



The Metropolitan Water District
of Southern California

2023 Climate Action Plan Implementation Second Annual Progress Report

2022 GHG Inventory Update and
Implementation Update
through December 2023

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THE METROPOLITAN WATER DISTRICT
OF SOUTHERN CALIFORNIA

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Diamond Valley Lake

Special Notes About this Year's Annual Progress Report

“ In 2023, The Metropolitan Water District of Southern California (Metropolitan) made significant progress on the actions outlined in our Climate Action Plan (CAP) to reduce greenhouse gas (GHG) emissions as we strive for carbon neutrality by 2045. This year, we reached milestones in greening our fleet, pursuing new renewable energy sources, and introducing innovative strategies to restore ecosystems and sequester carbon. As part of our growing commitment to respond to the many impacts of climate change, Metropolitan also kicked off a new process to create a Climate Adaptation Master Plan for Water (CAMP4W), which seeks to develop a portfolio of water investments that increases supply reliability, builds a more resilient and regionally interconnected water delivery system and maintains affordable water rates. CAMP4W bolsters our 2022 CAP, acknowledging that climate change is already impacting our operations and water resources despite plans to be carbon neutral in the future.

There are many strategies that support our goals to reduce emissions and make our water resources more resilient to climate change. For example, the 5.5 megawatts of solar power at our water treatment facilities and the battery energy storage systems (BESS) currently in construction reduce our emissions and provide resilient power supply during potential disruptions. Our water-use efficiency programs reduce demands when conditions are dry and supplies are low and reduce the energy and emissions associated with treating, pumping, and moving water. As we evaluate projects through our CAMP4W process, we are considering their GHG emissions, energy use and efficiency, as well as their potential environmental co-benefits.

I continue to be amazed by the dedicated team of experts charged with addressing our greatest challenges, like climate change, at Metropolitan. We are constantly adapting and evolving as the conditions around us demand, but we are also building on years of smart planning and innovative solutions that inform and inspire all of us every day."



Liz Crosson

*Chief Sustainability,
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Introduction

Climate change is increasingly threatening the reliability of every water source across the western United States, causing weather to abruptly swing from extreme dry to record wet conditions. To guard the region from these and other impacts of climate change and to be part of the solution, Metropolitan's Board of Directors adopted a comprehensive CAP on May 10, 2022.

The CAP is a blueprint for how Metropolitan will cost-effectively reduce emissions from its operations, including those associated with water delivered through the Colorado River Aqueduct (CRA).¹ The CAP sets targets for reducing GHG emissions from Metropolitan's operations, including conveyance, storage, treatment, and delivery of water to its 26 member water agencies across its 5,200 square-mile service area, and complements Metropolitan's existing long-range planning efforts, including the Integrated Water Resources Plan, Energy Sustainability Plan, Capital Investment Plan, and the CAMP4W which is currently being developed.^{2,3,4} The CAP also helps Metropolitan prepare for future regulations while supporting California's GHG emission reduction goals.

1. Metropolitan's CAP only includes emissions from sources within its operational control, including the CRA. Emissions associated with water deliveries from the State Water Project, which is owned and operated by the California Department of Water Resources (DWR), are covered in DWR's CAP.

<https://water.ca.gov/Programs/All-Programs/Climate-Change-Program/Climate-Action-Plan>

For transparency Metropolitan includes the aggregated emissions of water delivered to Southern California from all sources on its CAPDash website at:

https://cap.rinconconsultants.com/Metropolitan_Water_District.

2. <https://www.mwdh2o.com/how-we-plan/integrated-resource-plan/>

3. https://www.mwdh2o.com/media/16848/mwd_esp_report-1630_vol_1.pdf?key words=energy sustainability plan

4. <https://www.mwdh2o.com/media/12469/final-cap.pdf>

To ensure that Metropolitan is meeting its GHG reduction targets, the CAP includes a timeline for completing each action and requires annual GHG emission inventory updates, annual reporting, and a five-year CAP update. Additionally, the CAP meets the requirements of Section 15183.5(b)(1) of the California Environmental Quality Act (CEQA) Guidelines for a "Qualified GHG Reduction Plan," allowing Metropolitan to "streamline" or tier future project-level GHG emissions analyses under CEQA if projects demonstrate consistency with the CAP goals.

Metropolitan is committed to providing Annual Progress Reports (APRs), with an overview of Metropolitan's progress implementing the actions outlined in the CAP, an updated GHG inventory and the status of Metropolitan's carbon budget, which tracks how Metropolitan has advanced its GHG reduction goals. This second annual APR highlights Metropolitan's achievements since the inaugural APR was published on April 25, 2023, to coincide with Earth Day, and also features the 2022 GHG inventory update. Building on the comprehensive data that is publicly available via the online CAPDash website⁵, this APR provides more extensive qualitative background on the steps Metropolitan has taken to implement actions in the CAP, highlighting some of Metropolitan's success stories over the past year. This includes the leadership, contributions, and ingenuity demonstrated across Metropolitan as it seeks to cut emissions and promote environmental stewardship and innovation. Metropolitan presents this second annual 2023 CAP APR to showcase its progress in meeting its GHG emission reduction goals as it pursues achieving carbon neutrality by 2045.



**Click on the logo to visit
the CAPDash website**

5. https://cap.rinconconsultants.com/Metropolitan_Water_District

Glossary of Terms

AB – Assembly Bill

ACF – Advanced Clean Fleet

APR – Annual Progress Report

AZNM – Arizona New Mexico subregion for electricity production

BAU – business-as-usual. Typically referring to BAU emissions, which are the expected emissions if no mitigative actions are taken.

BESS – Battery Energy Storage System

CAISO – California Independent System Operator

CAMP4W – Climate Adaptation Master Plan for Water

CAP – Climate Action Plan

CEQA – California Environmental Quality Act

CRA – Colorado River Aqueduct

CVP – Central Valley Project

CVRA – Climate Vulnerability and Risk Assessment

Diemer WTP – Robert B. Diemer Water Treatment Plant

EV – electric vehicle

ENV-SP – Envision Certified Professional

GHG – greenhouse gas

HVAC – heating, ventilation, and air conditioning

Jensen WTP – Joseph P. Jensen Water Treatment Plant

LED – light-emitting diode

LADWP – Los Angeles Department of Water and Power

Metropolitan – The Metropolitan Water District of Southern California

Mills WTP – Henry J. Mills Water Treatment Plant

MMBTu -- Metric Million British Thermal Unit

MT CO₂e – metric tons of carbon dioxide equivalent

MWh – Megawatt-hour

RFP – request for proposals

SB – Senate Bill

SCE – Southern California Edison

SF6/HFC Fugitive Emissions – fugitive

emissions of sulfur hexafluoride (SF6) from electrical equipment and hydrofluorocarbon (HFC) emissions from refrigerator units and use of welding gas.

Skinner WTP – Robert A. Skinner Water Treatment Plant

SRI – Sustainability, Resilience and Innovation

SUV – sport utility vehicle

SWP – State Water Project

T&D – transmission and distribution, referring to the delivery system of purchased electricity.

TCR – The Climate Registry

USHQ – Union Station Headquarters

VMT – vehicle miles traveled

Weymouth WTP – F.E. Weymouth Water Treatment Plant

WRM – Water Resource Management

WSO – Water System Operations

WTP – water treatment plant

ZEV – zero emission vehicle

Annual Progress Report Snapshot

Metropolitan's CAP identified 42 measures for reducing Metropolitan's GHG emissions in an effort to reach the 2030 GHG reduction target and demonstrate substantial progress toward the long-term goal of carbon neutrality by 2045. The measures were divided into two implementation phases – Phase 1 and Phase 2. Phase 1 measures are designed to be implemented by 2030 to help achieve Metropolitan's 2030 GHG reduction target, while Phase 2 actions are intended to ensure Metropolitan will achieve its 2045 goal.

Measures are considered either “quantifiable” or “supportive.” Quantifiable measures have clear GHG tracking metrics and performance standards and as such, the emissions reductions and implementation progress from these measures can be measured. Supportive measures do not directly reduce GHG emissions, but are critical to the overall success of the CAP. These supportive measures include studies that serve as a foundation for future projects, as well as set up the needed structure for implementation of actions, while supporting collaboration across departments and organizations. This report summarizes key areas of progress made on the quantifiable and supportive measures included in Phase 1, and in some cases, Phase 2. For a summary of the implementation status of all CAP measures, please refer to the two summary tables in the Appendix.

Highlights of Metropolitan's implementation progress include:

- **Measure WC-3 (Turf Replacement):** The turf replacement program has achieved 128 percent of the 2030 water savings target, surpassing the 10,634 acre-feet goal by nearly 3,000 acre feet.
- **Measure EC-5 (Telecommuting):** The flexible schedules and telecommuting patterns of Metropolitan employees have avoided an estimated 18,010,512 vehicle miles traveled (VMT) over the last two years, surpassing the 2030 target, and achieving 116 percent of the VMT savings goal.
- **Measure AF-3 (Renewable Diesel):** In 2023, renewable diesel made up 96 percent of total mobile diesel usage, a significant increase from its 31 percent renewable diesel use in 2022, bringing Metropolitan to 96 percent of its 2025 target to transition to 100 percent renewable diesel use.
- **Measure EC-3 (Commuter Fleet Electrification):** A commuter survey found that approximately 10 percent of the employee commuter fleet is comprised of zero emission vehicles (ZEV)/electric vehicles (EV), which is approximately 66 percent of the 2025 target. Further electrification will be supported by the investments made through the ZEV taskforce and related programs as well as EV charger projects.

In addition to these achievements on CAP measures, Metropolitan also made progress on two additional sustainability initiatives identified in last year's APR: increasing the number of staff certified in the Envision Sustainable Infrastructure Framework and requesting proposals for carbon free energy development. Updates on these initiatives are described in the following section.

Envisioning Success

In an effort to promote more sustainable infrastructure across Metropolitan, the Sustainability, Resilience and Innovation (SRI) Office in January 2023 held a Technical Lunch and Learn Series on the Envision Sustainable Infrastructure Framework, which seeks to foster more sustainable, resilient and equitable civil engineering projects such as pipelines, railways, dams, pumping plants, reservoirs, laboratories and warehouses. The measures in the framework are designed to increase resiliency and preparedness, reduce negative impacts on the environment and cut costs through enhanced efficiency.

The lunch and learn series sought to present and introduce Metropolitan's teams to the framework to encourage conversations on opportunities to apply the framework to Metropolitan's Capital Improvement Projects. During these events Metropolitan staff were encouraged to become Envision Certified so that they can use the appropriate measures from Envision. Building on this event, Metropolitan provided a two-day training course to prepare employees to pass the professional certification exam for the Envision Certification. As of December 31, 2023, Metropolitan has 51 active Envision Certified Professionals (ENV-SP).

Request for Proposals for Carbon Free Energy Generation and/or Storage Leases and Licenses on Metropolitan Water District Property

As part of its strategy to transition to more low- and carbon free electricity, Metropolitan issued a Request for Proposals (RFP) for the design, installation, ownership, operation, and maintenance of carbon free energy and/or energy storage facilities on Metropolitan property in Palo Verde Valley. By increasing the marketplace availability of large-scale carbon free energy production and storage goals, Metropolitan is optimizing use of its existing resources to provide climate solutions. Metropolitan received several bids and is scheduled to select a respondent in spring 2024.

“ The Engineering Services Group is excited to lead the design and construction of projects that support Metropolitan's goal of carbon neutrality. Our current key projects include Battery Energy Storage Systems, zero emission vehicle infrastructure, and Pure Water Southern California.”

John Bednarski,
Chief Engineer – Engineering Services Group



Metropolitan has made significant progress on several of its quantifiable and supportive measures. Figure 1 summarizes the progress as of December 2023. Implementation status for quantifiable measures is indicated by the percent complete bar. Progress on supportive measures is indicated with one of the following implementation statuses.

Figure 1. Measure Implementation Progress

LEGEND		Pending or No Action = No action has been taken or action is pending.		Complete = Measure is fully implemented. No additional action is required.
		Underway = Measure is in progress. Action has been taken but the measure is not yet complete.		Quantitative = Measure has a quantifiable metric to track. Percent value represents progress towards the quantified goal for that measure.
		Ongoing = Measure is fully implemented; program or action is ongoing and will continue.		No Data = Action has been taken, but there is currently insufficient data to quantify the progress towards the goal for that measure.

Scope 1: Direct Emissions

	DC-1: Conduct a survey of all natural gas consuming devices in offices, control buildings, and residential structures and establish a schedule to replace natural gas equipment with electric by 2025.		FL-3: Replace fossil fuel passenger fleet vehicles as identified in the ZEV/EV Feasibility Study (FL-1).
	DC-2: Reduce natural gas emissions by 50 percent by 2030 and 100 percent by 2045 through electrification.		FL-4: Install EV charging and/or ZEV infrastructure at facilities pursuant to the findings of the ZEV/EV Feasibility Study (FL-1).
	DC-3: Update Metropolitan building standards to require all-electric construction for new buildings and retrofits.		AF-1: Complete a pilot project on the use of renewable diesel rather than conventional diesel for all stationary equipment by 2025.
	FL-1: Conduct a ZEV/EV Feasibility Study to determine which fleet vehicles can be converted, what chargers/fueling stations are required, and where they should be located by the end of 2022.		AF-2: Complete a pilot project of renewable diesel use in on-road and off-road vehicles by providing at least one renewable diesel tank at Metropolitan-owned fueling depots in 2021.
	FL-2: Adopt an ZEV/EV first policy for fleet vehicles to obtain ZEVs when technological, operational, or cost effectiveness parameters are met.		AF-3: Based on the results of the study in AF-2, Metropolitan will begin using renewable diesel fuel in 100 percent of Metropolitan's diesel-consuming on-road and off-road vehicles by 2025.

Scope 2: Indirect Emissions



E-1: Analyze marginal emissions rates and evaluate the feasibility of shifting energy use to lower emission periods.

0%

E-2: Connect the Yorba Linda Hydroelectric Power Plant behind Metropolitan's Southern California Edison (SCE) electricity meter to directly utilize carbon free electricity at Metropolitan's Diemer WTP by 2025.

47%

E-3: In markets where available, Metropolitan will switch its retail accounts to green tariff options offered by power providers by 2025 to reduce the Scope 2 GHG emissions associated with retail electricity use.

0%

E-4: Install 3.5 MW battery storage systems at the Jensen, Skinner, and Weymouth WTPs. Investigate the use of a software system to track and optimize GHG emissions reduction due to time-of-use strategies by 2025.

44%

E-5: Manage Metropolitan's energy purchases to ensure cost-effective energy supply while achieving the required GHG emissions objective.

