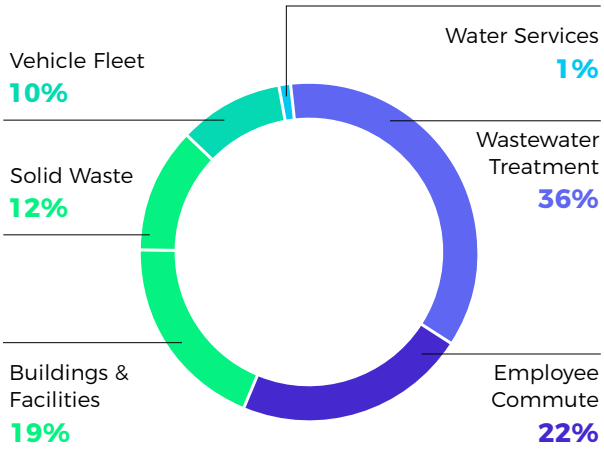


Image 10: Municipal Buildings & Facilities GHG Emissions, by Energy Use Type

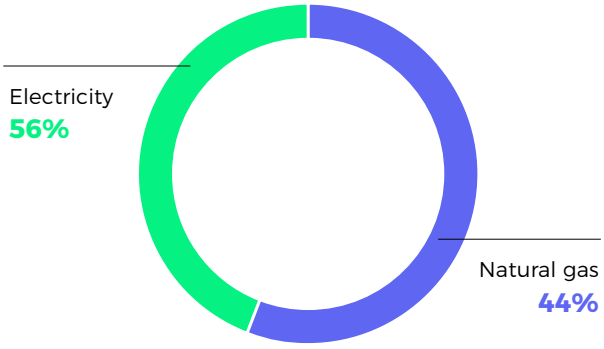
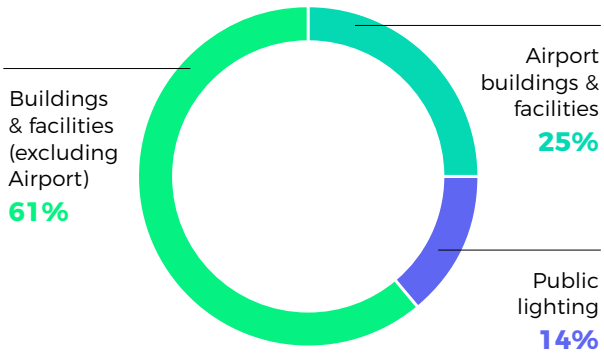


Image 11: Municipal Buildings & Facilities GHG Emissions, by Use



- Beginning in Fiscal Year (FY) 19-20, all City vehicles moving forward are being replaced with an EV when a suitable option is available for that type of vehicle (e.g. light duty, medium duty or heavy duty). The City's fleet is comprised of 12 percent EVs (including both fully electric vehicles and plug-in hybrids) and 24 percent diesel vehicles running exclusively on low-emissions renewable diesel (see Table 1 for the City's current fleet inventory).

Table 1: City Vehicle Fleet, by Fuel Type

Fuel	**Number of Vehicles in City Fleet**	**Portion of Fleet (%)**
Gasoline	1224	50%
Renewable diesel (low emissions)	594	24%
Hybrid	310 (includes 9 plug-in hybrids)	13%
Electric	290	12%
Liquefied petroleum gas (LPG)	26	1%
Total	**2,444**	

Key Transportation Sector Takeaways:

- While municipal operations are a small percentage of communitywide GHG emissions, they are within the City's direct control.
- Primary focus should be on Employee Commutes and Buildings & Facilities sectors.

  Within Buildings & Facilities, focus should be on the Airport's central utility plant.
- Municipal operations can move to 100 percent carbon-neutral electricity quickly through SJCE.

APPENDIX 3

CARBON NEUTRALITY BY 2030 SUPPORTING ACTION DETAIL

Strategy 1: Move to Zero-Emission Vehicles

ID	Type	Title	Description	Equity Component	Available Resources	Scaling
EV1	Zero-Emission Vehicles/ EV Charging Infrastructure	Increase Access to EV Charging – citywide	Develop an EV charging strategy (in coordination with SJCE and PW) in the next six months that identifies the most effective approach(es) to significantly increase access to public charging in the city.	Focused effort for people living in multifamily housing and disadvantaged communities; ensure installations occur in neighborhoods where residents are unable to charge at home at prices lower income residents can afford; co-develop with community	Existing staff	Secure funding to sub-stantially increase access to EV charging by increasing the number and distribution of EV chargers and implementing programs to reduce cost to those who are low-income
EV2	Zero-Emission Vehicles/ EV Charging Infrastructure	Increase Access to EV Charging - City Facilities	Conduct electrical load studies at City facilities, including analysis on the cost to shift the City's EV chargers in downtown garages to separate meters and savings from electric rate change, to assess City EV charging needs for next 5-10 years to support City vehicles, employees, and visitors.	N/A	Existing staff and consultant to initiate design and cost analysis for a portion of sites.	Secure funding for additional load studies and for facility upgrades required to support the installation of additional City EV chargers and for separate metering (as recommended).

