



The Metropolitan Water District
of Southern California

2022 Climate Action Plan Implementation Progress Report

2021 GHG Inventory and
Implementation Update
Through 2022

Published: April 2023



THE METROPOLITAN WATER DISTRICT
OF SOUTHERN CALIFORNIA

Prepared by:

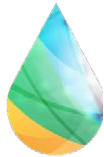
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SUSTAINABILITY
RESILIENCE
INNOVATION



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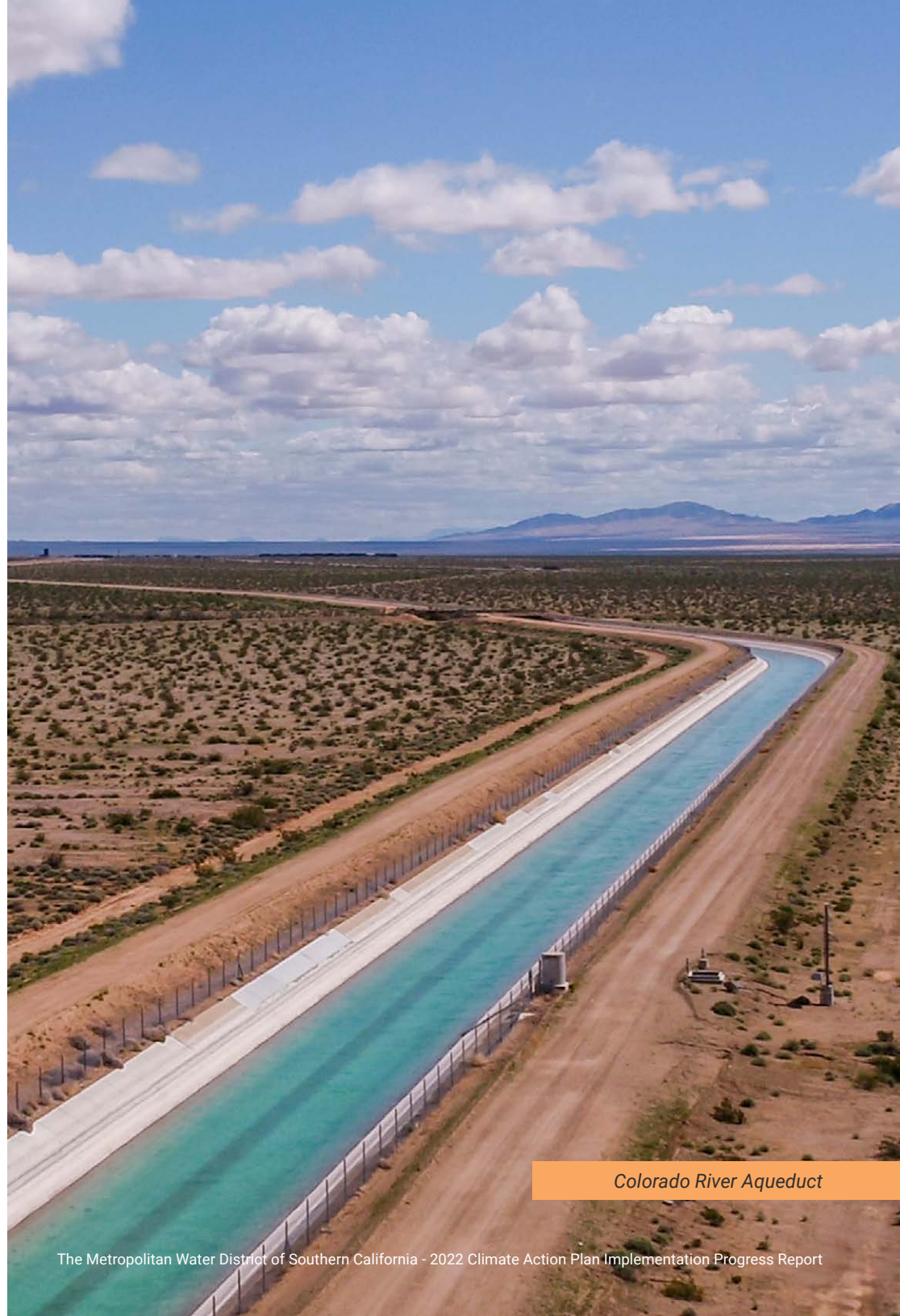
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Report No. 1667

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Colorado River Aqueduct

Acknowledgments

Implementation of the Climate Action Plan and the development of this Annual Progress Report is not possible without the dedication, support and contribution of numerous groups and individuals throughout Metropolitan. Many thanks to the following individuals who participated in the Climate Action Plan Implementation Working Group and those who contributed to the development of the Annual Progress Report.

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Diamond Valley Lake wildflowers

Special Notes About this Year's Annual Progress Report

The Metropolitan Board of Directors adopted its Climate Action Plan in 2022, setting Metropolitan on an ambitious path towards climate leadership in the water utility sector. I am honored to have joined the Metropolitan team last year to help implement the Climate Action Plan with an incredible team of sustainability champions. In this inaugural Annual Progress Report, we lay out our progress to track and reduce greenhouse gas emissions throughout Metropolitan and highlight our efforts to pursue activities through a sustainability and climate lens.

This Climate Action Plan does more than provide a roadmap to climate neutrality in 2045. It represents Metropolitan's commitment to be part of the solution to climate change as it also strives to adapt its planning and operations in a rapidly changing reality. We have a lot of work ahead, but I am confident we are on our way to exceeding our goals in our efforts to empower Metropolitan to deliver its core mission through solutions that benefit people, nature, and the climate.



Liz Crosson

*Chief Sustainability, Resilience
and Innovation Officer*

Introduction

To help guard the region from the impacts of climate change, which are increasingly stressing water supplies across the west, The Metropolitan Water District of Southern California's (Metropolitan) Board of Directors adopted a comprehensive Climate Action Plan (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 greenhouse gas (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 Climate Adaptation Master Plan for Water 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>. To ensure complete transparency about the carbon intensity of water delivered to Southern California from all sources, Metropolitan includes the aggregated emissions on its CAPDash website
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](https://www.mwdh2o.com/media/16848/mwd_esp_report-1630_vol_1.pdf?key%20words=energy%20sustainability%20plan)
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 the implementation of 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), which will feature an overview of Metropolitan's progress to implement 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 APR highlights Metropolitan's achievements since the adoption of the CAP in May 2022 through the end of 2022, and also features the 2021 GHG inventory update. Building on the data that is publicly available via the **CAPDash website**, this APR provides more extensive qualitative background on CAP implementation projects, highlighting Metropolitan's success stories over the past year. This includes the leadership, contributions, and ingenuity demonstrated across Metropolitan in support of CAP implementation, environmental stewardship, and innovation. Metropolitan presents this first 2022 CAP APR to showcase its progress in meeting its GHG emission reduction goals, including achieving carbon neutrality by 2045.



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

Glossary of Terms

AB – Assembly Bill

AEP – Association of Environmental Professionals

AZNM – Arizona New Mexico subregion for electricity production

BDI – Bay Delta Initiatives

BESS – Battery Energy Storage System

CAISO – California Independent System Operator

CAP – Climate Action Plan

CARB – California Air Resources Board

CEQA – California Environmental Quality Act

CRA – Colorado River Aqueduct

EPS – Environmental Planning Section

ESG – Engineering Services Group

GHG – greenhouse gas

GSD – City of Los Angeles General Services Department

HVAC – heating, ventilation, and air conditioning

LADWP – Los Angeles Department of Water and Power

LED – light-emitting diode

LEED-EB – Leadership in Environmental Engineering Design, Existing Building

LRP – Metropolitan’s Local Resources Program

Metropolitan – The Metropolitan Water District of Southern California

MT CO₂e – metric tons of carbon dioxide equivalent

MWh – Megawatt-hour

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.