98%

EE-1: Convert all interior and exterior lighting at 50 percent of Metropolitan facilities to light emitting diode (LED) technologies by 2030 and 100 percent by 2045.



EE-2: Continue programs to analyze CRA pump efficiency and replace or refurbish pumps when cost effective.



Copper Basin

Scope 3: Other Indirect Emissions and Sequestration



EC-1: Expand subsidized transit commute program to reduce employee commute miles.



EC-2: Expand employee use of carbon free and low carbon transportation by providing education programs on the benefits of commute options including public transportation, EV/ZEV options, and vanpools.

66%



EC-3: Install ZEV and/or EV infrastructure as directed by the ZEV/EV Feasibility Study to support at least a 15 percent transition of employee-owned vehicles to ZEVs/EVs by 2025.



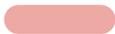
EC-4: Continue to offer benefits to employees who use alternative modes of transportation (e.g., public transportation, bikes).

116%



EC-5: Allow 50 percent of employees located at Metropolitan's headquarters to telecommute or utilize flexible schedules through 2030 to reduce travel time, VMT, and GHG emissions.

NO DATA



WA-1: Develop and implement net zero-waste policies and programs at all facilities to reduce landfilled waste by 30 percent by 2030 and achieve zero landfilled waste by 2045.



WA-2: Implement a program to reduce organic waste at Metropolitan's Union Station building. Contract or team with local organizations and waste disposal companies to route organic waste to anaerobic digestion or composting facilities and edible food-to-food recovery centers.



WA-3: Develop and implement a sustainable procurement policy.



WC-1: Expand programs that educate customers on water conservation initiatives through workshops and speaking engagements.



WC-2: Continue to implement innovative water use efficiency programs.

128%



WC-3: Continue Turf Removal Program to install an average of 1,500,000 square feet of water efficient landscapes per year through 2030 through the use of a rebate program.



WC-4: Provide funding for the development and monitoring of local stormwater recharge and use projects to evaluate the water supply benefit of stormwater.



WC-5: Continue to promote water efficiency technologies and innovative practices that can be adopted into future water conservation program updates.



CS-1: Study carbon capture protocols in the Sacramento-San Joaquin River Delta.



CS-2: Conduct a five-year research program to increase Metropolitan's knowledge of regenerative agriculture and carbon sequestration opportunities on Metropolitan properties in the Palo Verde Valley.

Staff Awards and Innovations

Metropolitan's biggest asset is the staff that lend their expertise, hard work, and experience to help increase resilience and spur innovation across the district.



Newly designed organic waste, dish and flatware return station at Union Station Headquarters (USHQ)

Waste Diversion at Metropolitan's Headquarters

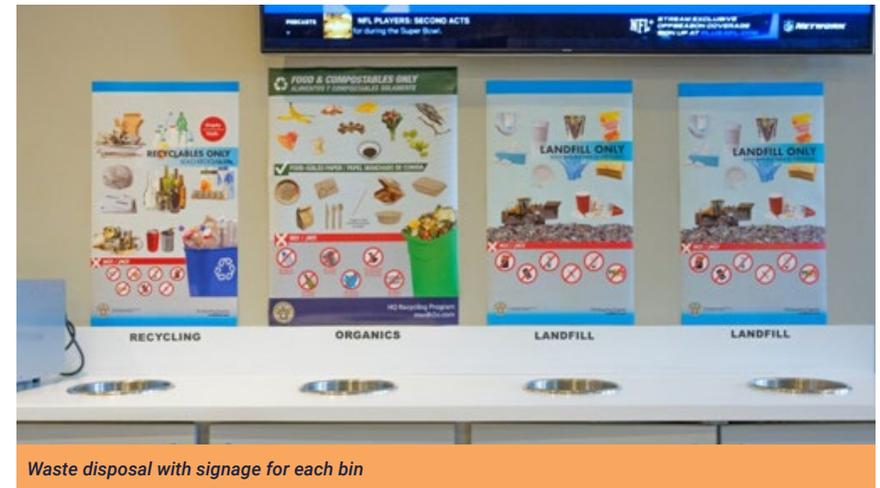
In 2023, recognizing an opportunity to increase sustainability for hundreds of staff at Metropolitan's headquarter building, two Metropolitan employees stepped up to spearhead the creation of a zero-waste diversion program that will help meet goals set by Los Angeles County, as well as the waste reduction goals set in CAP measures WA-1 and WA-2. Waste, especially organic waste sent to landfill, generates methane gas which is a potent GHG. Reducing waste decreases the amount of GHGs emitted from landfills. Furthermore, increasing composting and recycling can contribute towards a more circular flow of goods, where waste can become a resource for future products, reducing the emissions and resource use associated with production of new products.

Demonstrating their commitment to a greener future, facilities staff Julio Donayre and Ashley Lopez created the program by transitioning the headquarters building from plasticware to reusable plates and silverware, adopting compostable to-go containers in place of plastic containers and redesigning trash receptacles to highlight the different waste streams, using signage to provide examples of items to be disposed of in each bin.

In addition to the changes to the cafeteria, Julio and Ashley implemented clearly labelled waste bins in the building's courtyard to encourage organics and recycled waste disposal, as well as clearly labeled bins on each floor near the coffee nook with signs that direct what should be disposed of in each bin.



Ashley Lopez and Julio Donayre with newly designed organic waste, dishes and flatware return location



Waste disposal with signage for each bin

By putting this plan into action, Metropolitan hopes to help meet goals outlined in Los Angeles County's roadmap to a Sustainable Waste Management Future that seeks to divert 80 percent of waste from landfills by 2025, 90 percent by 2035, and more than 95 percent by 2045.

Ashley and Julio say that they have seen a significant decrease in waste going to the landfill and a corresponding increase in recyclables and organic and compostable waste. Over the next year, they will monitor the weight of the bins as they leave Metropolitan to track the waste being diverted.



ZEV Program

ZEV Purchases

In 2023, Metropolitan purchased its first-ever ZEVs – eight Ford Lightning pickup trucks, one Ford E-Transit cargo van, and three light-duty Toyota bZ4X SUVs. These 12 vehicles will be deployed to facilities with operational needs for medium-duty vehicles. In addition to ZEVs, two electric forklifts were purchased for use in the La Verne warehouse. In addition to meeting CAP goals to reduce emissions, the purchase of these vehicles provides credits towards the California Air Resources Board’s new Advanced Clean Fleet (ACF) regulation. To plan for ACF compliance, staff completed an assessment of its fleet inventory and power needs to develop short and long-term vehicle replacement strategies. The targeted strategies will provide a smooth transition to ZEVs, while ensuring Metropolitan meets its reliability and operational needs.



Metropolitan's first two Ford Lightning pick-up trucks



Zero emission sport utility vehicle



Electric forklift at the Weymouth WTP warehouse



Ford E-Transit cargo van

In FY 2024-25, Metropolitan has plans to purchase more than 25 ZEVs, pending budget approval and market availability. Although not ZEVs, Metropolitan currently has 88 hybrid vehicles in its fleet, 19 of which are hybrid trucks that were purchased in 2023.



Ford Lightnings at Weymouth WTP

“ The Fleet Services Unit and Metropolitan stakeholders collectively recognize our critical role in meeting our greenhouse gas reduction goals as outlined in the Climate Action Plan and prescribed policy. Our Unit is working hard to provide a financially sustainable pathway toward a zero emissions fleet. With a balanced approach toward carbon-neutral and efficient, reliable business operations, we roll forward.”

John Poli,
Unit Manager Water Systems Operations -
Fleet Services



ZEV Chargers and Pilot Programs

Metropolitan's expanding number of ZEVs will require a vast charging infrastructure system to support this transition. A capital project is currently underway to provide the needed short and long-term charging infrastructure for Fleet, Rideshare, and employee ZEVs. To support current and future ZEV charging needs until the infrastructure is built, Metropolitan is using chargers from the vehicle manufacturer provided at the time of purchase. In 2024, three charger pilot studies will begin at Union Station, Weymouth WTP, and the desert facilities. Each of these locations will test charging hardware and software from various manufacturers. Information gleaned from these year-long pilots will inform the long-term infrastructure charger project.



Wall-mounted charging units at Weymouth WTP

ZEV and Equipment Trials

The Metropolitan ZEV/EV team worked with vehicle and equipment vendors to allow staff to test zero emission trucks and mobile chargers at various locations throughout the year. These “try before you buy” efforts provided valuable lessons on vehicle/equipment operating effectiveness, market availability of ZEV technology, as well as hands-on educational opportunities for staff.

In January 2023, staff had the opportunity to test drive an electric truck and operate construction equipment at the Jensen Water Treatment Plant (WTP). In March, staff at the Lake Mathews facility were able to test-drive heavy-duty electric trucks and cargo vans. In July, staff conducted a trial of an electric stake bed truck for the Etiwanda Hydroelectric Plant and Rialto Feeder maintenance shutdowns. In November, Metropolitan conducted trials of electric equipment at the Venice Pressure Control Structure and the Santa Monica Feeder shutdown. Some of the vehicles tested at this shutdown included Ford Lightnings, an E450 utility truck, a box truck, stake bed truck, and step van. Two trailer-mounted mobile power units for charging of both equipment and vehicles were available at this trial. Each trial provided information on the benefits and challenges of using this new technology, including factors that may impact charging capabilities, mileage range, towing capabilities, under-chassis clearance, payload capacity, and upfitting and body configuration. The information gathered from the trials will be used to inform future selection and deployment of ZEVs.



DWR and Metropolitan staff inspecting Volvo electric-battery construction equipment at the Jensen WTP in January 2023 (Jonathan Brown, Joshua Legaspi, Kiersten Melville, Anna Yeutter).



Metropolitan staff test-driving electric trucks at Lake Mathews in June 2023.

Continued Excellence in The Climate Registry (TCR) Reporting

In 2023, Metropolitan was awarded the Water-Energy Leader All-Star for excellence in TCR Reporting for the third consecutive year. All-Star status is the highest level of recognition in data reporting to the TCR Water-Energy Nexus Registry.

While the implementation of CAP measures is important, monitoring and quantification of emissions is an essential part of long-term success. Metropolitan continues to prioritize excellence in data collection and tracking and will seek additional opportunities to obtain valuable data to support robust decision-making in the future.



Climate Vulnerability and Risk Assessment and CAMP4W

Extreme weather conditions in recent years have presented Southern Californians with an unsettling preview of the challenges ahead – weather whiplash is abruptly swinging the state from periods of severe and extended drought to record-setting wet seasons and putting mounting pressure on the year-to-year management of all our available water resources. To ensure the continued reliability of water supplies for the communities we serve, Metropolitan is developing the CAMP4W, a roadmap that will guide future capital investments and Metropolitan’s business model as we confront a new climate reality in the years and decades ahead. Through the CAMP4W process, Metropolitan is working with our 26 member agencies and their customers to ensure that our portfolio of water investments increases supply reliability, develops a more resilient and regionally interconnected water delivery system, and maintains affordable water rates for the 19 million residents living across its service area. Metropolitan will also engage government officials, environmental and community-based organizations, tribal entities, and the public in the planning process. The CAMP4W complements Metropolitan’s existing long-range planning efforts, including the Energy Sustainability Plan, CAP, and Capital Investment Plan.

In conjunction with the CAMP4W process, Metropolitan is preparing a Climate Vulnerability and Risk Assessment (CVRA) to explore current efforts to incorporate climate change risk into its planning and operational activities. The CVRA will be an important aspect of the CAMP4W process, as it will provide sound recommendations to better adapt to the changing environment. The CVRA will be comprised of a literature review of 12 internal documents and 53 external documents, supplemented by surveys and charrettes with Metropolitan staff on topics that include water quality and energy, as well as elements of Metropolitan’s operational systems and infrastructure beyond those included in the 2020 Integrated Resource Plan Needs Assessment. The CVRA will help provide greater understanding of Metropolitan’s ability to function under future climate extremes and complements the Integrated Resources Plan Needs Assessment to inform climate adaptation efforts moving forward.



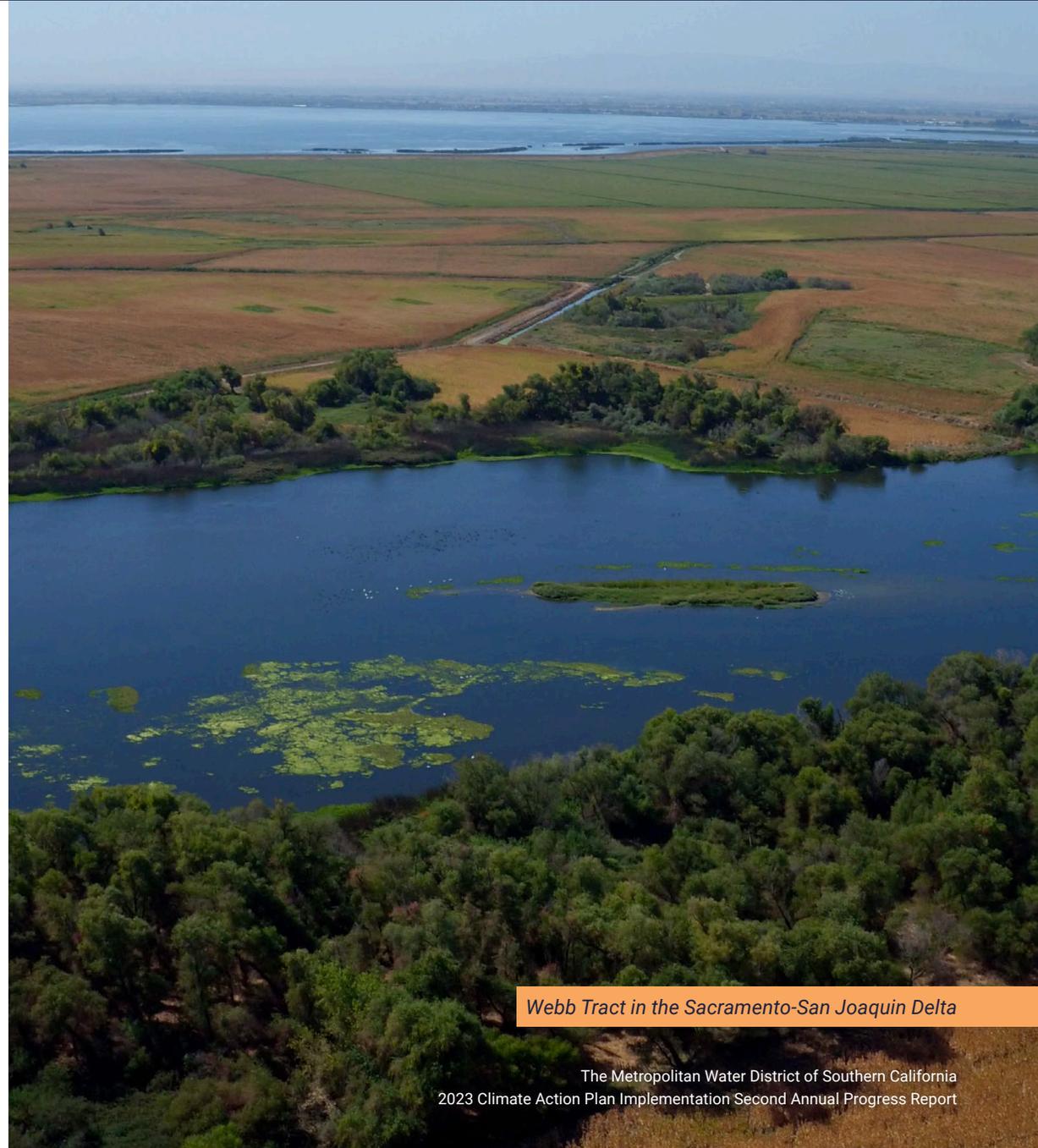
High Desert Water Bank, a groundwater banking project in the Antelope Valley

Metropolitan Awarded Grant for Wetland Restoration and Rice Conversion Projects on Webb Tract

As part of its commitment to support and protect the Sacramento-San Joaquin Delta, part of the State Water Project system that provides about a quarter of Southern California's water supplies, Metropolitan initiated several projects designed to bolster the region's health and sustainability.