EV3	Zero-Emission Vehicles/ EVs	Implement EV Educa-tion and Awareness Programs	Increase community knowledge and aware-ness through a variety of activities, including: Co-sponsor at least one "Ride and Drive" event per year. Continue train sales representatives on EVs at SJ dealerships.	Focused effort in disadvantaged communities where adoption is the lowest Locate Ride and Drive events and working with partners in East San José and other low-income communities. Train sales repre-sentatives on EVs at used car dealerships.	Unfunded; Pending FY 22-23 budget approval for DOT staffing to collaborate on EV Ride and Drive event and provide baseline car dealership trainings and offer basic info on EVs to community groups	Secure funding to: Support more Ride and Drive events Create enhanced Drive Forward II (financial literacy and EV education program) designed and delivered by CBOs.
EV4	Zero-Emission Vehicles/ EVs	Implement and/ or Promote Programs that Reduce Cost and Other Bar-riers to EV Ownership and Usage	Continue implementing the City's Drive EV program offering limited-time dealer discount on the purchase of EVs at participating San José dealerships.	Discounted prices for new vehicles offered through Drive EV will help some lower-in-come residents purchase an EV. Additional incentives; education, and more used EV are needed to accelerate and broaden EV adoption in San José.	Pending FY 22-23 budget approval for DOT staffing to implement program.	Secure grant funding to: Provide additional EV purchase incentives Identify partnerships and strategies to expand used EV supply in San José Create an electric car share service in partnership with the community that provides alternatives to car ownership and enables those interested in buying an EV to try one out at an affordable price Develop other shared, electric service models, in collaboration with communities, that expands mobility options and reduces GHG emissions
EV5	Zero-Emission Vehicles/ EVs and EV Charging Infrastructure	Secure Ex-ternal Funding and Resources	Secure external funding and resources to support the move to zero-emission vehicles and EV charging infrastructure	Prioritize funding for disadvantaged communities	Existing staff for resource/ funding applications	Grant matching funds (as required)

Strategy 2: Reduce the Miles We Travel in Our Vehicles by at least 20 Percent

ID	Type	Title	Description	Equity Component	Available Resources	Scaling
MT1	Streets	Build Complete and Safe Streets	Rebuild streets to make them safer, pri-oritizing the needs of those with mobility impairments, adding bike lanes, building bus boarding areas, reduc-ing speed limits, creating café/ retail space, etc.	Conduct community-based planning, de-sign, funding, delivery, and maintenance of projects citywide. Ensure equitable processes and outcomes prioritizing underserved communities.	Existing staff to initiate; leveraging: Caltrans Sustainable Transportation Planning Grants; One Bay Area Grant Program; Active Transportation Program; and Highway Safety Improvement Program; full implementation costs unfunded	Support design, construction, maintenance, and monitoring
MT2	Streets	Make More Public Space for People	Reimagine our streets as more enjoyable places with more space for people and encourage people to travel using active modes such as walking and biking, as well as for people visually impaired or in wheelchairs	Conduct community-based planning, design, funding, delivery, and maintenance of projects citywide.	Existing staff to initiate	Support design, construction, maintenance, and monitoring.
MT3	Streets	Fill Gaps in Trails and Sidewalks	Create an inventory of sidewalks and trails to identify where they are missing and then add sidewalks and trails where needed to make sure that all places are walkable, bike-friendly, and accessible for wheelchair and visually impaired users.	Conduct community-based planning, design, funding, delivery, and maintenance of projects citywide. Ensure equitable processes and outcomes prioritizing under-served communities in Council Districts 2, 4, 5, 6, and 8[22].	Existing staff to initiate; leveraging One Bay Area grant	Support design, construction, maintenance, and monitoring

[22]Per the City's Move San José Plan, the action is found to be the most valuable and impactful in these council districts.

MT4	Streets	Provide Lighting Improvements	Require better lighting for new developments, street reconstruction, and at transit stops to increase visibility and personal safety while walking, using a wheelchair or other assistive device, biking, and waiting for transit at night.	Conduct community-based planning, design, funding, delivery, and maintenance of projects citywide. Ensure equitable processes and outcomes prioritizing underserved communities in Council Districts 3 and 6[23].	Existing staff to initiate	Support design, construction, maintenance, and monitoring.
MT5	Streets	Provide Urban Greening	Add more trees and other plants on streets to create shade, lower temperatures, and make walking, using a wheelchair or other assistive device, and biking more pleasant.	Conduct community-based planning, design, funding, delivery, and maintenance of projects citywide.	Existing staff to initiate	Support design, construction, maintenance, and monitoring of urban greening designs.
MT6	Streets	Provide Low-Stress Bike Facilities and Slow Streets	Make biking safer and more pleasant, creating low-stress routes to help attract more people to biking.	Conduct community-based planning, design, funding, delivery, and maintenance of projects citywide. Ensure equitable processes and outcomes prioritizing underserved communities in Council Districts 4, 5, 6, 7, 8, and 9[24].	Existing staff to initiate; leveraging: One Bay Area Grant Program; Transportation Development Act Article 3 Program; Senate Bill 1 Program; and MTC Safe & Seamless Mobility Quick-Strike Program	Support design, construction, maintenance, and monitoring.
MT7	Streets	Maintain Bike and Pedestrian Infrastructure	Make biking, and walking, rappelling in a wheelchair, and using other assistive devices more pleasant by maintaining infrastructure to keep things in good condition.	Ensure equitable processes and outcomes prioritizing underserved communities in Council District 7[25] .	Existing staff to initiate; leveraging Senate Bill 1 Program	Support design, construction, maintenance, and monitoring.

[23]Per the City's Move San José Plan, the action is found to be the most valuable and impactful in these council districts.

[24]Per the City's Move San José Plan, the action is found to be the most valuable and impactful in these council districts.

[25]Per the City's Move San José Plan, the action is found to be the most valuable and impactful in these council districts.