SRI – Sustainability, Resilience and Innovation

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

TCR – The Climate Registry

USHQ – Union Station Headquarters

VMT – vehicle miles travelled

WSO – Water System Operations

WTP – water treatment plant

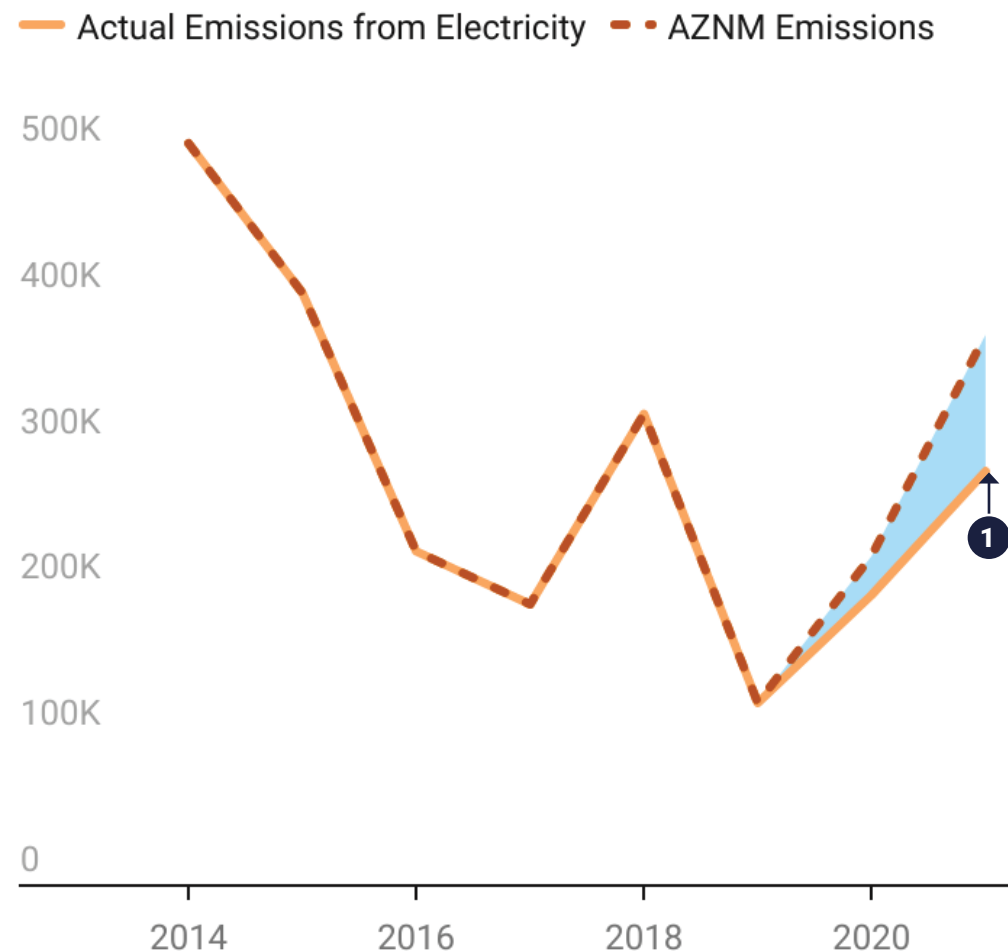
ZEV – zero emission vehicle

Annual Progress Report Snapshot

Metropolitan's CAP identified 42 total measures for reducing Metropolitan's GHG emissions. The measures were divided into two implementation phases, Phase 1 and Phase 2. The intent of the CAP is to achieve the 2030 GHG reduction target and demonstrate substantial progress toward the long-term goal of carbon neutrality by 2045. Phase 1 measures are to be implemented by 2030, to help achieve Metropolitan's 2030 GHG reduction target. 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 quantified. Supportive measures do not directly reduce GHG emissions but they are critical to the overall success of the CAP. These measures include studies which lead to bigger projects, setting up structural support for implementation, and developing collaboration across departments and organizations. This report summarizes the progress made on the 11 quantifiable and 21 supportive measures included in Phase 1. For a summary of the implementation status of all CAP measures, please refer to the two summary tables in the Appendix.

Electricity purchases remain a key driver of Metropolitan emissions, but implementation of Measures E-3 and E-5 relating to energy procurement is decreasing the emissions from this source over time. Figure 1 summarizes the impact of Measure E-5 on Metropolitan's 2021 wholesale electricity emissions during a year with extreme drought conditions that necessitated high CRA pumping.

Figure 1. Electricity Emissions Savings from Switching to CAISO from AZNM (MT CO₂e)



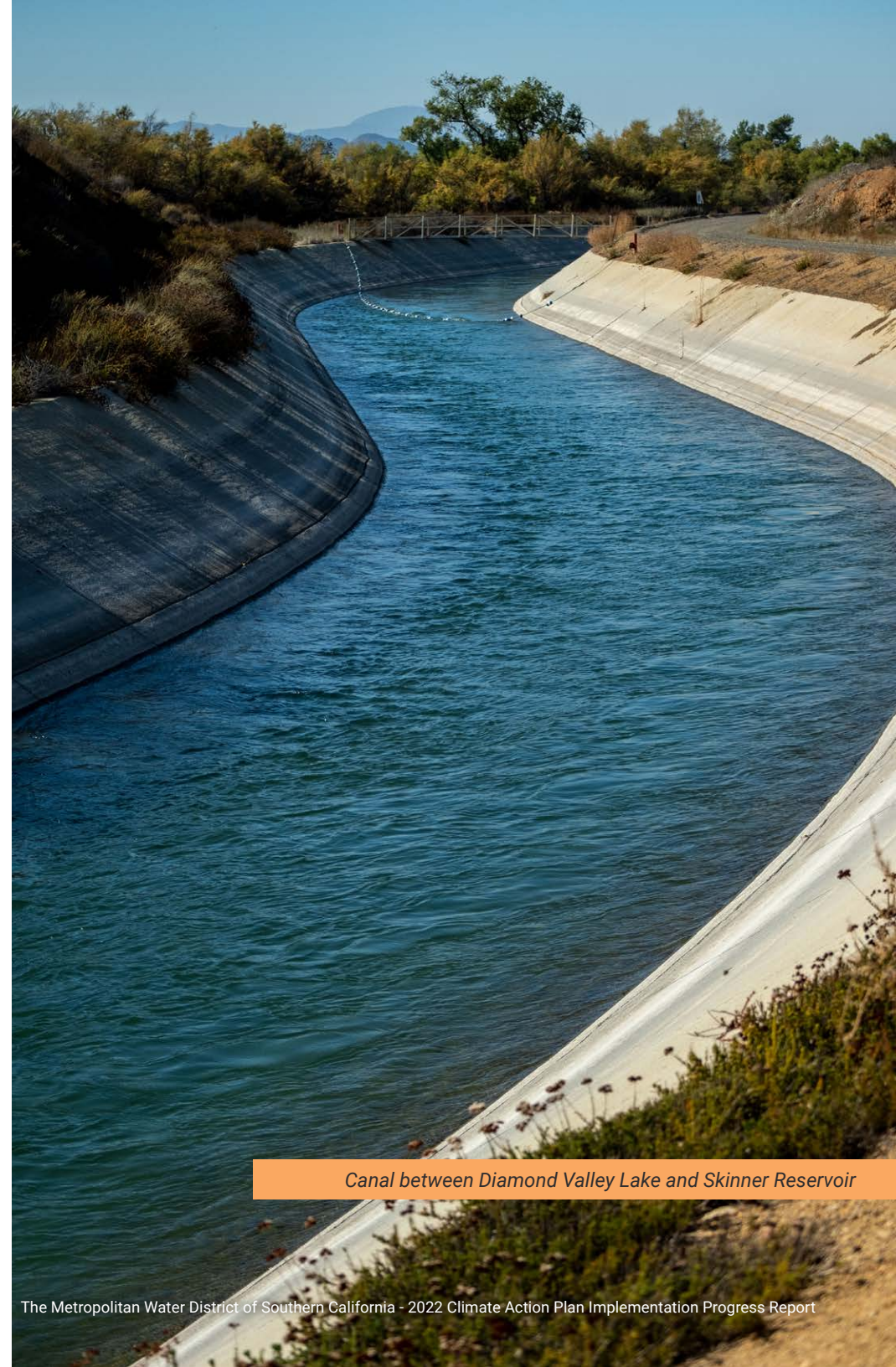
1 By implementing Measure E-5 Metropolitan changed the source of its wholesale electricity from outside California (AZNM) to electricity with a higher renewable percentage. This change resulted in a savings of 93,500 MT CO₂e in 2021 alone.