Metropolitan owns four islands in the Delta – Webb Tract, a large portion of Holland Tract, Bouldin Island, and Bacon Island – which allows Metropolitan to conduct research and identify potential projects that support water system reliability, restore habitat, and promote sustainable agricultural practices.

In 2023, Metropolitan was awarded a \$20.9 million grant from the Sacramento-San Joaquin Delta Conservancy (Delta Conservancy) to construct up to 3,500 acres of wetland and up to 1,500 acres of rice fields on Webb Tract located in Contra Costa County. The goals of the projects are to stop or reverse subsidence on the deeply subsided island, sequester carbon, generate income from long-term leases of the rice fields and generate income from carbon sequestered in rice and wetlands. The income generated from the projects are expected to fund their long-term maintenance. The projects will have the added benefit of providing habitat for migratory birds and other species in the Delta. The Delta Conservancy grant will fund design, environmental documentation, permitting and construction of the wetland and rice cultivation projects.



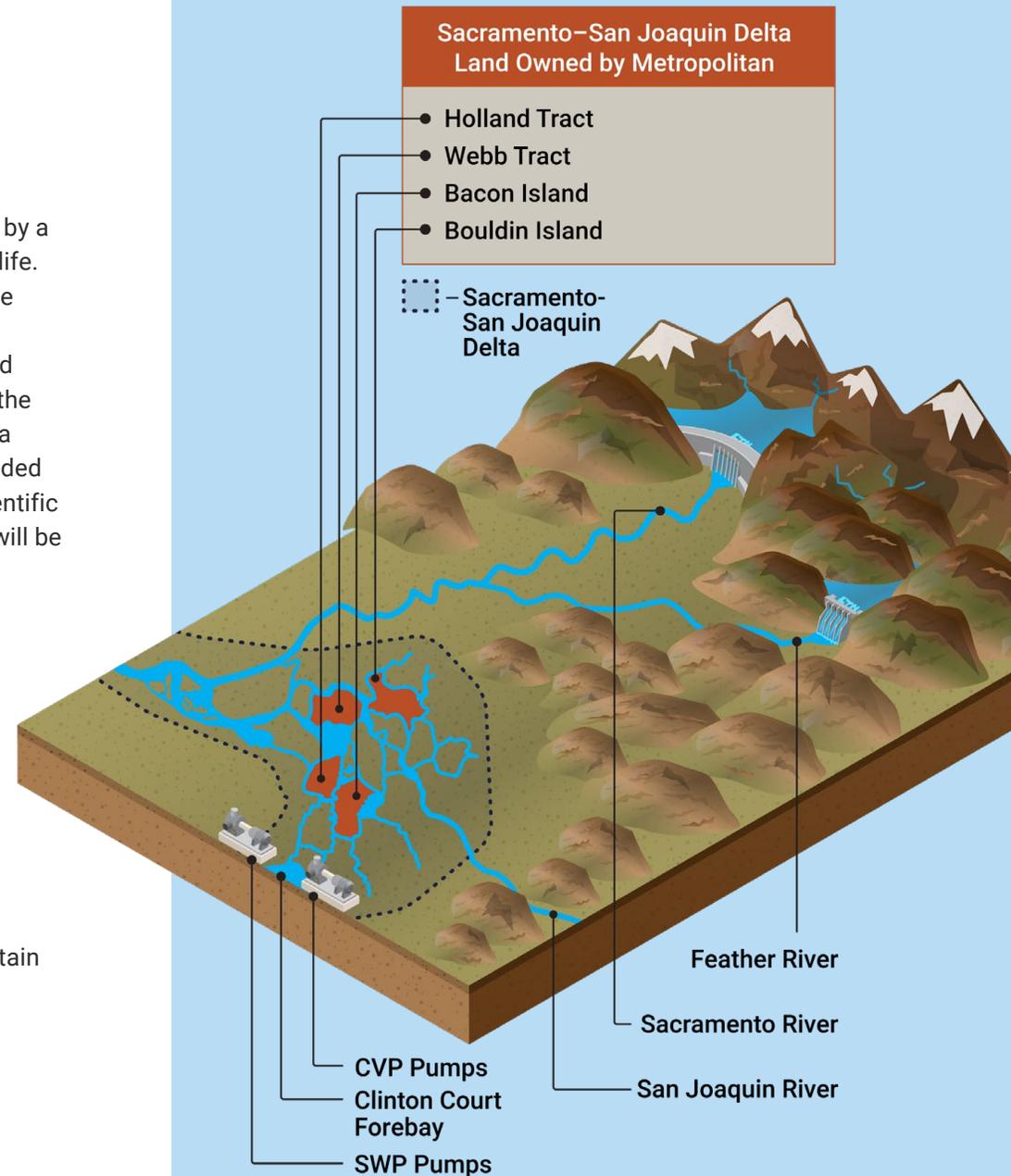
Webb Tract in the Sacramento-San Joaquin Delta

Delta Islands Adaptation Project Planning Grant is Completed

In 2023, Metropolitan completed the Delta Islands Adaptation Project funded by a Proposition 1 planning grant from the California Department of Fish and Wildlife. The project evaluated opportunities for island-wide improvements that include subsidence reversal, sustainable agricultural practices, carbon sequestration, water quality improvements, and habitat restoration on the four islands owned by Metropolitan. The project culminated in the selection of Bouldin Island as the preferred alternative to perform a more focused, island-wide study that used a creative and innovative process to identify a mosaic of land uses, which included conceptual design plans and identified potential pilot projects and future scientific studies that can be implemented on subsided Delta islands. The final report will be available in 2024.

Other Delta Conservation Activities

Metropolitan is also collaborating with state and federal agencies as well as researchers from the University of California at Davis and the United States Geological Survey to initiate studies on the suitability of using existing ponds on the islands to support Delta smelt supplementation efforts. Preliminary results suggest that pond culture will be a viable method for cultivation of Delta smelt. Further studies will be conducted to improve this understanding and to evaluate how to improve certain limitations in pond culture such as prey densities, temperature, stress, and post-release survival.



Staff Innovation: Solar-Powered Battery Storage

The Electrical Team from the Mills WTP developed an innovative option for replacing small gasoline-powered generators with solar-powered battery storage, supporting Metropolitan's goals to transition to cleaner, renewable power. The GoalZero Yeti 1500X portable power station, along with two 200-watt portable solar panels, function together as a portable solar generator, providing power for tools, charging batteries, and allowing the team to run equipment without the noise associated with a gas generator, which could potentially attract thieves.



Components of the solar generator fitted to a work truck. From left to right: battery inverter in the storage compartment, a close up of the Yeti battery inverter, and two 200-Watt solar panels on the back of the truck.

The solar-powered set up was initially used to provide power to a remote location for temporary measuring equipment on the Upper Feeder bridge crossing during urgent repairs.



Upper Feeder bridge crossing with identifying location of the temporary solar-powered generator

After its use at the Upper Feeder bridge crossing project, the battery inverter was repurposed as a truck-mounted power supply, again in place of a gasoline generator, providing a valuable, cleaner, mobile power supply to run tools, charge batteries, and power structure ventilation equipment.



Solar-powered, truck-mounted generator

Progress on CAP Goals

Metropolitan's CAP established a carbon budget designed to help Metropolitan achieve carbon neutrality by 2045. In order to track progress towards this goal, and to ensure Metropolitan stays within its carbon budget, a GHG emissions inventory is completed on an annual basis. This section summarizes Metropolitan's 2022 GHG emissions inventory, discusses notable drivers of emissions changes, and provides a carbon budget status update.

“ The Water Resource Management (WRM) Group is proud to support Metropolitan's goal of carbon neutrality through its long-range program design and implementation efforts that ensure a safe and reliable water supply under increasingly severe climate conditions. In addition, WRM supports key initiatives, including Metropolitan's nationally recognized regional conservation program that includes the Turf Replacement Program, Water Savings Incentive Program, and local incentives to encourage the replacement of older devices with more water-efficient models.”

Brandon Goshi,
Acting Group Manager
Water Resource Management



Annual GHG Inventories and Carbon Budget Update

During development of the CAP, Metropolitan prepared annual GHG emissions inventories for activities within its operational boundary from 2005 through 2020. Metropolitan has continued to prepare annual inventories to provide an understanding of GHG emissions over time.

This APR includes a GHG inventory update and provides an overview of Metropolitan's GHG emissions data from 2005 through 2022. The 2022 inventory was prepared in accordance with standard accounting protocols from TCR and the International Council for Local Environmental Initiatives.^{6,7} Emissions are grouped into categories, as defined below:

Scope 1: Direct Emissions – associated with fuel use and unintended fugitive emissions.

Scope 2: Indirect Emissions – associated with the purchase and consumption of electricity. Electricity use is directly impacted by water pumping requirements.

Scope 3: Other Indirect Emissions – includes other indirect emissions not captured in Scope 2, such as those associated with employee commutes, waste generation, water consumption at Metropolitan facilities, and emissions from construction projects.

Annual GHG inventories highlight the aspects of Metropolitan operations that drive overall GHG emissions, and the largest opportunities for reductions to meet Metropolitan's targets.

6. TCR. <https://theclimateregistry.org/registries-resources/protocols/>

7. International Council for Local Environmental Initiatives. 2010. *Local Government Operations Protocol*. <http://iclei.usa.org/GHG-protocols/>.

Metropolitan’s organization-wide GHG emissions for 2022 were estimated at 336,560 metric tons of carbon dioxide equivalent (MT CO₂e). Figure 2 details the breakdown of Metropolitan emissions by scope. Table 1 depicts Metropolitan’s GHG emissions across all emissions sources for 2022 and compares them to 2021, both in terms of total mass change of emissions in MT CO₂e, and the percent change year over year. This comparison provides an overview of which sources of emissions increased and decreased between the two years and by how much. A more in-depth discussion of emissions from each source and how this impacts Metropolitan’s overall carbon budget follows in the subsequent sections.

As shown in Figure 2 and Table 1, Metropolitan’s GHG emissions continue to be driven primarily by emissions from Metropolitan’s electricity use (Scope 2). By comparison, Scope 1 (direct emissions from fuel use, fugitive emissions) and Scope 3 (other indirect emissions) continue to make up only a small part of the overall GHG emissions each year. Improvements in data tracking for Scope 3 emissions have allowed the 2022 inventory to reflect decreases in Scope 3 emissions, increasing the relative share (percent) of Scope 1 and Scope 2 emissions. In 2022 electricity consumption also increased, further increasing the share of Scope 2 emissions. However, the overall distribution of emissions by scope is generally consistent with previous years of Metropolitan GHG emissions.

Figure 2. 2022 GHG Emissions by Scope (MT CO₂e)

■ Scope 1 (2%) ■ Scope 2 (95%) ■ Scope 3 (3%)

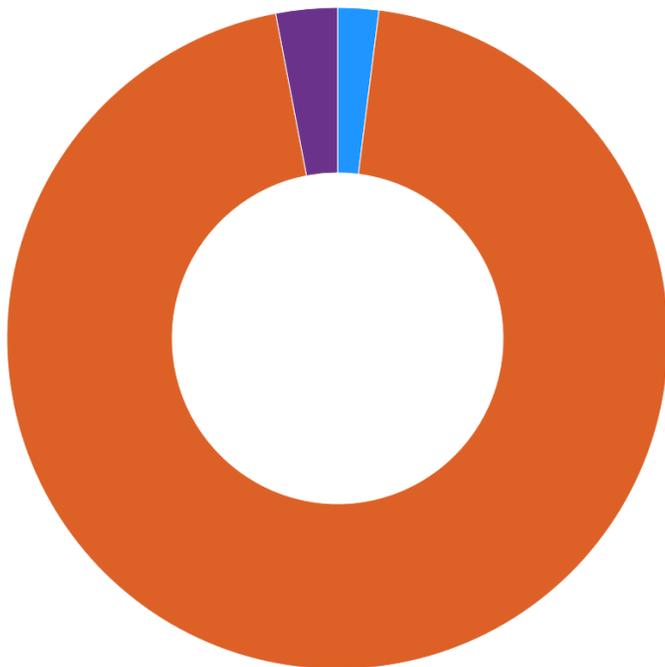


Table 1. 2021 and 2022 GHG Emissions Comparison (MT CO₂e)

Scope	Emissions Source	2021 Annual Emissions*	2022 Annual Emissions**	Change in Emissions	Percent Change Year Over Year
1	Mobile Emissions	5,830	6,315	85	8%
	Stationary Emissions	1,175	1,324	149	12%
	SF6/HFC Fugitive Emissions	87	53	-34	-39%
2	Electricity	269,064	312,206	43,142	16%
	T&D Losses	5,104	5,922	818	16%
3	All other Indirect Emissions	23,188	10,740	-12,448	-54%
Total		304,448	336,560	32,112	11%