MT8	Streets	Provide Bike Storage	Make it easier to bike places by providing secure bike racks and other quality bike parking.	Conduct community-based planning, design, funding, delivery, and maintenance of projects citywide. Ensure equitable processes and outcomes prioritizing underserved communities in Council Districts 3, 6, and 10[26].	Existing staff to initiate	Support design, construction, maintenance, and monitoring.
MT9	Streets	Enhance Bike Connectivity	Make it easier to complete trips on bike by building welldesigned, seamless bike lanes that connect with each other, and prioritize bike connections between neighborhoods and activity centers.	Conduct community-based planning, design, funding, delivery, and maintenance of projects citywide. Ensure equitable processes and outcomes prioritizing underserved communities in Council Districts 4, 6, 8, and 9[27].	Existing staff to initiate; leveraging: Transportation Development Act Article 3 Grants; Senate Bill 1; MTC Safe & Seamless Mobility Quick-Strike Program; and new development projects.	Support design, construction, maintenance, and monitoring.
MT10	Streets	Make Signals Work Better for People Walking or Biking	Identify locations where operation of traffic signals should prioritize pedestrian and bicycle mobility, comfort, and safety.	Conduct community-based planning, design, funding, delivery, and maintenance of projects citywide.	Existing staff to initiate	Support design, construction, maintenance, and monitoring.
MT11	Transit	Expand Transit Service	Expand the transit system by developing new transit lines above or below street level traffic and expanding rail service. The City of San José controls streets and can dedicate more lanes to transit.	Improve access to transit by physical improvements and fare programs that lower the cost of riding transit and rail throughout San José and the Bay Area.	Existing staff to initiate	Expedite expansion of transit/rail, in regional collaboration

[26]Per the City's Move San José Plan, the action is found to be the most valuable and impactful in these council districts.

[27]Per the City's Move San José Plan, the action is found to be the most valuable and impactful in these council districts.

MT12	Transit	Improve Existing Transit Service	Make it easier to get around on public transit and paratransit by supporting increases in frequencies of service, adding routes, adding bus lanes and signal priority, and having transit run more hours of the day.	Conduct community-based planning, design, funding, delivery, and maintenance of projects citywide. Ensure equitable processes and outcomes prioritizing underserved communities in Council Districts 1, 2, 3, 6, 7, and 9[29].	Existing staff to initiate	Support design, construction, maintenance, and monitoring.
MT13	Transit	Establish Means-Based Transit Fares	Make sustainable public transportation and paratransit transportation more affordable by offering reduced-fare transit for those in need.	Conduct community-based planning, design, funding, and implementation.	Unfunded	Establish parking and transportation management entities in down-town and transit villages to provide transit subsidy for low-income residents.
MT14	Transit	Enhance Transit Stops	Improve accessibility, comfort, and safety at transit stations and stops by having shelters, benches, better lighting, an emergency button, and real-time information, and incorporating universal de-sign.	Conduct community-based planning, design, funding, delivery, and maintenance of projects citywide. Ensure equitable processes and outcomes prioritizing underserved communities in Council Districts 5, 6, and 7[29].	Existing staff to initiate	Partner with the VTA in the design, construction, maintenance, and monitoring of improvements.
MT15	Transit	Provide Userfriendly Transportation Information	Use real-time information tools, like bus crowding displays, transit arrival information, and bikeshare availability, to help people make decisions about their trips.	Conduct community-based planning, design, funding, delivery, and maintenance of projects citywide. Ensure equitable processes and outcomes prioritizing underserved communities in Council Districts 5 and 6[30].	Unfunded	N/A

[28]Per the City's Move San José Plan, the action is found to be the most valuable and impactful in these council districts.

[29]Per the City's Move San José Plan, the action is found to be the most valuable and impactful in these council districts.

[30]Per the City's Move San José Plan, the action is found to be the most valuable and impactful in these council districts.

MT16	Transit	Provide Mobile Ticketing	Mobile ticketing can allow people to plan car-free trips easily on their phones by having mobile transit passes, bikeshare and carshare rentals, and other transportation services all available for purchase online.	Conduct community-based planning, design, funding, delivery, and maintenance of projects citywide.	Unfunded	N/A
MT17	Transit	Provide Microtransit and On-Demand Service	Microtransit and on-demand services can provide more transportation options for people in areas with fewer transit connections or during less busy days and times when demand isn't high enough for a fixed route transit service with full-sized vehicles.	Conduct community-based planning, design, funding, delivery, and maintenance of projects citywide. Ensure equitable processes and outcomes prioritizing underserved communities in Council Districts 1, 2, 4, 5, 8, and 9[31].	Unfunded	N/A
MT18	Transit	Establish Mobility Hubs	This strategy helps to make connections between different transportation options (e.g., Caltrain, light rail, buses, electric scooters, bikeshare, EV charging stations) easier by developing hubs where everything comes together.	Conduct community-based planning, design, funding, delivery, and maintenance of projects citywide. Ensure equitable processes and outcomes prioritizing under-served communities in Council Districts 1, 2, 3, 4, 8, 9, and 10[32].	Unfunded	Design, construction, maintenance, and monitoring

[31]Per the City's Move San José Plan, the action is found to be the most valuable and impactful in these council districts.

[32]Per the City's Move San José Plan, the action is found to be the most valuable and impactful in these council districts.