Annual Progress Report Snapshot

Between adoption of the CAP in May 2022 and the end of the calendar year, Metropolitan made significant strides in implementing the CAP. Figure 2 summarizes the progress made on each of the quantifiable and supportive actions identified in Phase 1 of the CAP. In addition, Metropolitan also made strides by identifying specific teams to implement CAP strategies and developing a reporting process which will streamline future tracking and implementation.

Highlights of Metropolitan's implementation progress include:







- Metropolitan is significantly outperforming the turf removal and water savings targets set in Measure WC-3.
- Metropolitan completed an audit of its natural gas consuming equipment across all its facilities as set in Measure DC-1. The next step will be to develop a plan to electrify them over time.
- Metropolitan is ahead of schedule for achieving the 2030 light-emitting diode (LED) lighting retrofits as set in Measure EE-1.
- Metropolitan formalized a large and experienced team to implement the CAP and other sustainability and resilience goals, including formation of the Sustainability, Resilience and Innovation (SRI) office, CAP Implementation Working Group, Zero Emission Vehicle (ZEV) Task Force, SRI Council, and appointing Liz Crosson as Chief SRI Officer. Many Metropolitan staff have stepped forward to lead initiatives and contribute to implementing a wide variety of projects since CAP adoption.
- Many measures are in progress, and momentum is building for future successes in achieving GHG emissions reductions and Metropolitan's environmental goals.



Canal between Diamond Valley Lake and Skinner Reservoir

Metropolitan has made significant progress on several of its quantifiable and supportive measures in the year since CAP adoption in May 2022. Figure 2 summarizes the progress as of December 2022. 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 2. Measure Implementation Progress

-  **Pending or No Action** = No action has been taken or action is pending due to circumstantial factors.
-  **Underway** = Measure is in progress. Action has been taken but the measure is not yet complete.
-  **Ongoing** = Measure is fully implemented; program or action is ongoing and will continue.
-  **Complete** = Measure is fully implemented. No additional action is required.
-  26% **Quantitative** = Measure has a quantifiable metric to track. Percent value represents progress towards the quantified goal for that measure.
-  **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.

17%



DC-2: Reduce natural gas emissions by 50 percent by 2030 and 100 percent by 2045 through electrification.



DC-3: Update Metropolitan building standards to require all-electric construction for new buildings and retrofits.



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.



FL-2: Adopt an ZEV/EV first policy for fleet vehicles to obtain ZEVs when technological, operational, or cost effectiveness parameters are met.



FL-3: Replace fossil fuel passenger fleet vehicles as identified in the ZEV/EV Feasibility Study (FL-1).



FL-4: Install EV charging and/or ZEV infrastructure at facilities pursuant to the findings of the ZEV/EV Feasibility Study (FL-1).

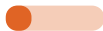


AF-1: Complete a pilot project on the use of renewable diesel rather than conventional diesel for all stationary equipment by 2025.



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.

26%



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 (YLHEP) behind Metropolitan's Southern California Edison (SCE) electricity meter to directly utilize carbon-free electricity at Metropolitan's Diemer facility 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 treatment plants. Investigate the use of a software system to track and optimize GHG emissions reduction due to time-of-use strategies by 2025.

45%

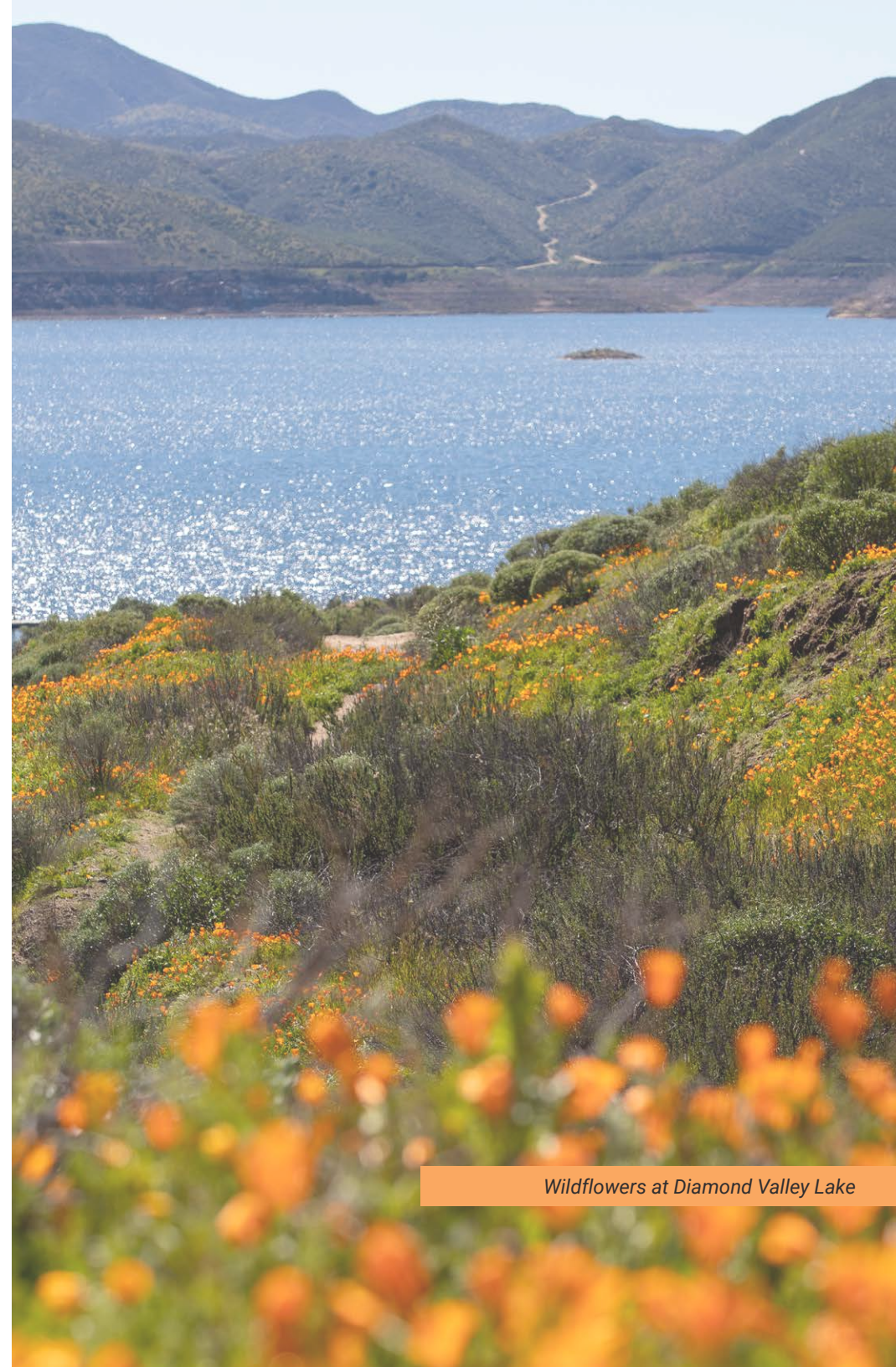
E-5: Manage Metropolitan's energy purchases to ensure cost-effective energy supply while achieving the required GHG emissions objective.