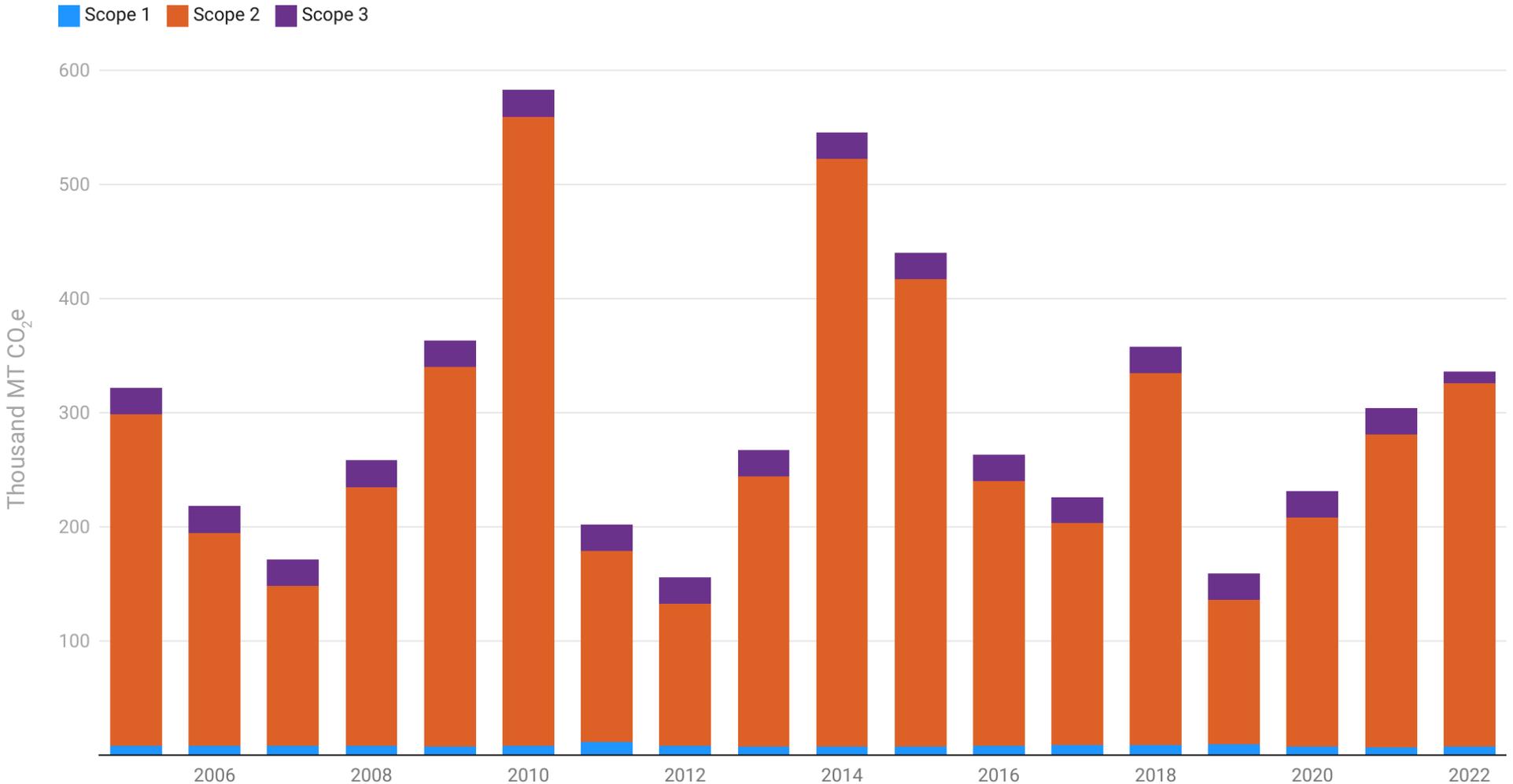
Values are rounded to the nearest whole number.

*2021 Annual Emissions updated to reflect The Climate Registry (TCR) verified data.

**Subject to TCR verification process – in progress

Metropolitan's GHG emissions fluctuate from year to year, depending on the availability of water supplies and the amount of water being pumped from the CRA, which is owned and operated by Metropolitan. When there is higher availability of water from the State Water Project, which is owned and operated by the State of California, Metropolitan takes advantage of those supplies and decreases its CRA pumping, which likewise decreases its GHG emissions. Alternatively, in drought years when availability of SWP supplies are low, CRA pumping increases, resulting in higher GHG emissions for those years. This relationship between electricity use and annual emissions is clearly visible in Figure 3, below.

Figure 3. Annual Emissions by Scope 2005-2022 (MT CO₂e)



2022 GHG Inventory – Drivers of Change

This section provides more details on the 2022 GHG emissions inventory and includes explanations of notable changes year over year. Emissions increased by approximately 32,112 MT CO₂e in 2022 compared to 2021. As shown in Figure 3, this increase is largely driven by continuing drought conditions, which required more CRA pumping and associated electricity use (Scope 2).

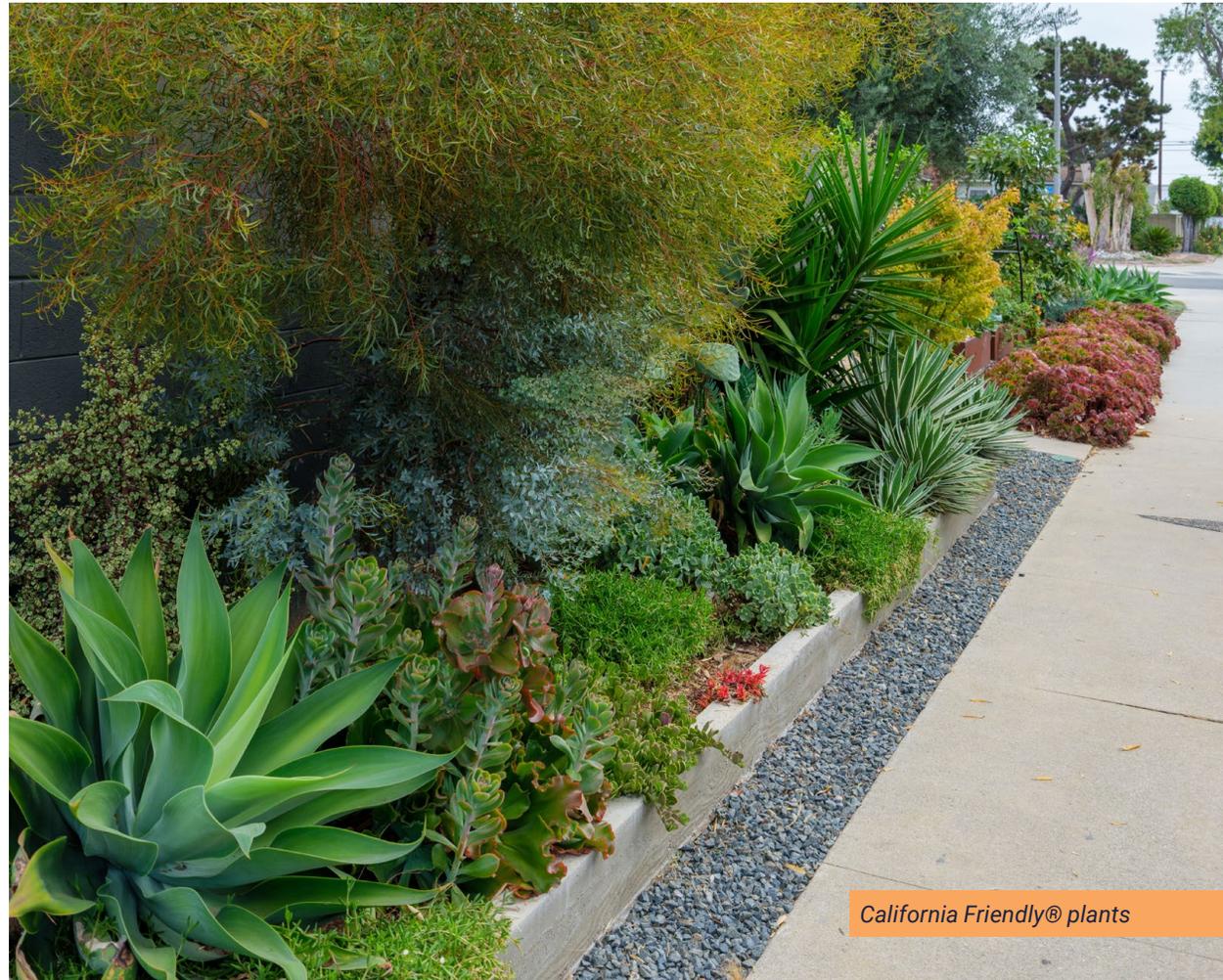
Scope 1: Direct Emissions

Emissions from Combustion and Fugitive Emissions

Metropolitan's 2022 Scope 1 emissions comprised approximately 2 percent of total emissions for GHG reporting, an increase over 2021. The largest source of Scope 1 emissions continues to be emissions from vehicles (mobile combustion of fossil fuels), comprising approximately 82 percent of Scope 1 emissions in 2022.

For mobile combustion, gasoline use increased by 3% year over year (almost 19,000 gallons), jet fuel increased by 129 percent (over 11,000 gallons) year over year, while compressed natural gas usage increased by about 3 percent (223 gallons).

Total mobile diesel usage decreased by 8 percent, while the share of renewable diesel increased by 5 percent, contributing to a reduction in emissions for diesel fuels that helped to partially offset the increase in other mobile fuel usage.



California Friendly® plants

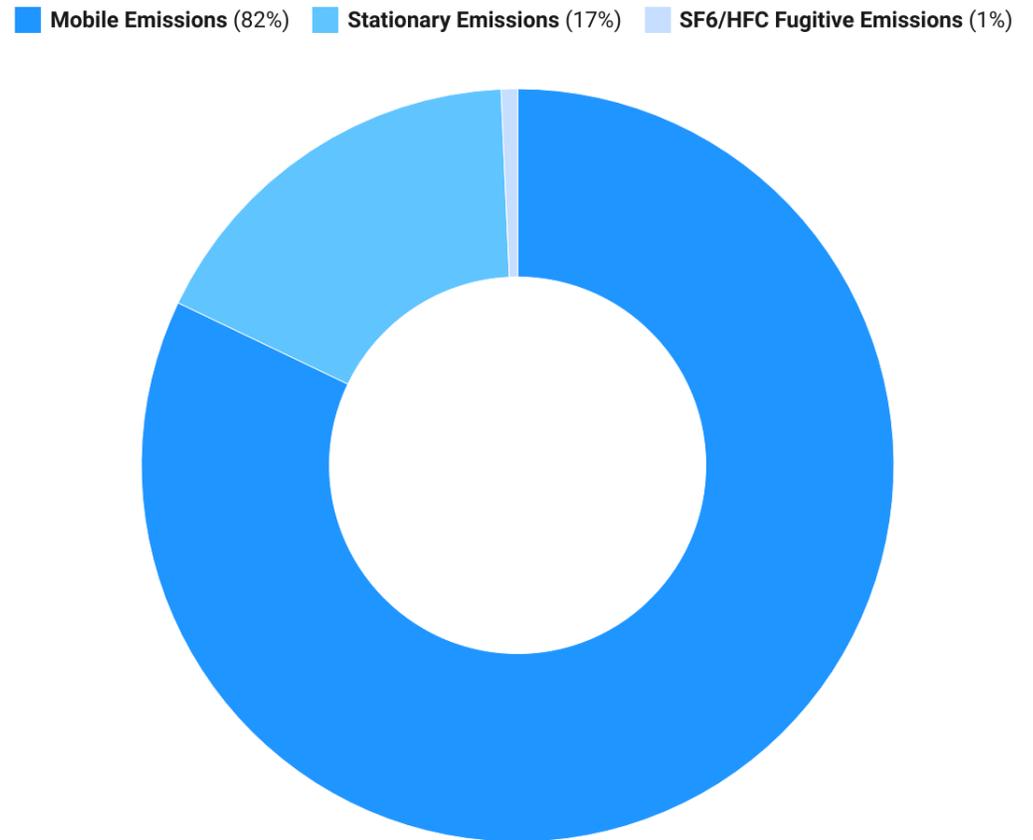
Fossil fuel burning equipment (stationary combustion) in Metropolitan facilities is responsible for the second largest source of Scope 1 emissions, accounting for approximately 17 percent of Scope 1 emissions in 2022. Stationary combustion of diesel increased by 37 percent (over 11,000 gallons), causing the largest increase in fuel usage and emissions for stationary combustion, followed by compressed natural gas, which increased by 20 percent (over 750 gallons), and natural gas, which increased by 3 percent (over 500 Metric Million British Thermal Unit [MMbtu]). The increase in diesel use was likely driven by several extended (10-12 hour) power outages at the Skinner WTP, which required the use of diesel powered generators to continue normal operations.

These power outages led to a nearly four-fold increase in the diesel used to power stationary equipment at the WTP relative to a normal year, and highlights the impact that downstream effects of climate extremes, such as power outages caused by heat waves, can have on operations and related emissions.

Fugitive emissions of sulfur hexafluoride (SF₆) from electrical equipment and hydrofluorocarbon (HFC) emissions from refrigerator units and use of welding gas, make up only a small fraction of Scope 1 emissions. In 2022, fugitive emissions comprised approximately 1 percent of Metropolitan's Scope 1 emissions.

Scope 1 emissions increased by approximately 8 percent between 2021 and 2022. Figure 4 shows Metropolitan's Scope 1 emissions by source. This overall increase was driven by increases in usage across nearly all fuel types, primarily gasoline for mobile combustion and diesel for stationary combustion; however, emissions were partially mitigated through increased use of renewable diesel. As noted in the implementation section, Metropolitan replaced 95 percent of its diesel fuel use with renewable diesel in 2023, so emissions associated with renewable diesel and fuel combustion will continue to decrease in future GHG inventories.

Figure 4. 2022 Scope 1 Emissions by Source (MT CO₂e)



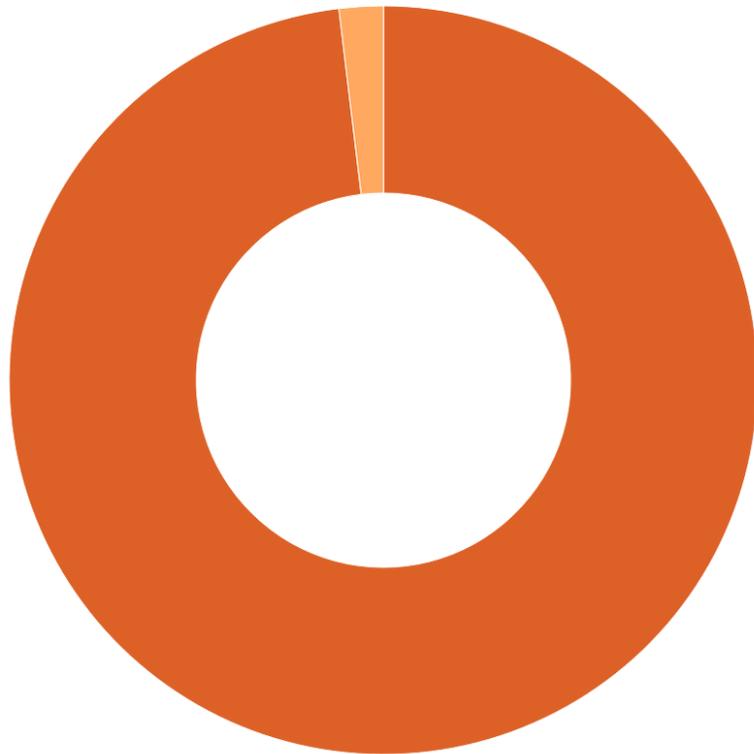
Scope 2: Indirect Emissions

Emissions from Electricity Use

In 2022, Scope 2 emissions comprised approximately 95 percent of Metropolitan's overall emissions, with 98 percent of those emissions coming from electricity consumption and 2 percent attributed to transmission and distribution (T&D) losses. This is consistent with Scope 2 emission trends over time. Figure 5 shows Metropolitan's Scope 2 emissions by source.