MT19	Policy	Develop and Implement Transit-First Policy	A Transit First Policy prioritizes public transit, bicycling, and walking on city streets to improve frequency, reliability, and speed of transit. It also addresses street design and access to transit stops to improve safety and user experience for people who take transit.	Conduct community-based planning, design, funding, delivery, and maintenance of projects citywide.	Existing staff to initiate	N/A
MT20	Policy	Provide TDM	TDM focuses on helping employees use existing multimodal options (i.e. transit, ridesharing, walking, biking, paratransit, and telework) to get to and from work by providing better information and incentives. This includes TDM requirements for new developments.	Conduct community-based planning and implementation of TDM programs citywide. Ensure equitable processes and outcomes prioritizing underserved communities in Council Dis-tricts 3, 7, and 10[33].	Existing staff to initiate	Establish parking and transportation management entities in downtown and transit villages to provide TDM programs for low-income residents.
MT21	Policy	Implement Smart Parking and Curbside Management Policies	Smart parking policies include removing parking minimums, instituting parking maximums, developing shared parking or unbundled parking schemes, and demand driven parking pricing.	Conduct community-based planning, design, funding, delivery, and maintenance of projects citywide. Ensure equitable processes and outcomes especially for underserved communities in Council Districts 3 and 7[34].	Existing staff to initiate	Establish marketrate public parking

[33]Per the City's Move San José Plan, the action is found to be the most valuable and impactful in these council districts.

[34]Per the City's Move San José Plan, the action is found to be the most valuable and impactful in these council districts.

MT22	Policy	Implement Transportation Impact Fees	Transportation impact fees (TIF) are paid by new developments to fund transportation improvements. These can be targeted to multi-modal improvements to reduce car dependence and provide better non-auto transportation infrastructure to serve the new site.	N/A	Unfunded	Update Council Policy 5-1 (Transportation Analysis) to institutionalize TIF.
MT23	Policy	Encourage Carshare	Carshare is a car rental model where people are able to rent cars for shorter periods of time, often by the minute or hour.	Conduct community-based planning, design, funding, delivery, and maintenance of projects citywide. Ensure equitable processes and outcomes prioritizing underserved communities in Council Districts 5, 7, and 8[35].	Existing staff to initiate	Create an electric car share service in partnership with community that provides al-ternatives to car ownership and enables those interested in buying an EV to try one out at an affordable price. Develop other shared, electric service models, in collaboration with communities, that expands mobility options and reduces GHG emissions.
MT24	Policy	Encourage Sustainable Local Deliveries	Encourage the use of alternative modes such as bike couriers, small trucks, and truck-free zones for last-mile deliveries to reduce congestion and pollution in neighborhoods.	Conduct community-based planning, design, funding, delivery, and maintenance of projects citywide.	Existing staff to initiate	Partner with freight operators to create an urban freight delivery zone in Downtown.
MT25	Land Use	Increase Affordable Housing Near Transit and Growth Areas	Encourage the production of affordable for-sale and rental units, especially near transit.	N/A	Existing staff to initiate; leveraging Affordable Housing and Sustainable Communities Program	N/A

[35]Per the City's Move San José Plan, the action is found to be the most valuable and impactful in these council districts.

MT26	Land Use	Increase Local Jobs Near Transit and Low-VMT Areas	Concentrate jobs, housing, and services around transit stations to reduce carbon footprint while create more productive and more livable communities.	N/A	Existing staff to initiate	N/A
MT27	Land Use	Support Development of Urban Villages with Mixed Land Uses and Amenities	Create walkable, bicycle-friendly, transit-oriented, dense, mixed-use, infill urban developments that provide both jobs and housing.	Engage local residents in the urban village planning process.	Existing staff to initiate	Support create urban village plans for all planned growth areas; Secure MTC Priority Development Area Grants
MT28	Emerging Mobility	Encourage Emerging Mobility in Equity Priority Communities	Staff will work with community and non-profit organizations to fund and implement specific projects that realize the Emerging Mobility Action Plan's recommendations, as well as incorporate policy and procedural recommendations in its regulations.	The Emerging Mobility Action Plan centered racial equity and inclusion in its recommendation. Projects will be designed and implemented in partnership with equity pri-ority communities—one of the recommendations of the plan.	Existing staff to ini-tiate; Pending FY 22-23 budget approval (additional DOT staffing)	Extend community engagement as well as design and implement mobility projects that meaningfully address community needs
MT29	Implementation	Secure External Funding and Resources	Secure external funding and resources to support the reduction of vehicle miles traveled	Prioritize funding for disadvantaged communities	Existing staff for resource/ funding applications	Grant matching funds (as required)

Strategy 3: Switch our Appliances from Fossil Fuel to Electric

ID	Type	Title	Description	Equity Component	Available Resources	Scaling
B1	Building Electrification/ New Construction	Evaluate Natural Gas Infrastructure Prohibition Ordinance for updates	Evaluate and propose any recommendations for an early phase-out of Distributed Energy Resources (DER), commercial cooking, and other exemptions	N/A	Pending FY 22-23 budget approval (staffing)	N/A

B2	Building Electrification/ New Construction	Evaluate Building Reach Code for Updates	Evaluate building reach code updates to consider: EV charging infrastructure requirements for multi-family buildings, ways to reduce the carbon costs of construction (per Council direction on 4/26/22), and/ or to further utilize roof space (i.e. solar panels, green roofs) to minimize carbon foot-print (per Council direction on 11/8/21).	Targeted sup-port to multifamily residents to allow better access to EV charging options	Pending FY 22-23 budget approval (staffing) and mid-year budget request (consultant services) per Council direction on 4/26/22	N/A
B3	Building Electrification/ Existing Buildings	Develop and Implement a building electrification framework	A Building Electrification Framework will help to guide the City's supportive programs and policies, aligned with the concerns of San José's historically marginalized communities, to further building electrification	Co-created with CBOs representing historically marginalized communities	Existing staff	N/A
B4	Building Electrification/ Existing Buildings	Initiate Electrification Upgrade Accelerator	Release a Request for Information and/ or Request for Qualifications to identify partnerships to support existing building electrification analysis, financing, implementation, and electrification workforce development.	Targeted low-income assistance	Pending FY 22-23 budget approval (staffing, contractual); leverage exist-ing programs and incentives (see Appendix 1)	Hire contractor to provide supplemental electrification assistance and funding for residential buildings, leveraging existing programs as possible