92%

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.



Wildflowers at Diamond Valley Lake

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.

0%

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).

NO DATA

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

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.

88%

WC-3: Continue Turf Removal Program to install an average of 1,500,000 square feet (sq. ft.) 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.

Sustainability and CAP Team Overview

A key step towards meeting Metropolitan's CAP and broader sustainability goals was to dedicate a team to implement the CAP measures. Throughout 2022, Metropolitan created a broad and multidisciplinary team to lead this program, representing leadership from throughout Metropolitan and drawing upon the varied and extensive expertise of Metropolitan staff.



Whitsett Intake Pumping Plant

Sustainability, Resilience and Innovation Office

In March 2022, Metropolitan formed the SRI office and selected its first Chief SRI Officer, Liz Crosson. The SRI Office is tasked with driving innovation and pursuing strategies for addressing environmental sustainability and increasing resilience across Metropolitan and acts as the central hub for sustainability and resilience efforts.



Adrian Hightower

Sustainability & Resilience Manager

WORK AREAS: Sustainability Metrics, Climate Vulnerability



Liz Crosson

Chief Sustainability, Resilience and Innovation Officer



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Senior Admin Analyst

WORK AREAS: Real Property, Carbon Sequestration, Events/Communications



Jennifer Harriger

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Senior Environmental Specialist

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Innovation and Research Manager

WORK AREAS: Innovation, Technology Grants & Research



Lisa Gorman

Senior Resource Specialist

WORK AREAS: Green Procurement, Zero Emission Fleet



Peggy Vogt

Principal Analyst

WORK AREAS: Innovation & Technology



Stephanie Salgado

Admin Analyst

WORK AREAS: Administrative Support & Business Services

CAP Implementation Working Group

Zero Emission Vehicle Task Force

Sustainability, Resilience and Innovation Council

The core CAP Implementation Working Group consists of four key Metropolitan staff with support from Rincon Consultants. In addition to this core team, CAP Implementation Working Group meetings are held monthly and attended by over 30 staff representatives from across Metropolitan to discuss CAP implementation projects and progress. The CAP Implementation Working Group is tasked with overseeing the day-to-day tasks required to move forward the measures and projects identified in the CAP.

In 2022, Metropolitan convened a ZEV Task Force to assess, develop and implement a strategy to transition Metropolitan's vehicle fleet from fossil fuel combustion to ZEV to reduce GHG emissions, help meet Metropolitan's climate goals, comply with state regulatory requirements, and maintain system resilience.

- **Administrative Services Section:**
Cuauhtémoc (Moty) Torres
- **Engineering Services:**
Mike Claisse
- **Finance:**
Sam Smalls
- **Information Technology:**
Brian Brenhaug
- **Real Property:**
Victor Ramirez
- **SRI Office:**
Liz Crosson, Lisa Gorman
- **Water System Operations (WSO):**
Sergio Escalante, Ron Taraporewala, Carol Kaufman, Kiersten Melville, John Poli
- **ZEV Task Force Co-Chairs:**
Liz Crosson and Heather Collins

The SRI Council was developed to oversee all SRI implementation work. SRI Council members are drawn from across Metropolitan and are charged with elevating SRI initiatives within and among Metropolitan departments including Administrative Services, Bay-Delta Resources, Colorado River Resources, Diversity, Equity and Inclusion Office, Engineering Services, Environmental Planning Section, External Affairs, Human Resources, Information Technology, Water Resource Management, Water System Operations and more.

Spotlight on Success

Merit Award: Outstanding Climate Change Document

In 2022, Metropolitan was awarded a Merit Award for Outstanding Climate Change Document from the California Association of Environmental Professionals (AEP), a nonprofit organization committed to improving the processing and implementation of environmental assessment, analysis, public disclosure, and reporting. The award recognizes the CAP for its exceptional work to identify impacts of concern; assess the scale, scope and context of climate disruption; include metrics to track and monitor progress; integrate adaptability and flexibility into implementation plans to adjust in the face of new information and changing conditions; and identify metrics that clearly characterize climate risk including scale and scope of risk, vulnerability and adaptive capacity, and economic impacts.



Malinda Stalvey, CAP Project Manager with the AEP Award for Metropolitan's Climate Action Plan

Ha Nguyen, Climate Registry Award

Metropolitan was awarded the All-Star Level award in 2022 from The Climate Registry (TCR), a non-profit organization founded in 2001 to measure and report GHG emissions from participating agencies and businesses. As the highest-level award, this honor recognizes an agency for its exceptional work to reduce its impact on climate change. Award criteria include reporting and verification of all relevant GHG emission sources and activities to meet TCR's criteria for complete reporting, achieving and disclosing a public GHG reduction goal, and verified/third-party reviewed baseline inventory year.

Metropolitan's CAP relies on the extensive data that Ha Nguyen collects, processes, and submits to TCR. The data collection, consolidation and verification process requires a great deal of coordination, attention to detail and accuracy, ensuring consistency and transparency. The reporting is comprehensive and is verified by an accredited third party. Metropolitan has submitted GHG emissions data annually to TCR since 2010. Over the last 10 years, Metropolitan has received numerous awards and recognition for its exceptional work in this regard, thanks in no small part to the ongoing efforts of Ha Nguyen and her team.



Pictured from left to right: Back row: Mai Hattar, (TCR staff - Rebecca Berg, Dan Krekelberg, Erica Skowron), Jon Chang, John Bednarski, Liz Crosson, John Shamma. Front row: Rosa Lau, Ha Nguyen

Progress on CAP Climate Goals

Metropolitan's CAP established a carbon budget based on achieving 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 must be completed on an annual basis. This section summarizes Metropolitan's 2021 GHG emissions inventory, discusses notable drivers of emissions changes, and provides a carbon budget status update.

Annual GHG Inventories and Carbon Budget Update

During development of the CAP, Metropolitan prepared GHG emissions inventories for activities within its operational boundary for each year 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 2021. The 2021 TCR inventory was prepared in accordance with standard accounting protocols from TCR and the International Council for Local Environmental Initiatives.^{5,6} Emissions are grouped into categories: Scope 1, Scope 2, and Scope 3, as defined by these protocols.

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.

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

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

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. Metropolitan’s organization-wide GHG emissions for 2021 were estimated at 316,719 metric tons of carbon dioxide equivalent (MT CO₂e). Figure 3 details the breakdown of Metropolitan emissions by scope. Table 1 depicts Metropolitan’s GHG emissions across all emissions sources for 2021.

As shown in Figure 3 and Table 1, Metropolitan’s GHG emissions are dominated 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. This distribution of emissions by scope is consistent with all previous years of Metropolitan GHG emissions.