Figure 5. 2022 Scope 2 Emissions by Source (MT CO₂e)

■ Electricity (98%) ■ T&D Losses (1.9%)



Overall electricity use increased by 16 percent in 2022 to over 2.3 million megawatt-hour (MWh). This is still less than the electricity used during 2014 and 2015 but represents a continued pattern of increased electricity used for pumping on the CRA and makes 2022 the third highest year for electricity use since 2005. The increase in pumping was driven by continued drought conditions, which led to lower State Water Project allocations and the requisite need to maximize pumping of water from the CRA. Additionally, during high electricity consumption years, the ratio of zero-carbon power from large hydroelectric to higher emission energy resources decreases, effectively driving up Metropolitan's GHG emissions and compounding the GHG impacts. Due to changes in electricity procurement driven by Measure E-3, switching retail electricity accounts to green tariff options, and Measure E-5, purchasing cost-effective and lower-emission wholesale electricity for pumping along the CRA, emissions from electricity use continue to be substantially less than other high CRA pumping years.

Given that Scope 2 emissions comprise most of Metropolitan's annual emissions, decreasing and decarbonizing electricity produced and purchased for operations will be the largest contributing factor to reduce Scope 2 emissions and meet Metropolitan's 2030 and 2045 targets.



Scope 3: Other Indirect Emissions and Sequestration

Emissions from Employee Commutes, Water/Wastewater, Solid Waste, and Construction Projects

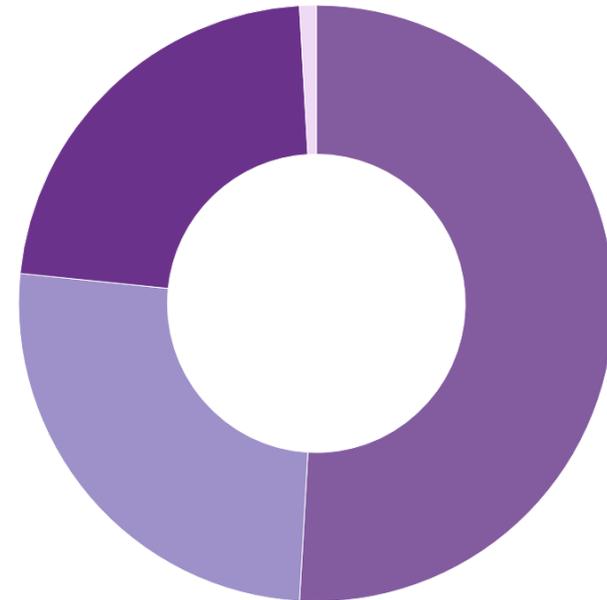
When combined, Scope 3 emissions are the second largest source of emissions for Metropolitan, representing approximately 3 percent of total emissions. Collecting data for these emissions requires a significant amount of coordination and data collection. Therefore, in 2022 Metropolitan continued to use the average emissions established by the CAP for solid waste, water, and wastewater. However, an employee commute survey and construction emissions tracking log were deployed to provide updated and more accurate estimates for employee commute emissions and construction emissions activities.

As a result of these tracking efforts, the inventory now reflects changes in the estimated annual emissions for employee commutes, which decreased by 34 percent (from 8,247 MT CO₂e⁸ to 5,469 MT CO₂e) due primarily to large increases in telecommuting (work from home), which reduces employee VMT. Construction emissions also decreased significantly (by 80 percent, from 12,081 MT CO₂e⁹ to 2,412 MT CO₂e), reflecting the conservative nature of the estimated emissions used in previous years compared to actual emissions, which are calculated using contractor reported data that is now required for all capital projects. Construction emissions reporting has been incorporated into construction project specifications. Additionally, strategies for improving data collection for solid waste, water, and wastewater are being explored and developed by the CAP Implementation Working Group for inclusion in future GHG inventories. Incorporation of the updated data for employee commutes and construction decreased the total estimated Scope 3 emissions and increased the share (percentage) of solid waste, water, and wastewater emissions relative to the updated Scope 3 emissions total.

Metropolitan continues to make progress on implementing Scope 3 GHG reduction measures as outlined in the Scope 3 Implementation Progress section, even when progress on these measures cannot yet be quantified or tracked. In 2022, the largest share of Scope 3 emissions was from employee commutes at approximately 51 percent, followed by solid waste at approximately 26 percent, then construction emissions at approximately 23 percent, and water/wastewater at approximately 1 percent. Figure 6 illustrates the breakdown of Scope 3 emissions by source.¹⁰

Figure 6. 2022 Average Scope 3 Emissions by Source (MT CO₂e)

Employee Commute (51%) Solid Waste (26%) Construction (23%)
Water/Wastewater (1%)



8. The 2021 emissions for employee commutes were taken from the CAP average that has been used when more recent data is not available.

9. The 2021 emissions for construction projects were taken from the CAP average that has been used when more recent data is not available.

10. Percentages do not sum to 100 percent due to rounding to the nearest whole number.

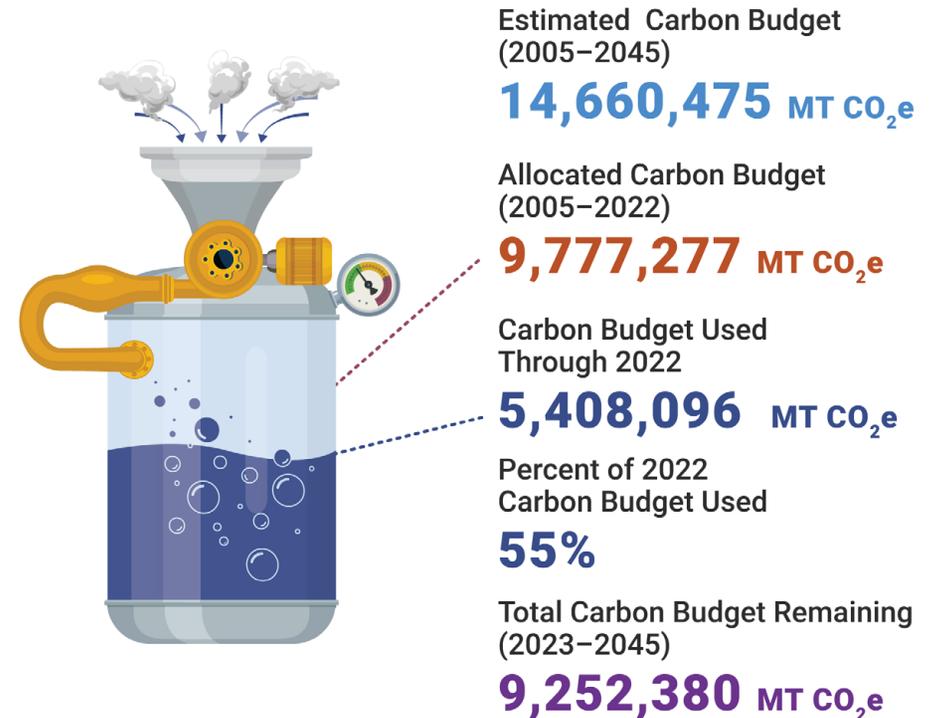
Carbon Budget Update

Metropolitan’s carbon budget is analogous to a tank with a set capacity for, or a cap on, the total mass emissions Metropolitan can produce between 2005 and 2045. The total capacity has been set based on Metropolitan’s historical emissions, forecasted emissions, and GHG reduction targets, which are consistent with state goals. Metropolitan’s GHG reduction targets align with the state goals outlined in Senate Bill 32, requiring GHG reductions of at least 40 percent below 1990 levels by 2030, and Assembly Bill 1279, mandating carbon neutrality as soon as possible, but no later than 2045.

All GHG emissions from Metropolitan’s operations recorded in the annual GHG inventories are added into the tank each year. The total capacity of the tank represents Metropolitan’s total emissions budget, and over time that tank fills up. If Metropolitan produces fewer GHG emissions than can fit in the tank by its target years of 2030 and 2045, and achieves carbon neutrality by 2045, the GHG reduction targets will be achieved, regardless of emissions produced during any one year. To assess progress, Metropolitan will add its annual operational emissions to the total emitted in prior years, comparing the total GHGs emitted to the remaining budgeted amount.

As summarized in Figure 7, the amount of GHG emissions in Metropolitan’s carbon budget between 2005 and 2022 is approximately 9,777,277 MT CO₂e. During this period, Metropolitan emitted approximately 5,408,096 MT CO₂e, representing roughly half (55 percent) of the maximum emissions allowable through 2022. The annual carbon budget for 2022 was 419,572 MT CO₂e, and the total emissions for 2022 was 336,560 MT CO₂e, creating an additional “buffer” of 83,012 MT CO₂e. Remaining well below the budgeted amount year over year means that Metropolitan remains on pace to meet its 2030 GHG reduction goals. Continuing to implement the strategies outlined in the CAP as well as identifying new opportunities to reduce emissions will be important as the annual budget is depleted year after year. **The overall carbon budget has 9,252,380 MT CO₂e remaining for the period of 2023 to 2045.**

Figure 7. Carbon Budget Summary



Because Metropolitan is well under its carbon budget, the CAP is considered on pace for achieving the long term GHG emission reduction goals.

Implementation Progress Through 2023

This section highlights the implementation progress made by Metropolitan through 2023 on the Phase 1 measures outlined in the CAP. Progress reporting is organized by scope, including Scope 1: Direct Emissions, Scope 2: Indirect Emissions, and Scope 3: Other Indirect Emissions. Each measure includes information on its current implementation status, along with a narrative of Metropolitan's progress. The summaries in this section highlight key measures in which progress has been made. For an overview of the implementation status for all CAP measures, see the summary tables in the Appendix.

The following measure-related steps were highlighted as priorities in last year's APR. Brief updates are provided for each measure below. Some measures are covered in greater detail later in this section of the report.

- **Measure AF-3 (Renewable Diesel)** – All accounts that have not switched to renewable diesel will transition to renewable diesel, where available.
 - Significant progress was made on this measure, with all available accounts transitioning to renewable diesel in 2022. As of 2023, 96 percent of mobile diesel use procured was renewable diesel.
- **Measure DC-1 (Natural Gas Inventory)** – Identify cost-effective and efficient replacement options. For example, natural gas-burning HVAC and water heaters can be replaced with heat pumps. After identifying replacement equipment, where available, the next steps include developing a budget and establishing a phased schedule to replace the equipment with electric alternatives by 2025.
 - Progress was made on this measure. Both a draft natural gas phase out plan which identifies types of equipment that can be used for cost-effective replacement of existing natural gas equipment, and a draft Electric-Upon-Replacement policy are under review.
- **Measure E-3 (Switch to Green Energy)** – Continue to identify accounts that can be converted to a green energy portfolio.
 - As of 2022, Metropolitan had switched over the maximum number of retail accounts that green energy providers SCE and Clean Power Alliance had capacity to provide. The number of green energy accounts remains at maximum capacity. Metropolitan will continue to monitor for opportunities to enroll new accounts as opportunities present.
- **Measure E-4 (Battery Electricity Storage System [BESS])** – Ribbon cutting celebration for the completion of the BESS project at the Weymouth WTP in fall/winter 2023.
 - Supply chain issues have continued to delay completion of this project. Completion of the Weymouth BESS is expected in fall 2024.

- **Measure EC-5 (Telecommute at USHQ to Reduce VMT)** – Develop a telecommute tracking program to capture staff commutes to Metropolitan’s Los Angeles-based headquarters building, including telecommuting frequency, mode of public transportation, and mileage to calculate VMT.
 - Significant progress has been made on this measure, with an employee commute survey indicating that telecommuting has surpassed the initial target set and reduced VMT by approximately 9,005,256 VMT per year.
- **Measure FL-1 (ZEV/EV Feasibility Study)** – Identify a schedule, locations for replacement, and which vehicles and associated infrastructure will be replaced.
 - Significant progress has been made on this measure, with the ZEV task force having completed a draft feasibility study, initiated a “try before you buy” effort to evaluate ZEV options, completed a vehicle and power needs inventory and market assessment, initiated a capital improvement program for EV infrastructure, created an online fleet tool to screen ZEV replacement vehicles, purchased 12 EVs in 2023, and proposed over 20 ZEVs for the FY 24/25 operating equipment budget.
- **Measure WA-1 (Scope 3 Emissions Tracking)** – Research, develop, and implement a tracking system to capture the volume of water, wastewater, and solid waste used at occupied facilities.
 - Last year Metropolitan investigated the use of machine learning programs and other potential technological solutions to reduce the significant time and labor costs associated with manually tracking these Scope 3 emissions sources. Multiple meetings with potential software service providers and information technology staff have led to a promising and cost-competitive proposal that is currently under consideration.

Metropolitan continues to benefit from the lower emissions electricity purchased through its wholesale and retail procurement policy. This has reduced overall emissions despite variability in pumping requirements year to year. Initiatives and projects such as the organics waste diversion program at the USHQ office, ZEV task force and electrification effort, telecommute policy, renewable diesel procurement, and turf replacement program are already making positive impacts consistent with Metropolitan’s environmental goals by conserving water, diverting waste, and reducing emissions now while laying the groundwork for steep emissions reductions in the future.





Colorado River Aqueduct shutdown

Scope 1: Direct Emissions Reduction Progress

Scope 1 sources include emissions resulting from direct combustion of fuels used in Metropolitan's fleet vehicles and other stationary equipment as well as natural gas used at Metropolitan's facilities. To further reduce Scope 1 emissions, Metropolitan has begun identifying opportunities for electrification and has shifted to renewable fuels for short-term GHG emissions reductions.

STRATEGY 1: Phase Out Natural Gas Combustion at Facilities

Measure DC-1 Conduct a Natural Gas Audit and Develop a Phase Out Plan.

STATUS:

UNDERWAY



This measure consists of conducting a survey of natural gas consuming equipment in offices, control buildings, and residential structures, and establishing a schedule to replace natural gas equipment with electric equipment by 2025.