B5	Building Electrification/ Existing Buildings	Partner to Develop an Electrification Plan for Targeted Disadvantaged Neighborhoods	The Department of Energy (DOE) will provide technical assistance needed to develop the scope of work for single family and multifamily housing units for energy efficiency and electrification upgrades specifically in disadvantaged communities. The detailed plans will create funding-ready projects.	Targeted low-income plan-ning and assistance; partnering with First Community Housing, Latinos United for a New America (LUNA), and International Assistance Network (ICAN)	Pending FY 22-23 budget approval (staff-ing); DOE Community-Local Energy Assistance Program (LEAP) grant (technical assistance)	N/A
B6	Building Electrification/ Existing Buildings	Provide Residential Electrification Incentives for Low-Income Residents	Offer incentives, focused on space and/or water heating appliances. Note: May be coupled with B4 (Retrofit Accelerator) and/ or leveraged with other existing programs	Targeted low-income assistance	Pending FY 22-23 budget approval (staffing and incentives)	Increased incentive amounts and/or increased incentive participants
B7	Building Electrification/ Ex-isting Build-ings, New Con-struction	Support Electrification Workforce Development	Supplement and promote existing electrification workforce trainings (e.g. Silicon Valley Clean Energy, TECH program) to increase contractor understanding/ support and provide a pathway to high-quality job opportunities	Targeted engagement of historically marginalized communities	Pending FY 22-23 budget approval (staffing); $275,000 (SJCE funding for services) DOE Community-LEAP grant (planning assis-tance)	Launch an electrification workforce development working group Develop and fund additional electrification workforce development analysis, planning, and programs

B8	Building Electrification/ Existing Buildings	Implement Zero Emissions Neighborhood (ZEN) Pilot	Initiate implementation of the ZEN demonstration pilot, which is intended to bring a suite of Climate Smart-related measures to a single neighborhood to reduce GHG emissions and improve local economic, environmental, transportation, and health conditions.	Targeted in historically marginalized communities; measures codeveloped with neighborhood	Pending FY 22-23 budget allocation (staffing); $74,000 Guadalupe-Coyote Resource Conservation District partnership (funding urban greening only); leverage existing programs as possible.	Implement additional Climate Smart measures (e.g. building electrification, transportation infrastructure/ pilots, etc.)
B9	Building Electrification/ Existing Buildings, New Con-struction	Support the Creation of an Online Zero Carbon Hub	Work w/ supporting organizations (e.g. County of Santa Clara, Building Decarbonization Coalition, internal departments) to identify and promote a hub to serve as the City's central information location for building electrification information, resources, and incentives	Targeted outreach to his-torically marginalized communities	Pending FY 22-23 budget approval (staffing); platform unfunded	Create City zero-carbon hub (as needed)
B10	Building Electrification/ Existing Buildings, New Construction	Leverage Existing Programs and Incentives	Meet with program coordinators for each of the programs and incentives (see Appendix 1) available to San José residents/ businesses to develop and implement an annual action plan to support uptake. Track progress.	Targeted outreach to historically marginalized communities	Pending FY 22-23 budget (staffing)	Contract with CBOs to engage San José's historically marginalized communities

B11	Building Electrification/ Existing Buildings	Explore Opportunities to Reduce the Cost of Building Electrification	Technical analysis and partnerships to determine and implement economies of scale or other measures to reduce the cost of building electrification (e.g. coordinating with PG&E on options for neighborhood-wide upgrades and including B10)	Targeted in historically marginalized communities	Pending FY 22-23 budget (staffing to initiate); technical assistance unfunded	Consultant to evaluate cost and technical analysis, and recommended cost reduction strategies
B12	Building Electrification/ Existing Buildings	Explore Policy Options for Existing Building Electrification (see examples in Appendix 6)	Conduct community meetings and host a City Council study session in Fall 2022 to vet and explore policy options and determine any next steps. Per Council direction in November 2021, keeping in mind that "implementation of a carbon neutrality goal will act neither as a policy nor legal barrier to any one development or project—when viewed in isolation-- that might potentially add emissions"	Targeted engagement of historically marginalized communities	Pending FY 22-23 budget approval (staffing) and mid-year budget request (consultant services) per Council direction on 4/26/22	Launch an Equitable Building Electrification Task Force that would develop guiding recommendations for a suite of policies and programs necessary to achieve residential building electrification; draft policy and conduct community engagement (as/ if directed).
B13	Building Electrification/ Existing Buildings, New Construction	Provide Community Education and Outreach	Promote and leverage existing informational resources such as the Switch Is On campaign, and develop new educa-tion and awareness-raising campaigns	Targeted reach to disadvantaged communities via CBOs	Existing staff; Pending FY 22-23 budget approval (marketing)	Increased partnerships, community engagement, and marketing
B14	Building Electrification/ Existing Buildings, New Construction	Secure External Funding and Resources	Secure external funding to support building electrification, energy efficiency, and onsite renewables and back-up power	Targeted low-income assistance	N/A	N/A