Figure 3. 2021 GHG Emissions by Scope (MT CO₂e)

■ Scope 2 (91%)
 ■ Scope 3 (7%)
 ■ Scope 1 (2%)

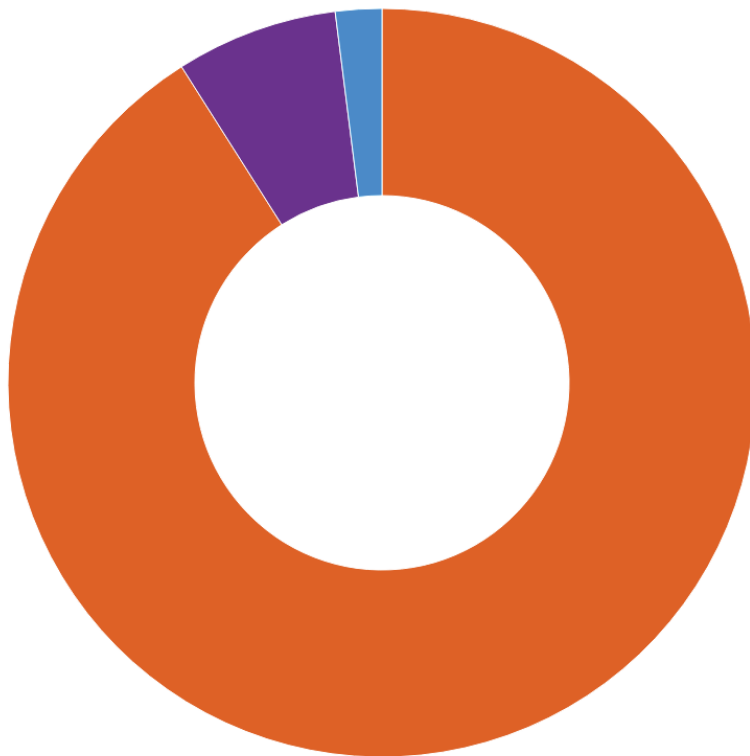


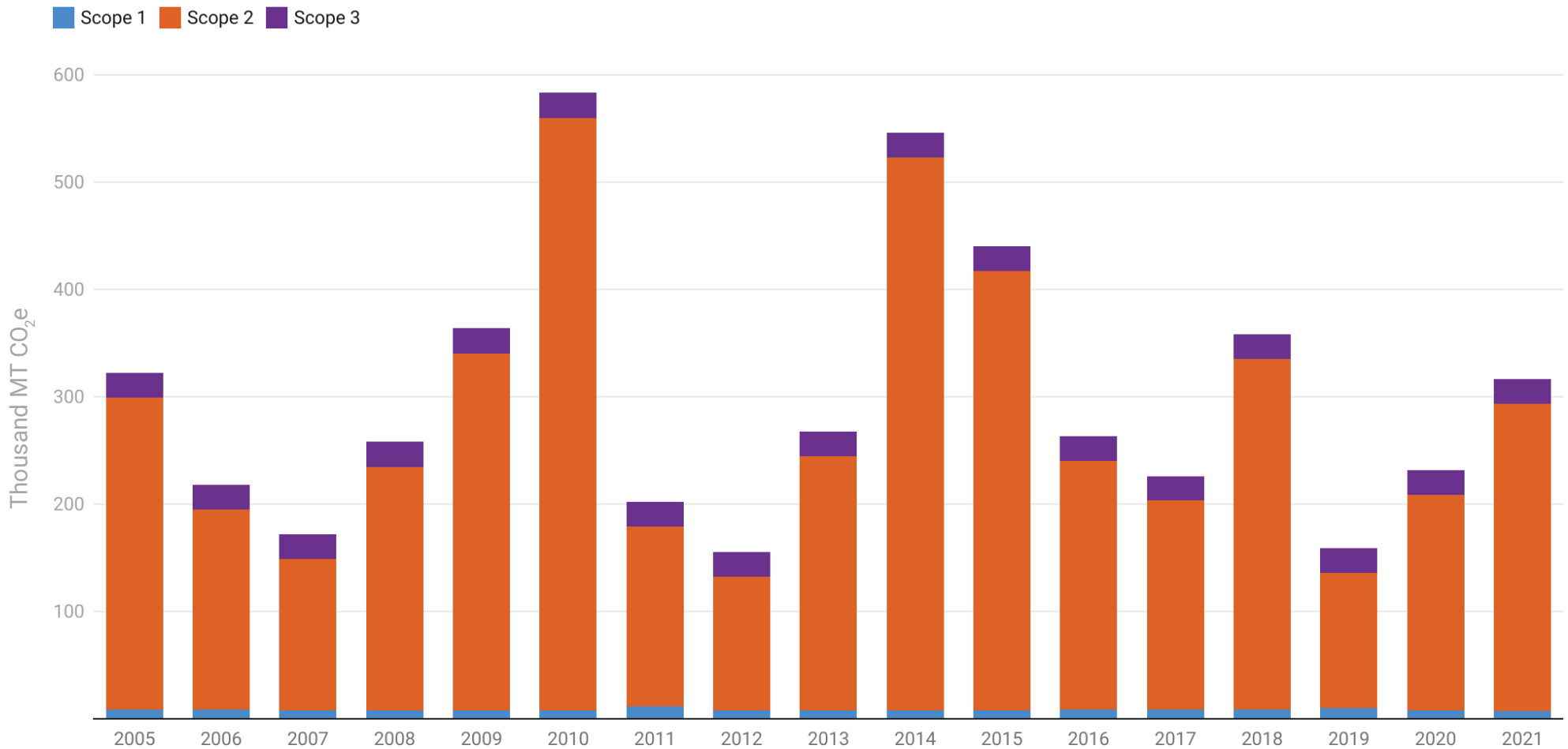
Table 1. Metropolitan 2020 and 2021 GHG Emissions Summary (MT CO₂e)

Scope	Emissions Source	2020 Annual Emissions	2021 Annual Emissions	Change	Percent Change
1	Mobile Emissions	5,706	5,816	110	2%
	Stationary Emissions	1,652	1,184	- 468	-28%
	SF6/HFC Fugitive Emissions	200	63	-137	-68%
2	Electricity	198,819	283,572	84,753	43%
	T&D Losses	2,017	2,896	879	44%
3	All other Indirect Emissions	23,188	23,188	-	0%
Total		231,581	316,719	85,138	37%

Values are rounded to the nearest whole number.

Metropolitan’s GHG emissions fluctuate from year to year largely depending on the amount of electricity it uses to pump water from the CRA, as well as deliveries from the State Water Project. Consequently, GHG emissions recorded in any one particular year are representative of available water supplies, water policy, and the amount of renewable energy available from the electricity grid, in addition to Metropolitan’s progress towards meeting its GHG emissions reduction targets. This relationship between electricity use and annual emissions is clearly visible in Figure 4, below.

Figure 4. Annual Emissions by Scope 2005-2021 (MT CO₂e)



2021 GHG Inventory – Drivers of Change

This section provides more detail on the GHG emissions inventory, as well as notable changes and drivers. Emissions increased by approximately 85,138 MT CO₂e in 2021 compared to 2020. Consistent with trends noted in the previous section, this increase in annual emissions is driven mostly by increased electricity use as a result of increased CRA pumping (Scope 2).

Scope 1: Direct Emissions

Emissions from Combustion and Fugitive Emissions

Metropolitan's Scope 1 emissions comprised approximately 2 percent of total emissions for 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 2021.