The natural gas equipment audit was completed in 2022 and described in the inaugural Progress Report published in April of 2023. Following this effort, Metropolitan proposed a natural gas phase out plan that included guidance on cost-effective and efficient replacement options currently available on the market, considerations when replacing natural gas equipment, and sample language for an “Electric-Upon-Replacement” policy. The natural gas phase out plan is currently under review. The natural gas audit and phase out plan supports Measures DC-2 and DC-3, discussed further below. Metropolitan is working to develop and adopt an electrification first policy as part of the sustainable procurement policies under development, which will prioritize the purchase and installation of electric equipment upon replacement.

Measure DC-2 Reduce Natural Gas Usage by 50 percent by 2030 and 100 percent by 2045.

STATUS:

20%



Measure DC-2 consists of reducing natural gas usage by 50 percent by 2030 and 100 percent by 2045. Despite natural gas equipment remaining in use across many Metropolitan facilities, total MMBtu of natural gas used has decreased overall since the baseline year of 2017 and resulted in a cumulative savings of approximately 10,855 MMBtu, which is 20 percent of the savings target identified in the CAP. This decreased usage is likely due to the retirement of on-site co-generation units. Additional savings will be gained through the phase out of natural gas water heating and HVAC units identified in the natural gas audit.

Measure DC-3 Require New Construction and Retrofits to be All-Electric.

STATUS:

UNDERWAY



Measure DC-3 consists of updates to Metropolitan building standards to require new construction and retrofits to be all-electric, ensuring progress on natural gas reduction continues as new facilities are constructed and existing ones are updated. Metropolitan is currently developing several new policies and standards with an implementation target of 2024.

STRATEGY 2: Zero Emission Vehicle Fleet

Measure FL-1 Conduct a ZEV/EV Feasibility Study.

STATUS:

COMPLETE



This measure consists of conducting a ZEV/EV Feasibility Study to determine which fleet vehicles can be converted, what chargers/fueling stations are required, and where the chargers/fueling stations should be located. The measure also requires the study to address future infrastructure needs to support the transition of Metropolitan vanpool and employee-owned vehicles per measures FL-3 and FL-4. A Draft Feasibility Study was prepared in November 2022 and completed in 2023, though the document remains in draft form. The Draft Feasibility Study provides a roadmap to replace Metropolitan’s mid- and heavy-duty fleet vehicles to comply with the California Air Resources Board Advanced Clean Fleet guidelines. The Draft Feasibility Study also identifies existing fleet vehicles and infrastructure to understand current operations and fleet composition. The next step is to begin preliminary design of required infrastructure to support the transition to an electric fleet.

Measure FL-2 Adopt a ZEV/EV First Policy for Fleet Vehicles.

STATUS:

UNDERWAY



Measure FL-2 directs Metropolitan to develop a ZEV First purchasing policy and implement the fleet transition to ZEV to meet the GHG emissions reduction targets, comply with state regulatory requirements, and maintain system resilience. The ZEV Task Force was implemented in October 2022 to lead coordination and policy development and comprised of employees representing all Metropolitan departments with the background and expertise needed to successfully implement the transition.

SRI, WSO, and the Administrative Services Section completed the “ZEV First Directive,” which governs the purchase of all Metropolitan vehicles. Priority will be given to vehicles with the cleanest emissions that meet operational needs; this means that ZEVs will be selected when they are readily available and meet Metropolitan’s operational requirements, including emergency response needs. If ZEVs are not readily available or operationally feasible, Metropolitan shall next consider near-zero emission vehicles, which include plug-in hybrid and hybrid models. Metropolitan will only consider internal combustion vehicles when zero emission, near-zero, plug-in hybrid, or hybrid vehicles are not operationally feasible. The Directive is currently in review and is expected to be implemented in 2024. See the ZEV Program story in the Staff Awards and Innovations section of this report for additional detail about the progress being made to electrify Metropolitan’s fleet and prepare the necessary infrastructure to support the fleet transition. See the **ZEV Program** story in the **Staff Awards and Innovations** section of this report for additional detail about the progress being made to electrify Metropolitan’s fleet and prepare the necessary infrastructure to support the fleet transition.

STRATEGY 3: Use Alternative Fuels to Bridge the Technology Gap to ZEV Fleet and Equipment

Measure AF-3 Use Renewable Diesel Fuel in 100% of Diesel-Consuming On-Road and Off-Road Vehicles by 2025.

STATUS:

96%



Measure AF-3 directs Metropolitan to utilize renewable diesel for all mobile fuel uses by 2025. Renewable diesel is chemically identical to fossil diesel but is derived from renewable sources such as waste gas and plant or animal fats rather than fossil petroleum. Because the carbon contained in renewable diesel was removed from the atmosphere by the materials used to produce it, it is not contributing additional non-renewable fossil carbon emissions into the atmosphere. Use of renewable diesel is a key interim strategy for reducing combustion emissions before vehicle fleets can be fully electrified. In 2022, renewable diesel comprised 31 percent of total mobile diesel fuel usage (23,523 gallons), up 5 percent from 2021. This number represents the percent progress towards Metropolitan's target of 100 percent renewable diesel use for diesel-consuming mobile equipment. Metropolitan continued to purchase renewable diesel for the fueling depot located at Lake Mathews after the 2021 pilot project, and in February 2023 switched all available fuel contracts to renewable diesel. This resulted in purchases of 71,858 gallons of renewable diesel in 2023, bringing the share of total mobile diesel to approximately 96 percent. This translates into an estimated emissions savings of 717 MT CO₂e relative to using traditional diesel fuel and puts Metropolitan close to achieving the 2025 target. Renewable diesel will continue to be used as a cleaner fuel source until the transition to ZEVs is complete.



Solar panels at Jensen Water Treatment Plant

Scope 2: Indirect Emissions Reduction Progress

Scope 2 or indirect emissions are driven by electricity use at Metropolitan facilities. This category represents the largest emissions source from Metropolitan's operations. Metropolitan has made significant progress in reducing the emissions associated with both retail and wholesale electricity consumption by changing to accounts that prioritize increasingly renewable sources. These changes have continued to keep electricity emissions low, even in high pumping years, such as 2022. In addition, Metropolitan is continuing to reduce electricity demand through efficiency upgrades like light emitting diode (LED) lighting.

STRATEGY 4: Utilize Low-Carbon and Carbon Free Electricity

Measure E-3 Switch Retail Electricity Accounts to Green Tariff Options.

STATUS:

47%



Measure E-3 directs Metropolitan to change its retail electricity accounts (electricity purchased from a utility) from the standard electricity mix to a green tariff option, which includes higher rates of carbon free and renewable electricity. The target for 2025 is to procure at least 88 percent of electricity from carbon free sources.

As of 2022, Metropolitan has converted 456 electricity accounts to carbon free electricity. This included procuring the maximum amount of 100 percent green rate electricity from SCE, which was enough energy to switch over nearly all facilities covered by this energy provider, with the exception of the Skinner WTP. This continues to be the maximum capacity of green energy available from SCE. For Los Angeles Department of Water and Power (LADWP) retail energy accounts, switching to the green rate option could increase electricity costs by upwards of \$1 million dollars annually depending on Metropolitan's water operations. This potential cost makes the switch financially challenging. Therefore, it has not been possible to switch any additional retail accounts to green rate options since 2022. Additional retail accounts will be switched when more green energy capacity is available from SCE and Clean Power Alliance, or when green energy rates from LADWP decrease. In 2022, green energy purchases resulted in over 4 million kWh of carbon free electricity purchased. In total, Metropolitan procured an estimated 41 percent carbon free electricity for its retail accounts, representing 47 percent of the 2025 target.¹¹

“ The energy industry is changing rapidly, and Power Operations and Planning is working to find renewable sources to power the CRA, Metropolitan’s proposed Pure Water Southern California project, and zero emission vehicles efforts. At the same time, we’re working on upgrading our energy infrastructure as we enter our second century of service.”

John Jontry,
Assistant Group Manager – Integrated Operations Planning & Support Services, Water Systems Operations



11. The percent total renewable electricity is estimated using historical electricity procurement data for retail accounts and actual green electricity procurement data from 2022. Total retail procurement data was not available at the time of this report. However, retail electricity does not change significantly year to year.

Measure E-5

Manage Energy Purchases to Ensure Cost-Effective Energy Supply While Achieving Emissions Objectives.

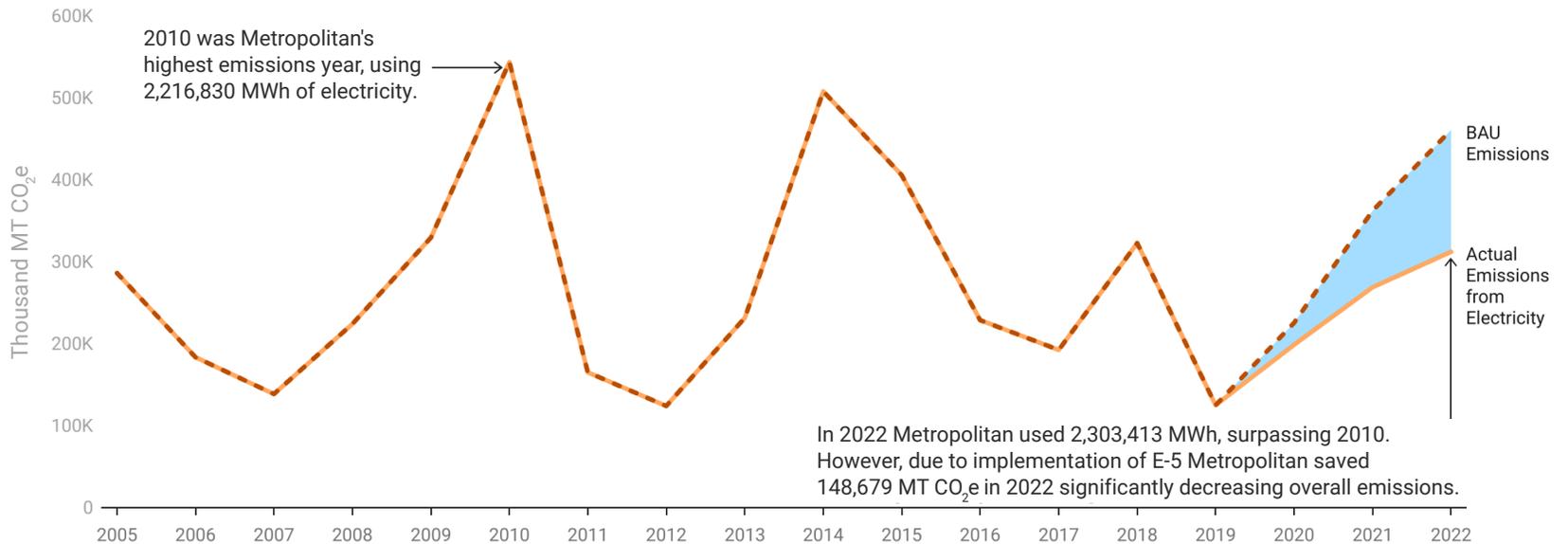
STATUS:¹²

44%



Implementation of this measure began in 2020, including changes to energy procurement policies to reduce reliance on out-of-state electricity from the Arizona New Mexico (AZNM) subregion, which is used to power the pumps along the CRA. This measure also directs Metropolitan to increase the use of energy from the California Independent System Operator (CAISO) subregion, which has a lower GHG emission factor as a result of greater use of renewables compared to the AZNM regional grid. Metropolitan set a goal to save 610,245 MT CO₂e by 2030 through the purchase of electricity from CAISO instead of AZNM. Making this switch reduces emissions during higher pumping years, which is particularly beneficial during periods of prolonged drought when additional pumping is required over numerous years. This benefit is showcased in Figure 8. Emissions associated with CAISO electricity purchases will also likely continue to decrease over time due to Senate Bill 100, which requires 100 percent of electricity retail sales to be sourced from renewable or zero-carbon resources by 2045, and Senate Bill 1020, which sets interim targets for 90 percent of electricity to come from renewable or zero carbon sources of by 2035, followed by 95 percent by 2040, and 100 percent clean energy utilization by 2045. This change in electricity procurement has already reduced Metropolitan emissions associated with electricity purchases by almost 270,000 MT CO₂e between 2020 and 2022, compared to business-as-usual (BAU) emissions if Metropolitan did not make this switch. In addition, decreasing the use of electricity purchased from outside of California reduces Metropolitan's costs associated with California's Cap and Trade program, providing a win/win scenario.

Figure 8. Electricity Emissions Savings from Switching to CAISO from AZNM



12. Updates to the final kWh total purchased from CAISO and the 2022 EPA eGRID emissions factors for AZNM and CAISO used in estimating the emissions savings resulted in a slight reduction in the estimated emissions saved and a 1 percent reduction in the measure's completion status (from 45% complete to 44% complete) for the 2022 data reporting year. 2023 wholesale energy purchase data was not provided in time for inclusion in this report. Inclusion of 2023 wholesale purchase data will result in an increase in total estimated emissions savings and a higher percent complete for the measure.