B15	Partnership and Collaboration (Applies Cross-Sector)	Collaborate and Partner with Other Entities with Similar Carbon Neutrality Goals to Support Progress	Engage with other jurisdictions and large businesses or institutions with a carbon neutral by 2030 or 2035 goal to learn, share, and support progress	N/A	Existing staff	N/A

Strategy 4: Power Our Community with 100 Percent Carbon-neutral Electricity

ID	Type	Title	Description	Equity Component	Available Resources	Scaling
P1	Power Source	Develop and implement a ten-year Integrated Resource Plan	SJCE's IRP will identify a pathway, including cost, to 100 percent carbon-neutral elec-tricity (on an annual basis) by 2030; due to be submitted to CPUC by Nov. 1, 2022	SJCE will continue to consider maintaining lower cost products to ensure customers are able to opt for products priced to meet their needs	Existing staff	N/A
P2	Power Source	Procure a Minimum of 204 MWs of storage and renewables	SJCE will add the following resources to its portfolio through 2026: in alignment with CPUC Mid-term Reliability procurement mandate (decision 20-05-003): 2023: 43 MW storage and renewables (already procured) 2024: 129 MW of batteries or renewables that can operate during the peak demand hours in September 2025: 54 MW of re-newables that can provide power in hours 5-10PM (32 MW must be in addition to resources procured in 2024) 2026: 21.5 MW of long duration (8 hour) storage and 21.5 MW of firm clean resources with an 80 percent capacity factor	Power developers commit community development funding, which has helped implement community job training for people with low incomes and people who are black, indigenous, or people of color (BIPOC)	Existing staff	N/A

P3	Power Source	Enroll Maximum Disadvantaged Community – Green Tariff Pro-gram Customers	Enroll and sustain a near 100 percent sub-scription in SJCE's Disadvantaged Community – Green Tariff program	Program is only eligible to low-income customers living in disadvantaged communities	Existing staff	Possible expansion of program to more participants should additional CPUC or non-CPUC funding become available.
P4	Power Source	Support clean energy improvements to natural gas plants	Explore opportunities for adding batteries to natural gas plants to reduce hours of operation and retrofitting to permit use of a green hydro-gen/ natural gas blend.	Reduce emissions in communities neighboring natural gas electric generation plants	Existing staff	N/A
P5	Customer Uptake	Market to direct access customers to utilize SJCE's service	Encourage direct access customers (typically larger power users) to enroll in SJCE's service for clean power	N/A	Existing staff	N/A
P6	Customer Uptake	Increase uptake of TotalGreen service option	Promote SJCE's TotalGreen (100 percent renewable) service option and increase uptake communitywide	N/A	Existing staff	N/A
P7	Onsite Renewables	Support distributed generation and local resiliency through on-site solar and battery storage and back-up power.	Promote and leverage existing programs for rooftop solar and storage.	Targeted promo-tion of programs available for low-income residents	Existing staff	Secure funding to provide additional incentives for demand response and storage utilization such as a virtual power plant.

Leading by Example

ID	Type	Title	Description	Lead Department	Equity Compo-nent	Available Re-sources	Scaling
M1	Power Source	Switch to TotalGreen Electricity	Switch all City operations electricity accounts to SJCE's TotalGreen service option by 2025.	SJCE	N/A	Currently unfunded; Environmental Services Department (ESD) Regional Wastewater Facility and Municipal Water operations already opted up to TotalGreen and the Airport is requesting budget for FY 22-23.	Est. $980,000 in additional utility costs each fiscal year, including the Airport
M2	Transportation – Employee Mode Shift	Implement an Employee TDM Program	Initiate a TDM program for City employees to help employees use existing multimodal options (i.e. transit, ridesharing, walking, biking, paratransit, and telework) to get to and from work by providing better information and incentives.	DOT	N/A	Currently unfunded; DOT is requesting budget for FY 22-23	N/A
M3	Transportation – Fleet Electrification	Update the Green Fleet Policy	Update the Green Fleet Policy (City Adminis-trative Policy Manual 5.1.10) to reflect zero-emission vehicle priority	Public Works (PW)	N/A	Existing staff	N/A

M4	Buildings - Electrification	Integrate the City's All-Electric Policy for Municipal Facilities into City Processes	Evaluate the City's Natural Gas Infrastructure for Municipal Facilities policy (Council Policy Manual, 8-15) for removal of exemptions and develop implementation processes to ensure compliance; specifically target the Airport's existing central utility plant and conduct a study to determine the feasibility to upgrade to allelectric replacement.	ESD (policy), PW (policy implementation), Air-port (central utility project)	N/A	Existing staff for policy evalution and implementation proceses; consultant services for Airport and other projects is unfunded	N/A
M5	Coordination and Integration	Integrate Climate Smart across City Government	Further integrate climate considerations and messaging into decision making, operations, and communictions across City goverment. Options for consideration include: integrating Climate Smart/ carbon neutrality messaging fur-ther into de-partment communic-tions; joint climate communictions campaigns with divisions/ departments with connet-ions to key stakeholders; and employee climate training.	All Deparments	N/A	Currently unfunded; ESD is requesting budget for FY 22-23	Citywide mandatory employee training program (est. $100,000)

M6	Funding	Secure External Funding and Resources	Secure external funding and resources to support building electrification, energy efficiency, onsite reneables, back-up power, vehicle electrification and EV charging stations, and employee mode shift	ESD, PW, DOT, SJCE	Prioritize funding for municipal buildings/ operations located in and/ or serving disadvantaged neighborhoods	Existing staff for resource/ funding applications	Grant matching funds (as required)