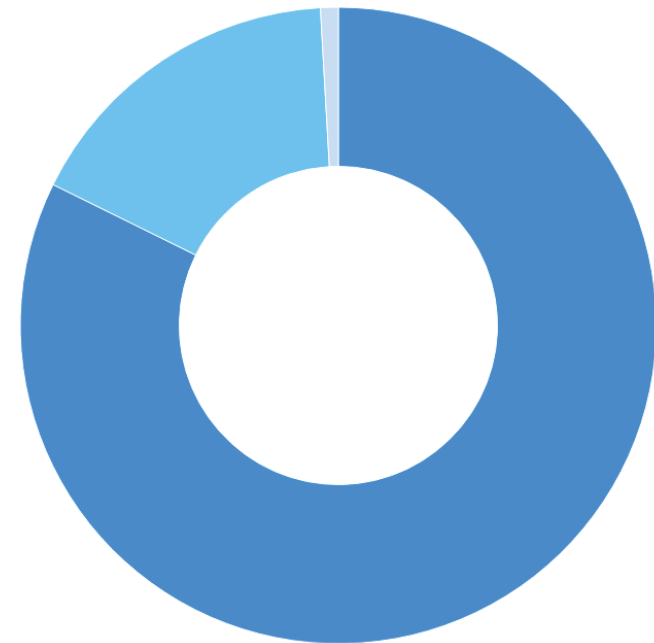
Fossil fuel burning equipment (stationary combustion) in Metropolitan facilities is responsible for the second largest source of Scope 1 emissions, accounting for approximately 17 percent of Scope 1 emissions in 2021.

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 2021, fugitive emissions comprised approximately 1 percent of Metropolitan's Scope 1 emissions.

Scope 1 emissions remained relatively consistent between 2020 and 2021. Figure 5 shows Metropolitan's Scope 1 emissions by source.

Figure 5. 2021 Scope 1 Emissions by Source (MT CO₂e)

■ **Mobile Emissions (82%)** ■ **Stationary Emissions (17%)**
■ **SF₆/HFC Fugitive Emissions (1%)**



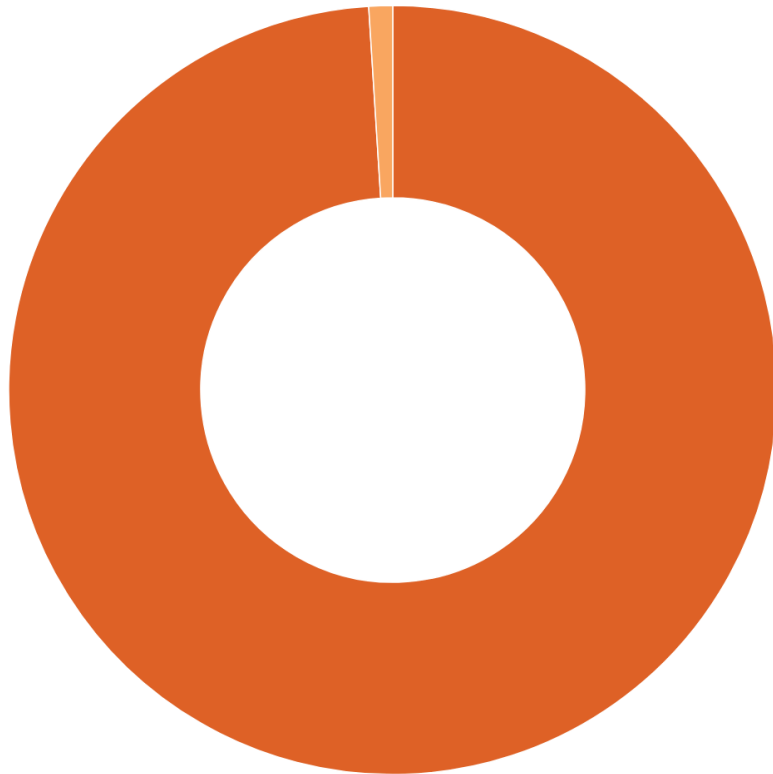
Scope 2: Indirect Emissions

Emissions from Electricity Use

Scope 2 emissions comprised approximately 91 percent of Metropolitan’s total emissions for 2021, with 99 percent of those emissions coming from electricity consumption and 1 percent attributed to transmission and distribution (T&D) losses. This is consistent with Scope 2 emission trends over time. Figure 6 shows Metropolitan’s Scope 2 emissions by source.

Figure 6. 2021 Scope 2 Emissions by Source (MT CO₂e)

■ Electricity (99%) ■ T&D Losses (1%)



Overall electricity use increased by 29% in 2021 to over 2.1 million megawatt-hour (MWh), higher than any time since 2015, and is the fifth highest for any year since 2005. This increase in electricity use was driven by continued drought conditions, which led to lower State Water Project allocations and the requisite need to pump a relatively high amount of water from the CRA. In addition, during high electricity consumption years, the ratio of zero carbon power provided by large hydroelectric to other higher emission energy resources decreases, effectively driving up Metropolitan’s GHG emissions factor and compounding the GHG impacts. However, due to electricity procurement changes 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 were substantially less than other high CRA water years. This electricity procurement change was made prior to the CAP adoption and helped reduce emissions in the 2021 inventory.

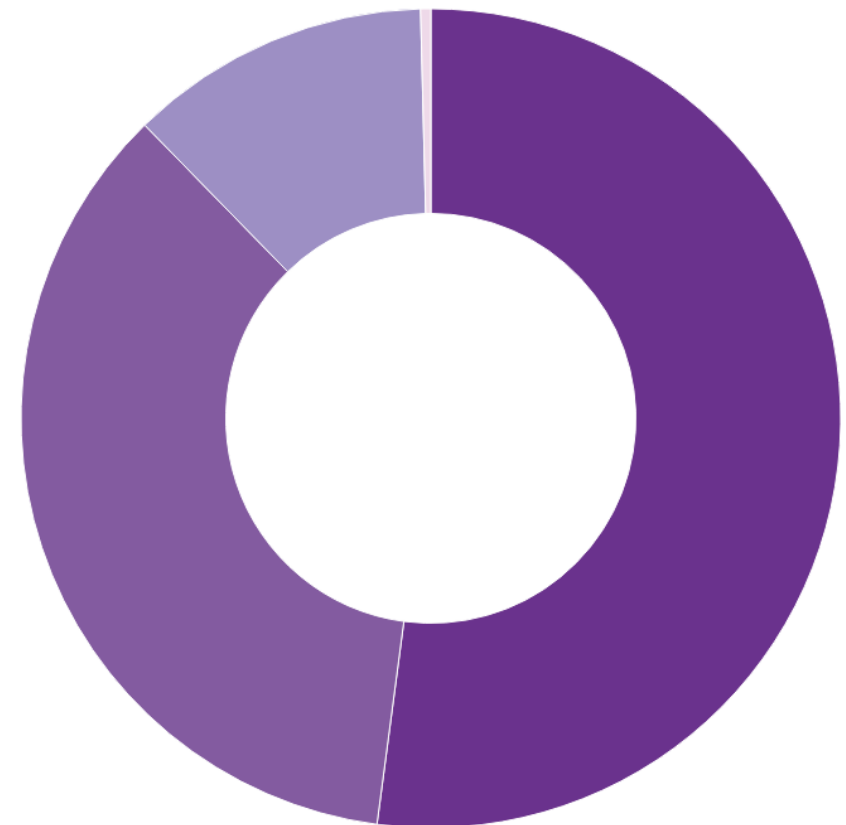
Given that Scope 2 emissions comprise most of Metropolitan’s annual emissions, decreasing and decarbonizing electricity purchased for operations will be the largest contributing factor to reduce Scope 2 emissions and meet Metropolitan’s 2030 and 2045 targets.