STRATEGY 5: Improve Energy Efficiency

Measure EE-1 Convert 50 Percent of Interior and Exterior Lighting at All Metropolitan Facilities to LED Technologies by 2030 and 100 Percent by 2045.¹³

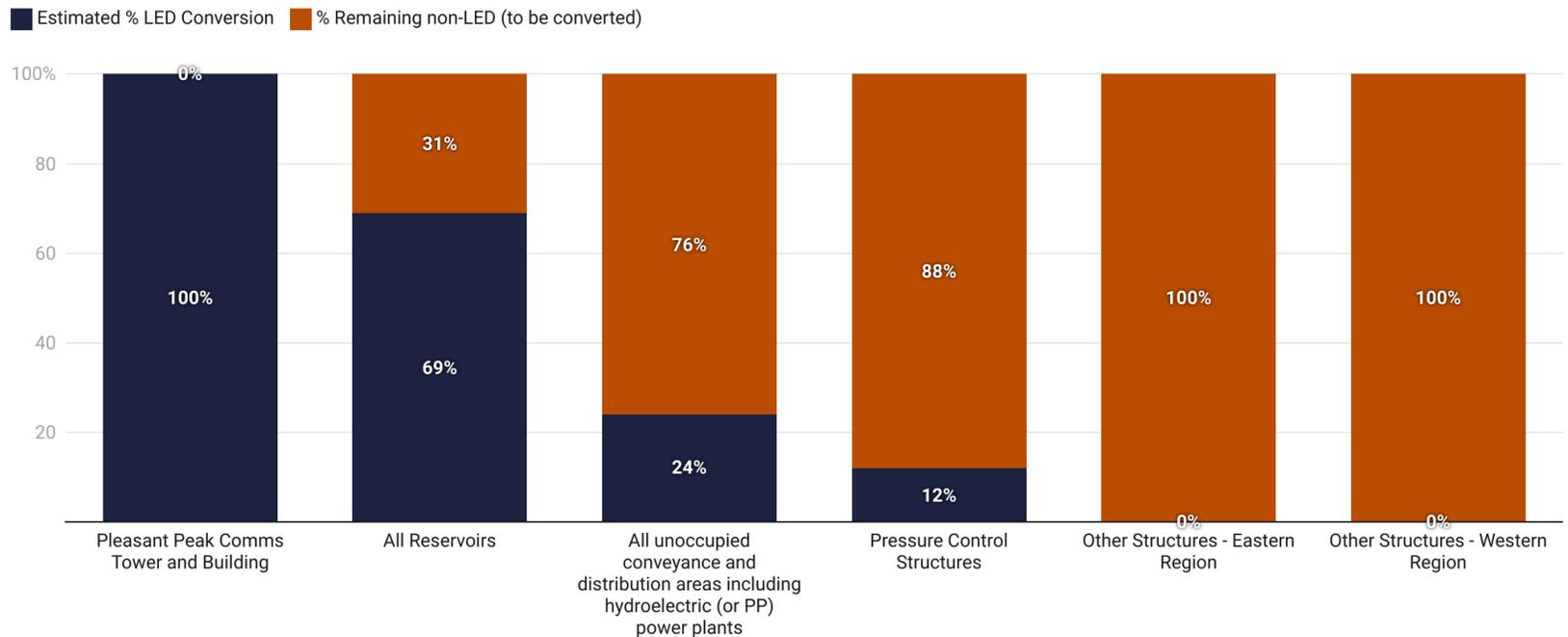
STATUS:

98%

Measure EE-1 directs Metropolitan to convert 50 percent of interior and exterior lighting to LED by 2030 and 100 percent by 2045. As described in the inaugural CAP Progress Report in 2022, staff coordinated with electrical team managers to develop an inventory of lighting converted to LED technology at all occupied facilities and unoccupied field sites, which indicated an estimated 46 percent of lighting had been converted. This year's updated survey indicates an estimated 49 percent of all lighting has been converted to LED, an achievement driven by rapid LED conversion at Metropolitan's water treatment plants and continued LED retrofits resulting in an overall increase of 3 percent over the previous year. The LED retrofits to date are summarized in Figure 9 and Figure 10.

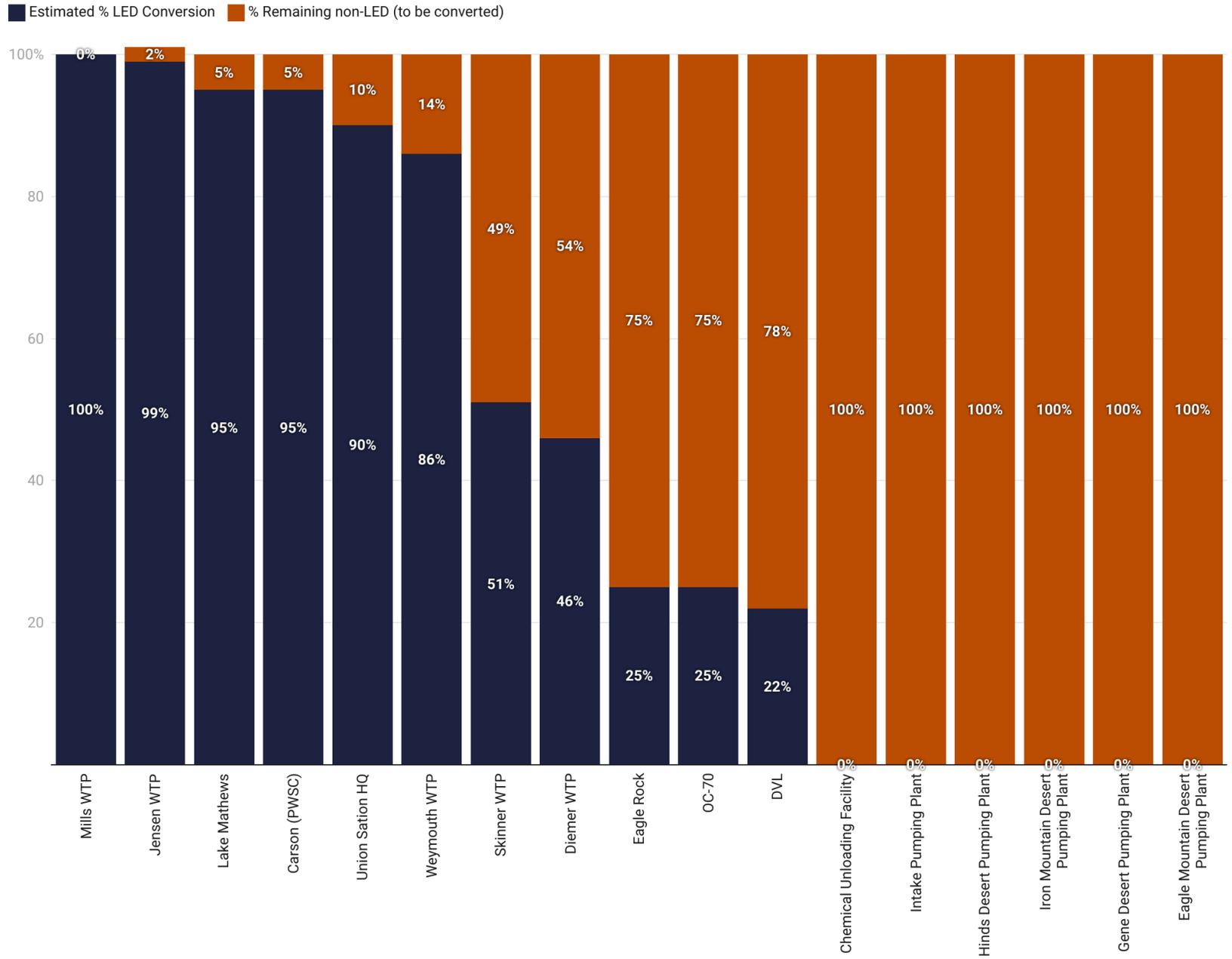
Metropolitan continues to be ahead of schedule for achieving the 2030 target thanks to the support of WSO managers and the staff at Metropolitan facilities. There are plans in place for additional LED conversions at several facilities, expected to be completed between 2023 and 2026, as well as ongoing replacement of older non-LED lighting with LED technology on an as-needed basis at many of the desert facilities and unoccupied field facilities.

Figure 9. Percent Conversion to LED Technology at Unoccupied Facilities



13. The original measure language in the CAP directs Metropolitan to convert all interior and exterior lighting at 50 percent of Metropolitan facilities by 2030 and at 100 percent of facilities by 2045. This assumed that LED conversion would take place at one facility at a time. However, Metropolitan has begun converting lighting to LED technology at many facilities on an ongoing basis. The updated measure language in this report and on the CAP Dash represents the same outcome as the original CAP measure language through a different implementation approach that more accurately reflects Metropolitan's progress.

Figure 10. Percent Conversion to LED Technology at Occupied Facilities





Scope 3: Other Indirect Emissions and Sequestration Progress

Scope 3 emissions sources include other indirect emissions including those from water, wastewater, solid waste, construction, and employee commutes. Metropolitan has made continuous progress on reducing its Scope 3 emissions and is moving to increase the accuracy of its data tracking. In addition, Metropolitan has already exceeded its goals for turf replacement, water conservation and cutting emissions.

Construction on the Second Lower Feeder

STRATEGY 6: Incentivize More Sustainable Commutes

Measure EC-5 Allow 50 Percent of Employees at Headquarters to Telecommute to Reduce VMT and GHG Emissions Through 2030.

STATUS:

116%

Measure EC-5 directs Metropolitan to allow 50 percent of the employees located at its USHQ building to telecommute or utilize flexible schedules through 2030 to reduce travel time, VMT, and GHG emissions.

In early 2021, and in response to the COVID-19 pandemic, Metropolitan initiated a work from home policy and eventually developed a hybrid schedule (2 days in the office, 3 days at home) for employees based at its USHQ building in downtown Los Angeles. This hybrid schedule ultimately exceeded the 50 percent goal in reduction of travel time, VMT, and GHG emissions established by the CAP. In September of 2023, Metropolitan conducted an employee commute survey that allowed for quantification of the VMT and GHG reductions resulting from increases in telecommuting. The reductions were drastic compared to the initial target set since the percentage of telecommute days by employees increased far beyond the initial goal utilized in CAP estimates. The CAP target was to reduce commute VMT by 15,560,094 by 2030. The estimated VMT savings from the current level of telecommuting is 9,005,256 VMT per year. Because this hybrid work approach was also utilized in 2022, the 2023 data was assumed to apply to the 2022 inventory year as well. This results in an estimated cumulative savings of 18,010,512 VMT across both years, surpassing the VMT emissions savings target for 2030. This reduction in VMT translates into an emissions savings of 2,778 MT CO₂e per year, and 5,557 MT CO₂e total savings through 2023.

While Metropolitan is currently using the hybrid schedule, negotiations between Metropolitan and its bargaining units are in progress and the current hybrid schedule is subject to change.

STRATEGY 7: Increase Waste Diversion to Achieve Zero-Waste

Measure WA-1 Develop and Implement Net Zero-Waste Policies and Programs at All Facilities to Reduce Landfilled Waste by 30 Percent by 2030 and Achieve Zero Landfilled Waste by 2045.

STATUS:¹⁴

NO DATA

Metropolitan implemented a waste reduction program at its USHQ building located in downtown Los Angeles. Waste is now separated into organics, compostable, and landfill waste bins and waste pickups are made for each of the three waste streams. Metropolitan has begun tracking the weight of each waste bin before pickup to monitor how much waste is produced and diverted following the waste policy at its headquarters building. Additionally, waste policies at other occupied facilities (i.e., WTPs, desert facilities, Eagle Rock, Chemical Unloading Facility) will be investigated, net zero-waste policies implemented, if necessary, and a tracking system developed to track the volume of waste reduced at each occupied facility. See the **Waste Diversion at Metropolitan's Headquarters** story in the **Staff Awards and Innovations** section of this report for additional details on the terrific work being done to reduce waste at the USHQ building.

¹⁴. Progress on this measure is detailed in the narrative updates provided; however, activity data has not been collected so progress on this measure cannot be quantified at this time.

Measure WA-3

Develop and Implement a Sustainable Procurement Policy.

STATUS:

UNDERWAY



Measure WA-3 consists of the development and implementation of a sustainable procurement policy, which provides guidance on the materials Metropolitan will purchase for its operations, including office supplies, cleaning products, building materials, electronics, and durable goods. The Administrative Services Section and SRI are approximately 60 percent through the process of developing this new Operating Policy G-06 - Sustainable Procurement, and are also revising Metropolitan's existing Operating Policy G-05 - Procurement of Goods and Services, to include Metropolitan-wide sustainable procurement practices. In addition to these policies, practical sustainable procurement resource information will be provided in a new Sustainable Procurement Guidebook and in an update to the Contracting Procedures Manual. Once both are completed, training for employees will be provided on the Sustainable Procurement Guidebook and updated Contracting Procedures Manual.

“ We are committed to advancing Metropolitan's vision of a carbon-neutral future. By investing in clean energy, optimizing our water efficiency, and reducing our greenhouse gas emissions, we are not only saving costs and resources, but also protecting our environment and public health. We are proud to be part of the solution for a more sustainable water sector.”

Heather Collins,
Assistant Group Manager Water Systems Operations - Treatment & Water Quality Group



STRATEGY 8: Increase Water Conservation and Local Water Supply

Measure WC-3

Continue Turf Replacement Program to Install an Average of 1.5 Million Square Feet of Water Efficient Landscapes per Year Through 2030 Through the Use of a Rebate Program.

STATUS:

128%



Metropolitan's goal is to replace an average of 1.5 million square feet of grass with water-efficient landscape per year through 2030 through its turf replacement rebate program. Metropolitan's progress on this measure is a major achievement for water stewardship, as more sustainable, climate-friendly landscapes use significantly less water than turf over the long-term, as well as provide other benefits such as creating important habitat for local wildlife. As shown in Figure 11, Metropolitan removed a total of 39,477,359 square feet of turf between 2017 and 2023, representing an annual average of 5.6 million square feet of turf removed through the rebate program. This number exceeds the 1.5 million-square-foot target by a substantial margin, resulting in larger-than-anticipated water savings. When turf is removed, it results in water savings from reduced watering requirements both in the initial year the turf is removed and every subsequent year. The estimated water savings from turf replacement projects in Metropolitan's service area from 2017 through 2023 is approximately 13,633 acre-feet as shown in Figure 12, which translates to an emissions savings of approximately 1,241 MT CO₂e.¹⁵ This surpasses Metropolitan's target of a cumulative savings of 10,634 acre-feet, by roughly 3,000 acre-feet and putting Metropolitan at 128 percent of its goal.