APPENDIX 4

ADDITIONAL OPTIONS FOR FUTURE CONSIDERATION

The acceleration strategies identified in this Pathway may not accomplish San José's carbon neutrality goal by 2030. As the Pathway is updated, the City can also consider negative emissions strategies as well as developing technologies that may become available in the coming years, including:

- **Technology-based Carbon Removal:** Carbon capture and storage (CCS) and Direct Air Capture (DAC) use chemical or physical processes to remove carbon dioxide from power plant or factory flue gases (CCS) or the air (DAC) and then store the carbon dioxide so that it can't enter the atmosphere. Multiple technologies for CCS and DAC are currently in early stages of development.
- **Increasing Carbon Sequestration in Natural and Working Lands:** Plants and soils capture and store carbon from the atmosphere, reducing atmospheric levels of (or "sequestering") carbon dioxide. This natural carbon sequestration is especially high on natural and working lands (NWLs)[36] such as parks, farms, and open space preserves. The City is currently developing a Natural and Working Lands Element for the Climate Smart plan that assesses current levels of carbon sequestration on City-designated NWLs in the City's sphere of influence and sets goals and identifies actions to increase carbon sequestration on these lands in the future. The City's Community Forest Management Plan (DOT), Green Stormwater Infrastructure Plan (ESD), and ActivateSJ Plan (Parks, Recreation, and Neighborhood Services) also support the establishment and management of plants that sequester carbon, as do the efforts of many local and regional CBOs and agencies.
- **Emerging Innovations:** Additional options that can help reduce GHG emissions are being developed or may arise over time and can be considered for incorporation to support the City's carbon neutrality by 2030 strategies as the City progresses towards its goal. These may include:

  Vehicle-to-Grid (V2G) Integration: The ability for EV batteries to put power back on the grid, including during peak hours, or serve as a backup power source for homes. This can improve grid resilience and could potentially lower electricity bills for residents.

  Dynamic Induction Charging: This emerging technology allows drivers to charge their EVs while driving via wireless charging infrastructure embedded into roadways and could make EVs more appealing to residents who would not be able to charge at home.

  Automated Zero-emission Vehicles: Driver/pilot-free aerial or ground-based vehicles that transport people and goods. These include small aircraft, with no crew, that are operated remotely, with some level of remote assistance, or entirely autonomously.

  Time-based Carbon Offsets: Systems and tools to track hour-by-hour energy use and match with hourly renewable energy certificates (RECS, or "offsets") to allow entities to achieve 24/7 carbon-neutral goals.

[36]City-designated NWLs are lands designated as "Open space, Parklands, and Habitat", "Agriculture", or "Open Hillside" in the Envision San José 2040 General Plan.

Green Hydrogen Fuel Cells: Hydrogen fuel can be produced in various ways, some that are cleaner than others. “Blue hydrogen” uses a process called steam methane reformation, in which hydrogen is made from methane and carbon emissions are curtailed with carbon capture and storage. Hydrogen that is produced with water, and has a clean electricity source to run the process, is considered “green hydrogen,” as it produces no carbon emissions. The current challenges with green hydrogen are cost and transit. Large amounts of renewable electricity, as well as the electrolysis process, can be expensive. Additionally, hydrogen is extremely flammable and hard to store, making transport difficult. However, green hydrogen is a potential low-carbon fuel that could replace hydrocarbons. Since hydrogen is already widely used, and there is growing interest from petroleum companies, these challenges could be resolved in the near future.

APPENDIX 5

FORTHCOMING EXTERNAL FUNDING OPPORTUNITIES FOR CARBON NEUTRALITY BY 2030 STRATEGIES

Funding Focus Area	Funding Title (Entity Distributing)	Description of Use(s)	Amount (or Estimated Amount)	Status
Cross Sector	Transformative Climate Communities Planning Grant (California Strategic Growth Council)	Plan and design neighborhood plan that addresses climate change at a community level. Strategies may include: affordable housing, transit access, energy efficiency, water efficiency, waste management, urban greening, indoor air quality, brownfield redevelopment	$300,000	Application In-Progress, due July 1, 2022
	Transformative Climate Communities Implementation Grant (California Strategic Growth Council)	Implementation of neighborhood plan that addresses climate change at a community level. Strategies may include: affordable housing, transit access, energy efficiency, water efficiency, waste management, urban greening, indoor air quality, brownfield redevelopment	$35 million	Forthcoming (est. Spring 2024 application for use in 2024-2029)

Transportation	Active Transportation Program (Caltrans and MTC)	Funds Active Transportation projects.	TBD	Application In-Progress
	One Bay Area Grant (MTC)	Funds various transportation projects in alignment with regional goals including Complete Street Projects.	TBD	Application In-Progress
	Surface Transportation Block Grant (STBG) Program	Federal formula funding through MTC. EV charging infrastructure and installation and deployment of intelligent transportation technologies are eligible projects.	TBD	Not released yet.
	Transportation Alterna-tives Program (TAP)	Federal formula funding through Caltrans.	TBD	Not released yet.
	National Highway Freight Program	Federal formula funding through Caltrans	TBD	Not released yet.
	Congestion Mitigation and Air Quality Improvement Program (CMAQ)	Federal formula funding through Caltrans	TBD	Not released yet.
	Highway Safety Im-provement Program (HSIP)	Federal formula funding through Caltrans	TBD	Not released yet.
	Nationally Significant Freight and Highway Programs (INFRA)	Federal competitive grant funding; Funds highway and rail projects of regional and national economic significance	TBD	Not released yet.