Scope 3: Other Indirect Emissions and Sequestration

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

When combined, Scope 3 emissions are the second largest source of emissions for Metropolitan. Collecting data for these emissions requires a large amount of coordination and data collection. Therefore, in 2021 Metropolitan continued to use the average emissions established by the CAP. However, strategies for improving data collection and annual tracking for Scope 3 emissions sources are being developed by the CAP Implementation Working Group for inclusion in future GHG inventories. In addition, Metropolitan continues to make progress on implementing Scope 3 GHG reduction measures as outlined in the Scope 3 Implementation Progress section. The average breakdown of Scope 3 emissions by source is featured in Figure 7.

Figure 7. 2021 Average Scope 3 Emissions by Source (MT CO₂e)



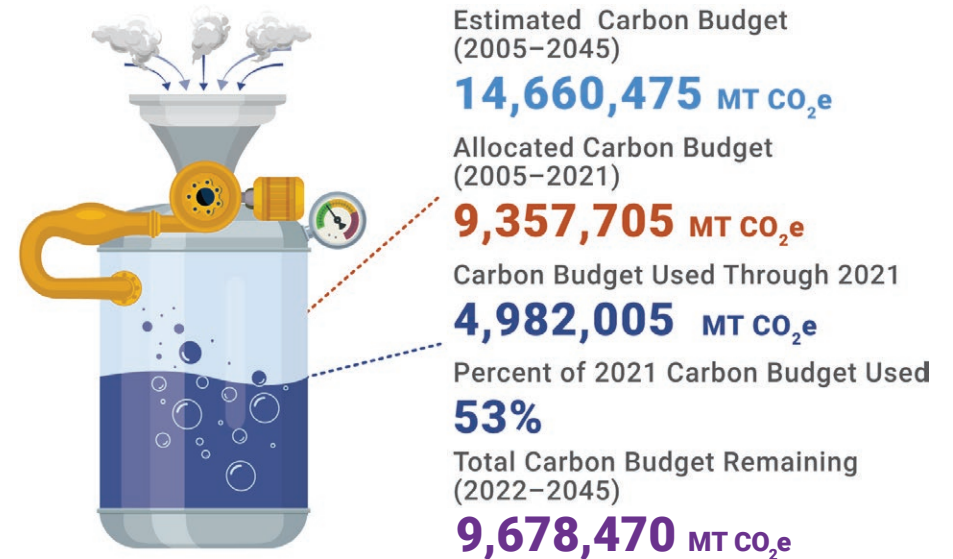
Carbon Budget Update

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. This total capacity is 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 set out in Senate Bill (SB) 32, requiring GHG reductions of at least 40 percent below 1990 levels by 2030, and Assembly Bill (AB) 1279, mandating carbon neutrality by 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 8, the amount of GHG emissions in Metropolitan's carbon budget between 2005 and 2021 is approximately 9,357,705 MT CO₂e. During this period, Metropolitan emitted approximately 4,982,005 MT CO₂e, representing roughly half (53 percent) of the maximum emissions allowable through 2021. Remaining well below the budgeted amount year over year means that Metropolitan is on pace to meet its 2030 GHG reduction goals. Continuing to implement the strategies outlined in the CAP will be important as the annual budget is depleted year after year. The overall carbon budget has 9,678,470 MT CO₂e remaining for the period of 2022 to 2045.

Figure 8. 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 2022

This section provides additional background on key implementation successes achieved through 2022. Progress reporting is organized by scope including Scope 1: Direct Emissions, Scope 2: Indirect Emissions, and Scope 3: Other Indirect Emissions. Each measure highlight includes information on its current implementation status along with a narrative of Metropolitan's progress. The summaries in this section highlight key measures where implementation progress has been made. For an overview of the implementation status for all CAP measures, see the summary tables in the Appendix.

Initiatives and projects such as the turf removal program, LED light conversion, and use of renewable energy are already making positive impacts by conserving water, increasing energy efficiency of operations, and reducing emissions. Additionally, Metropolitan has begun work on and completed many actions that lay the groundwork for the longer term GHG reductions from reduced natural gas usage, electrification of the vehicle fleet, and increased resilience in the years to come. The fast paced and successful implementation of all of these projects and actions is possible because of the dedication, hard work, expertise and contributions of Metropolitan staff.



California wildflowers



Colorado River Aqueduct Maintenance

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 reduce emissions in this scope, Metropolitan has begun identifying opportunities for electrification and has shifted to biofuels for short-term GHG emissions reductions.

STRATEGY 1: Phase Out Natural Gas Combustion at Facilities

Measure DC-1. Conduct a Natural Gas Audit.

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.

A total of 16 WSO managers and 5 treatment plant engineers were contacted to conduct an internal audit of natural gas-consuming equipment. Two training sessions were held in December 2022 (24 attendees) to discuss data collection and the purpose of the natural gas equipment inventory.

The natural gas inventory was completed in February 2023. A summary of natural gas-consuming equipment is included in Table 2, below.

Table 2. Natural Gas Fired Equipment at Metropolitan Facilities

Equipment Type	Number of Units	Average Age of Equipment
Boiler	15	15
Direct-Fired HVAC Units (e.g., Furnaces, Rooftop Units)	64	23
Hot Water Heater (storage)	31	10
Other	96	23
Oven	4	3
Stovetop/Cooktop	6	10
Turbine/Cogeneration Unit	3	19
Mobile Equipment	1	2
Total	220	17

The next step is to begin identifying cost-effective and efficient replacement options. For example, natural gas burning heating, ventilation, and air conditioning (HVAC), and water heaters can be replaced with heat pumps. After identifying replacement equipment, where available, staff will develop a budget and establish a phased schedule to replace the equipment with electric alternatives by 2025. The natural gas audit and phase out plan support Measure DC-2, which consists of reducing natural gas usage by 50 percent by 2030 and 100 percent by 2045. Additionally, Measure DC-3 consists of updates to Metropolitan's building standards to require new construction and retrofits to be all-electric, to ensure that progress on natural gas reduction continues as new facilities are constructed and existing ones are updated.

STRATEGY 2: Zero Emission Vehicle Fleet

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

STATUS:
Underway



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 by the end of 2022. The measure also required the study to address future infrastructure needs for 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 is scheduled for completion in 2023. The Draft Feasibility Study provides a roadmap to replace Metropolitan's mid- and heavy-duty fleet vehicles to comply with California Air Resources Board (CARB) guidelines. The Draft Feasibility Study also identifies existing fleet vehicles and infrastructure to understand current operations and fleet composition. The next step is to develop a vehicle replacement schedule and begin preliminary design of required infrastructure to support the transition.

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 held its first meeting on October 13, 2022. The newly established ZEV Task Force is leading coordination and policy development and is comprised of employees representing all Metropolitan departments with the background and expertise needed to successfully implement this transition.

SRI, WSO, and the Administrative Services Section began development of a draft "ZEV First Directive," which governs the purchase of zero emission sedans, vans, and other modes of on-road transportation with a gross vehicle weight rating of 8,500 pounds or less.

In addition, the Task Force coordinated with the Los Angeles City Mayor's Office and Los Angeles Department of Water and Power (LADWP) for a tour of the LADWP John Ferraro Headquarters fleet charging facilities in November 2022. Metropolitan staff viewed the charging facilities, fleet vehicles and battery storage infrastructure, and obtained information on procurement practices and building of the charging infrastructure. Metropolitan gained valuable knowledge from LADWP's ZEV journey. Additionally, the Mayor's Office and LADWP offered to provide future facility tours as Metropolitan begins transitioning its own fleet to ZEV.