15. Based on an annual average emissions intensity of 0.091 MT CO₂e per acre-foot delivered.

Figure 11. Square Feet of Turf Replacement

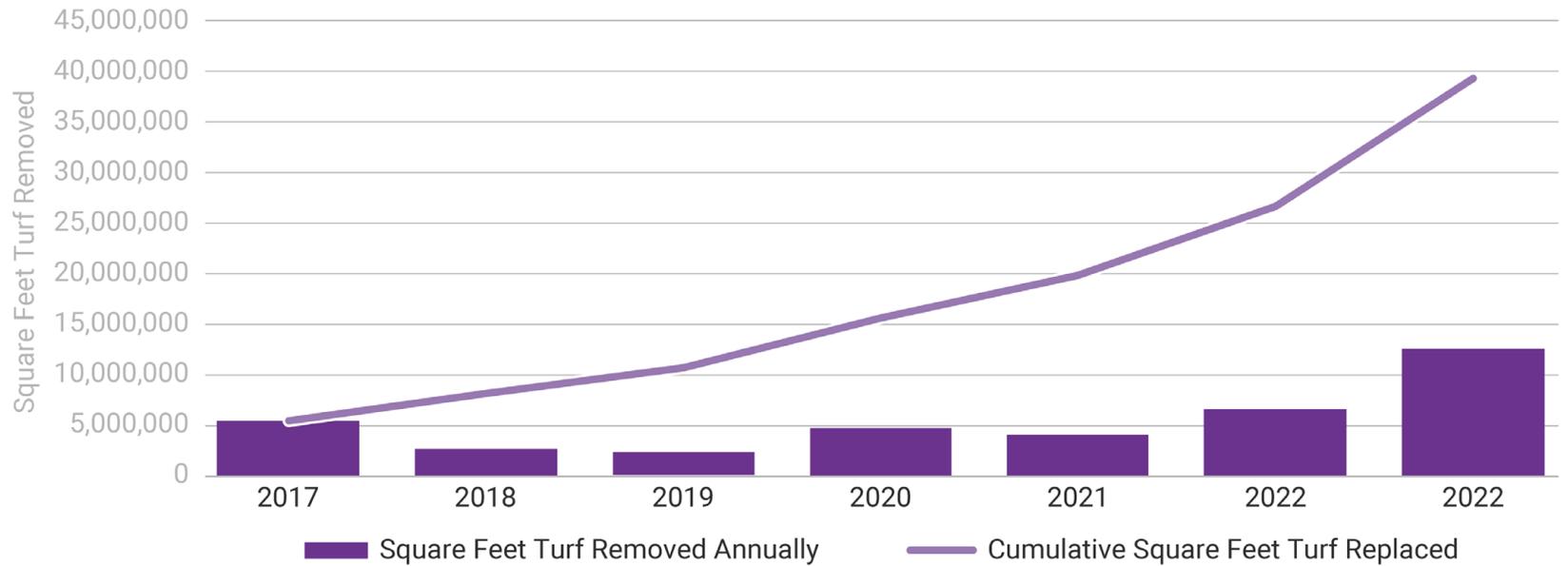
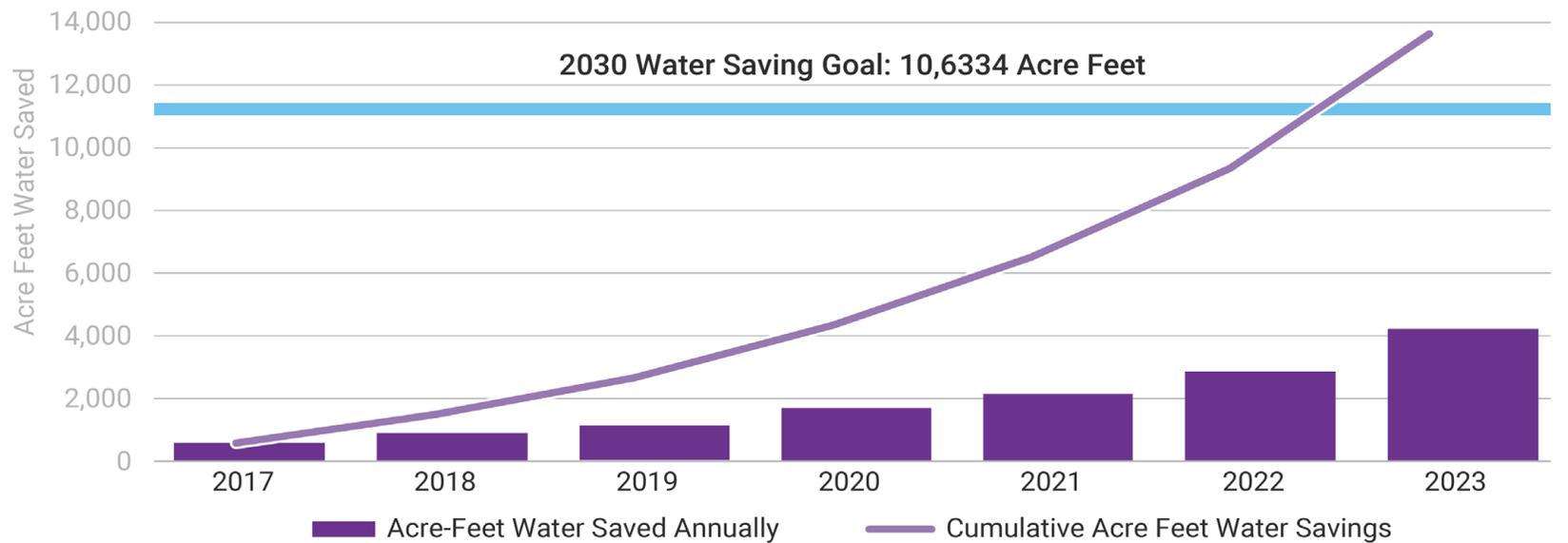


Figure 12. Acre-Feet of Water Savings



Looking Ahead

Metropolitan continues to make progress towards achieving the goals set out in the CAP and further promoting and enhancing sustainability and resilience throughout the organization. Some measures and projects that Metropolitan will prioritize over the next year are highlighted in this section.

Priorities and Projects in the Coming Year

- **Measure EE-1 (LED Lighting Retrofits):** Continue LED Lighting retrofits in non-occupied facilities, pumping plants, desert facilities, and historical fixture bulb swaps.
- **Measure EC-3 (ZEV Infrastructure):** Continue with zero emission infrastructure design and pilot projects.
 - Install six EV chargers, two at each of three Metropolitan facilities, locations are: Union Station, Weymouth WTP, and the desert facilities.
- **Measure E-4 (BESS at Weymouth, Jensen, Skinner WTPs):** Finish construction of BESS at the Weymouth WTP.
- **Measure WA-3 (Sustainable Procurement):** Finalize, adopt, and implement the Sustainable Procurement Policy.
- **Measure DC-1 (Natural Gas Phase Out Plan):** Finalize the natural gas phase out plan and adopt an Electric-Upon-Replacement policy for natural gas equipment.
 - Complete at least 1 HVAC and 1 water heater electrification project
- **Measure DC-3 (All-Electric New Construction):**
 - Finalize and adopt updated construction policies and standards requiring additional electrification of construction vehicles.
 - Finalize and adopt an electrification first policy for new construction.
- **Measure EC-6 (ZEV Procurement):** Continued purchase of ZEVs to further electrify Metropolitan's fleet and reduce mobile emissions.
 - Procure at least 25 fleet ZEVs
- **Clean Energy on the CRA:** Award consultant agreement to evaluate cost and feasibility of renewable energy projects along the CRA. This work builds on a previous effort that identified potential renewable energy development options and locations.
- **CAMP4W:** Continue implementation of the CAMP4W process and use the process to evaluate at least one project in 2024.
- **Envision Certification:** Continue Envision certification of Metropolitan staff to further align CAP goals for sustainability and resilience.

Appendices



Lake Mathews

Supportive Measures - Status Summary Table

Strategy ID	Action #	Strategy Language	Phase	Target Year	Status
Strategy 1	DC-1	Conduct a survey of all natural gas consuming devices in offices, control buildings, and residential structures and establish a schedule to replace natural gas equipment with electric by 2025.	1	2025	Underway
Strategy 1	DC-3	Update Metropolitan building standards to require all-electric construction for new buildings and retrofits.	1	2030	Underway
Strategy 2	FL-1	Conduct a ZEV/EV Feasibility Study to determine which fleet vehicles can be converted, what chargers/fueling stations are required, and where they should be located by the end of 2022.	1	2030	Complete
Strategy 2	FL-2	Adopt an ZEV/EV first policy for fleet vehicles to obtain ZEVs when technological, operational, or cost effectiveness parameters are met.	1	2030	Underway
Strategy 2	FL-3	Replace fossil fuel passenger fleet vehicles as identified in the ZEV/EV Feasibility Study (FL-1).	1	2030	Underway
Strategy 2	FL-4	Install EV charging and/or ZEV infrastructure at facilities pursuant to the findings of the ZEV/EV Feasibility Study (FL-1).	1	2030	Underway
Strategy 3	AF-1	Complete a pilot project on the use of renewable diesel rather than conventional diesel for all stationary equipment by 2025.	1	2025	Complete
Strategy 3	AF-2	Complete a pilot project of renewable diesel use in on-road and off-road vehicles by providing at least one renewable diesel tank at Metropolitan-owned fueling depots in 2021.	1	2021	Complete
Strategy 4	EE-3	Investigate feasibility of a large-scale (100 MW) battery storage system for the CRA.	2	2045	Complete
Strategy 4	E-1	Analyze marginal emissions rates and evaluate the feasibility of shifting energy use to lower emission periods.	1	2030	Ongoing
Strategy 5	EE-4a	Replace pump impellers at the Iron Mountain pumping plant if directed by findings of the pump assessment (Measure EE-2).	2	2045	No Action
Strategy 5	EE-4b	Replace pump impellers at Eagle Mountain or Hinds pumping plants if directed by findings of the pump assessment (Measure EE-2).	2	2045	No Action
Strategy 5	EE-4c	Refurbish motors at Iron Mountain if applicable based on the findings of the pump assessment (Measure EE-2).	2	2045	No Action
Strategy 5	EE-4d	Refurbish motors at Eagle Mountain or Hinds pumping plants if directed by findings of the pump assessment (Measure EE-2).	2	2045	No Action

Strategy ID	Action #	Strategy Language	Phase	Target Year	Status
Strategy 5	EE-2	Continue programs to analyze CRA pump efficiency and replace or refurbish pumps when cost effective.	1	2030	Ongoing
Strategy 5	EE-5	If the proposed RRWP (Pure Water Southern California) is ultimately constructed, install an inter-stage pumping system on the reverse osmosis brine stream to reduce energy use.	2	2045	Underway
Strategy 6	EC-2	Expand employee use of carbon free and low carbon transportation by providing education programs on the benefits of commute options including public transportation, EV/ZEV options, and vanpools.	1	2030	Ongoing
Strategy 6	EC-4	Continue to offer benefits to employees who use alternative modes of transportation (e.g., public transportation, bikes).	1	2030	Ongoing
Strategy 6	EC-6	Replace all Metropolitan vanpool vehicles with ZEVs. Start with a pilot study (Measure FL-1) to evaluate the best approach.	2	2045	Pending
Strategy 6	EC-1	Expand subsidized transit commute program to reduce employee commute miles.	1	2030	Underway
Strategy 7	WA-2	Implement a program to reduce organic waste at Metropolitan's Union Station building. Contract or team with local organizations and waste disposal companies to route organic waste to anaerobic digestion or composting facilities and edible food to food recovery centers.	1	2030	Ongoing
Strategy 7	WA-3	Develop and implement a sustainable procurement policy.	1	2030	Underway
Strategy 7	WA-4	Partner with municipal agencies, like the City of Los Angeles, to create programs that will allow Metropolitan to provide its fair share of diversion and help local jurisdictions meet the goals of SB 1383 for organics diversion, including food waste and composting.	2	2045	Underway
Strategy 8	WC-1	Expand programs that educate customers on water conservation initiatives through workshops and speaking engagements.	1	2030	Ongoing
Strategy 8	WC-2	Continue to implement innovative water use efficiency programs.	1	2030	Ongoing
Strategy 8	WC-4	Provide funding for the development and monitoring of local stormwater recharge and use projects to evaluate the water supply benefit of stormwater.	1	2030	Ongoing
Strategy 8	WC-5	Continue to promote water efficiency technologies and innovative practices that can be adopted into future water conservation program updates.	1	2030	Ongoing

Strategy ID	Action #	Strategy Language	Phase	Target Year	Status
Strategy 8	CS-3	Establish baseline soil carbon quantities through science-based approaches then develop pilot projects to enhance carbon sequestration and implement larger scale carbon sequestration projects as deemed feasible.	2	2045	Underway
Strategy 8	WC-6	Implement advanced technology systems to increase Metropolitan owned recycled and groundwater recovery systems to maintain local water supply (e.g., proposed RRWP).	2	2045	Underway
Strategy 9	CS-2	Conduct a five-year research program to increase Metropolitan's knowledge of regenerative agriculture and carbon sequestration opportunities on Metropolitan properties in the Palo Verde Valley.	1	2030	Underway

Quantifiable Measures - Status Summary Table

Strategy ID	Action #	Strategy language	Sector	Metric - Goal	Metric - Unit	Implementation Target Year	% Complete
Strategy 1	DC-2	DC-2: Reduce natural gas emissions by 50 percent by 2030 and 100 percent by 2045 through electrification.	Natural Gas Stationary	53,404	MMBtu	2030	20%
Strategy 3	AF-3	AF-3: Based on the results of the study in AF-2, Metropolitan will begin using renewable diesel fuel in 100 percent of Metropolitan's diesel-consuming on-road and off-road vehicles by 2025.	Diesel Mobile	100	Percent Renewable Diesel	2025	31%
Strategy 4	E-2	E-2: Connect the Yorba Linda Hydroelectric Power Plant behind Metropolitan's SCE electricity meter to directly utilize carbon free electricity at Metropolitan's Diemer WTP by 2025.	Electricity	53,400	MWh	2030	0%
Strategy 4	E-3	E-3: In markets where available, Metropolitan will switch its retail accounts to green tariff options offered by power providers by 2025 to reduce the Scope 2 GHG emissions associated with retail electricity use.	Electricity	88	Percent Renewable Retail Electricity	2025	47%

Strategy ID	Action #	Strategy language	Sector	Metric - Goal	Metric - Unit	Implementation Target Year	% Complete
Strategy 4	E-4	E-4: Install 3.5 MW battery storage systems at the Jensen, Skinner, and Weymouth WTPs. Investigate the use of a software system to track and optimize GHG emissions reduction due to time-of-use strategies by 2025.	Electricity	219	MT CO ₂ e Saved From Battery Arbitrage	2030	0%
Strategy 4	E-5	E-5: Manage Metropolitan's energy purchases to ensure cost-effective energy supply while achieving the required GHG emissions objective. (High emissions scenario)	Electricity	610,245	MT CO ₂ e Saved Compared to Baseline	2030	44%
Strategy 5	EE-1	EE-1: Convert all interior and exterior lighting at 50 percent of Metropolitan facilities to LED technologies by 2030 and 100 percent by 2045.	Electricity	50	Percent of LED retrofits completed	2030	98%
Strategy 6	EC-3	EC-3: Install ZEV and/or EV infrastructure as directed by the ZEV/EV Feasibility Study to support at least a 15 percent transition of employee-owned vehicles to ZEVs/EVs by 2025.	Employee Commute	15%	Percent of EV's in Commuter Fleet	2025	66.0%
Strategy 6	EC-5	EC-5: Allow 50 percent of employees located at Metropolitan's headquarters to telecommute or utilize flexible schedules through 2030 to reduce travel time, vehicle miles traveled (VMT), and GHG emissions.	Employee Commute	15,560,094	Reduced Commuter VMT	2030	116%
Strategy 7	WA-1	WA-1: Develop and implement net zero-waste policies and programs at all facilities to reduce landfilled waste by 30 percent by 2030 and achieve zero landfilled waste by 2045.	Solid Waste	22,143	Tons	2030	No Data
Strategy 8	WC-3	WC-3: Continue Turf Replacement Program to install an average of 1,500,000 square feet of water efficient landscapes per year through 2030 through the use of a rebate program.	Water Wastewater	10,634	Acre Feet	2030	128%



*THE METROPOLITAN WATER DISTRICT
OF SOUTHERN CALIFORNIA*

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