	Local and Regional Project Assistance (RAISE)	Federal competitive grant funding; formerly known as the BUILD and TIGER grant program.	TBD	Not released yet.
	Stopping Threats on Pedestrians	Federal competitive grant funding for bollard installation projects to prevent pedestrian injuries and acts of terrorism in areas used by large numbers of pedestrians.	TBD	Not released yet.
	Safe Streets and Roads for All Grant Program	Federal competitive grant funding to develop and implement comprehensive safety plans and projects.	TBD	Not released yet.
	Congestion Relief Program	Federal competitive grant funding for projects in large, urbanized areas to advance innovative and multimodal solutions to congestion relief	TBD	Not released yet.
	Strengthening Mobility and Revolutionizing Transportation (SMART)	Federal competitive grant funding for demonstration projects focused on advanced smart city or community technologies and systems to improve transportation efficiency and safety.	TBD	Not released yet.
	Culvert Removal, Replacement and Restoration Program	Federal competitive grant funding for removing, replacing, and restoring culverts to address the flow of water through roads, bridges, railroad tracks and trails.	TBD	Not released yet.

	Reconnecting Communities	Federal competitive grant funding for planning and construction of projects to mitigate existing transportation facilities that create barriers to mobility, access, or economic development.	TBD	Not released yet.
	Railroad Crossing Elimination Competitive Grant Program	Federal competitive grant funding for the elimination of hazards at railway-highway crossings	TBD	Not released yet.
	National Infrastructure Project Assistance	Federal competitive grant funding for multimodal and multijurisdictional projects of national or regional significance.	TBD	Not released yet.
	Bridge Grant Programs	Federal competitive grant funding	TBD	Not released yet.
	Bridge Replacement, Rehabilitation, Preser-vation, Protection and Construction	Federal formula funding	TBD	Not released yet.

	Active Transportation Infrastructure Investment Program	Federal competitive grant funding for safe and connected active transportation projects that connect destinations within or between communities -- including schools, workplaces, residences, businesses, recreation areas, and other community areas – or to create active transportation spines connecting communities and metropolitan regions, or states.	TBD	Not released yet.
	Capital Investment Grants	Federal competitive grant funding for transit improvement projects	TBD	Not released yet.
	Bus Formula Grants	Federal competitive grant funding	TBD	Not released yet.
	Bus Competitive Grants	Federal competitive grant funding	TBD	Not released yet.
	Low-No Emission Buses	Federal competitive grant funding	TBD	Not released yet.
	Charging and Fueling Infrastructure Grants	Federal competitive grant funding for strategically deploying publicly accessible EV charging infrastructure and other alternative fueling infrastructure along designated alternative fuel corridors.	TBD	Not released yet.

	Healthy Streets Program	Federal competitive grant funding for encouraging urban forestry projects aimed at tackling climate change and environmental justice through roadways built using green infrastructure elements.	TBD	Not released yet.
Buildings	Energy Efficiency Conservation Block Grant (EECBG) (Infrastructure Investment and Jobs Act)	Federal funding for cities to advance energy efficiency, energy conservation, and renewable energy projects in communities (details TBD).	TBD	Forthcoming (est. Fall 2022)
Power Source	Renewables Advancing Community Energy Resilience (RACER) (Federal Office of Energy Efficiency and Renewable Energy)	Funds to invest in locally appropriate energy resilience planning at the community level, including the development and integration of new and existing metrics and preparedness and response plans, via robust multi-stakeholder participation and collaboration. Identify any opportunities for solar storage deployment in those locations that can best support increased resilience.	$500,000-$3,000,000 (depending on topic area)	Evaluating opportunity; due July 2022
	PG&E Microgrids Program (CPUC)	Technical support and cost offsets for qualifying energy distribution system upgrades.	TBD	Forthcoming (est. Fall 2022)

APPENDIX 6

EXAMPLES OF BUILDING ELECTRIFICATION POLICY OPTIONS

Policy	Description	Examples of Implementation
Building Performance Standards (BPS)	A BPS policy couldestablish targets for buildings to electrify, reduce GHG emissions, or to improve other metrics, by specific dates. To do this, buildings could be required to benchmark their performance over time. Successful BPS policies include complementary support programs and assistance for covered buildings, local workforce, and historically marginalized populations.	New York City, NY
Minimum Efficiency Standards for Rentals (MESR)	An MESR policy for existing residential rental properties could require property owners to meet a minimum efficiency standard for their building or unit - thereby incentivizing building electrification - before they can receive and/or renew their rental license.	Burlington, VT
Requirements at Time of Major Renovation[37]	This policy could provide prescriptive requirements for allowable electric building systems at the time of major renovation of a building.	Vancouver, BC (under development)
Requirements at Time of System Replacement[38]	This policy could regulate which systems are allowable to install at the time of system replacement - such as requiring the installation of appliances powered by electricity instead of gas - and would be enforced through permitting.	Vancouver, BC (under development)
Commercial Linkage Fee Environmental Sustainability Credit	This could provide a credit on the commercial linkage fee for net zero-emissions buildings (for both qualifying retrofits and new construction).	None known

[37]This policy is currently under discussion by several Bay Area community choice aggregation organizations, which cannot enact or enforce this law, but could help support implementation in the cities that they serve.

[38]At the April 26, 2022 City Council meeting, Council directed staff to evaluate this policy option and engage with the community and return to Council in Fall 2022 with findings.

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