The Task Force also coordinated with the City of Los Angeles General Services Department (GSD) Fleet Services staff to tour its fleet maintenance facility in East Los Angeles on December 15, 2022. SRI, WSO, and Engineering Services Group (ESG) staff had the opportunity to discuss the implementation, use, and maintenance of ZEVs, chargers, and telematics software by GSD. Metropolitan staff also gained valuable information on how GSD plans to expand its electric fleet.

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

Measure AF-2 Complete a Renewable Diesel Pilot Project in On-Road and Off-Road Vehicles.

STATUS:
Complete



Measure AF-2 directs Metropolitan to 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. Metropolitan currently uses a combination of gasoline, diesel, and compressed natural gas to fuel its fleet. Electrification of Metropolitan's fleet is key to decarbonizing Metropolitan's operations; however, electric heavy-duty vehicles are still being developed, and using fuels like renewable diesel can reduce GHG emissions over the short-term before full replacement with electric vehicles is possible. Metropolitan completed a pilot project in 2021 to test the use of renewable diesel at a Metropolitan-owned fueling depot at Lake Mathews.

For the 2021 Lake Mathews Fueling Depot Pilot Project, Metropolitan purchased 21,751 gallons of renewable diesel. This switch in fuel use resulted in an estimated 223 MT CO₂e savings when compared to using traditional diesel fuel.

As part of the pilot project, Metropolitan replaced the diesel fuel in an existing tank at the Lake Mathews facility with renewable diesel. All diesel-consuming vehicles located at the Lake Mathews facility used the renewable diesel and vehicle maintenance was monitored for over one year. Metropolitan found no difference in vehicle operation, consistent with findings from published reports.

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

STATUS:

26%



Renewable diesel comprised 26 percent of total mobile diesel fuel usage in 2021 (21,751 gallons). 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, purchasing 23,523 gallons of renewable diesel in 2022, saving an estimated 250 MT CO₂e relative to using traditional diesel fuel. In February 2023, Metropolitan switched all available fuel contracts to renewable diesel. Renewable diesel is not yet available at Metropolitan's remote desert facilities, but as the fuel becomes available, Metropolitan will switch to renewable diesel at these facilities as well. Renewable diesel will continue to be used as a cleaner fuel source until the transition to ZEVs is complete.



Gene Pumping Plant

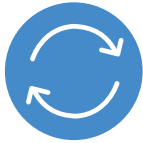
Scope 2: Indirect Emissions Reduction Progress

Scope 2 or indirect emissions are driven by electricity use at Metropolitan facilities and is 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 renewable sources. In addition, Metropolitan is continuing to reduce electricity demand through efficiency upgrades like LED lighting.

STRATEGY 4: Utilize Low-Carbon and Carbon-Free Electricity

Measure E-1: Analyze Marginal Emissions Rates and Evaluate the Feasibility of Shifting Energy Use to Lower Emission Periods.

STATUS:
Ongoing



In California, the GHG emissions associated with electricity can vary greatly throughout the day. During daylight hours, high solar production can drive emissions down to 0.18 MT CO₂e per MWh, while during the evening, when fossil fuel-generated power dominates, emissions can be over 0.30 MT CO₂e per MWh. Metropolitan's Power Operations and Planning Section continually monitors and investigates energy procurement options to ensure the most cost-effective, green energy options available are used.

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 Southern California Edison (SCE), which was enough energy to switch over nearly all facilities covered by this energy provider, with the exception of the Robert A. Skinner Water Treatment Plant (WTP). This translates into over 4 million kWh of carbon-free electricity purchased in 2022. In total, Metropolitan procured an estimated 41 percent carbon-free electricity for its retail accounts, representing 47 percent of the 2025 target.¹

Measure E-4. Install Battery Energy Storage Systems at the Joseph P. Jensen, F.E. Weymouth, and Robert A. Skinner Water Treatment Plants.

STATUS:

0%



This measure consists of installing battery backup power systems at several key facilities to optimize GHG emissions reductions. The battery energy storage system (BESS) facilities will enhance Metropolitan's long-term power use, provide a hedge against projected electricity price increases, and improve the resilience of the electricity supply at these facilities.

The BESS equipment is specifically designed for each treatment plant. All three BESS projects are currently under contract and although construction for these projects were originally estimated to take nine months, supply chain issues have extended the procurement process for the battery storage equipment central to the projects. Given supply chain delays, BESS construction at the Jensen and Skinner WTPs is estimated for completion in early 2025. BESS construction at the Weymouth WTP is scheduled for completion later in 2023.

1. 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:

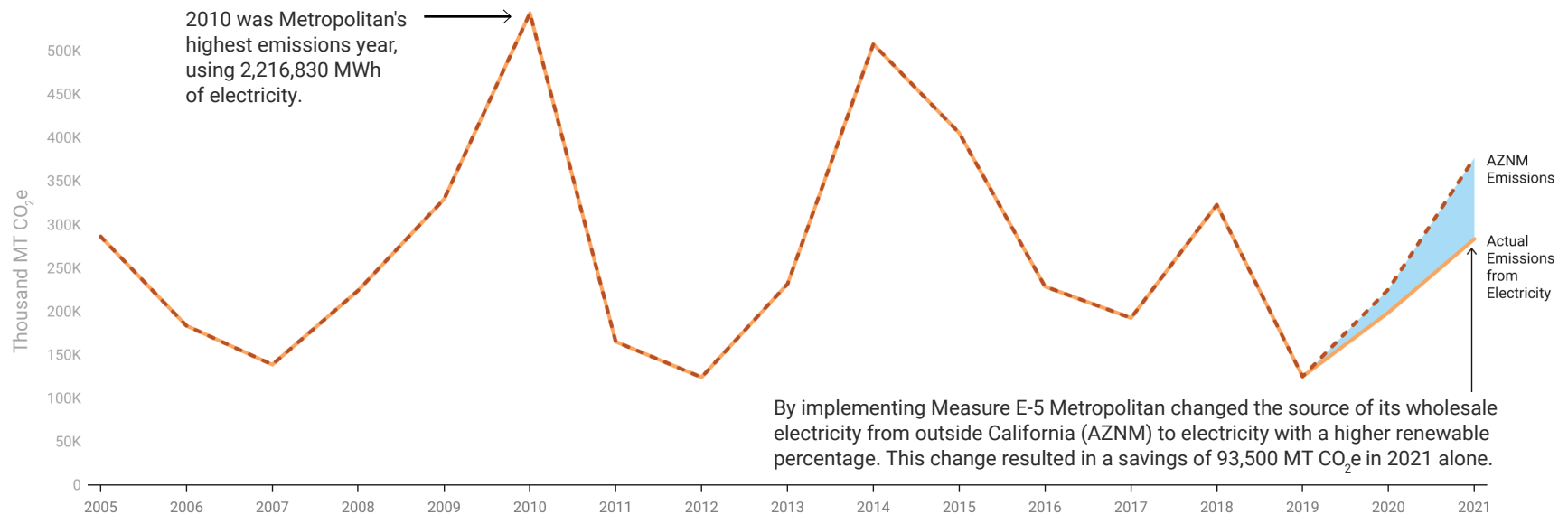
Manage Energy Purchases to Ensure Cost-Effective Energy Supply While Achieving Emissions Objectives.

STATUS:

45%

This measure changes 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. It 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. This benefit is showcased in Figure 9. Emissions associated with CAISO electricity purchases will also likely continue to decrease over time due to SB 100, which requires 100 percent of electricity retail sales to be sourced from renewable or zero-carbon resources by 2045, and SB 1020, which sets interim targets for the percent of electricity from renewable or zero carbon sources of 90 percent 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 275,000 MT CO₂e since 2020. 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 9. Electricity Emissions Savings from Switching to CAISO from AZNM



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 2045.¹

STATUS:

92%

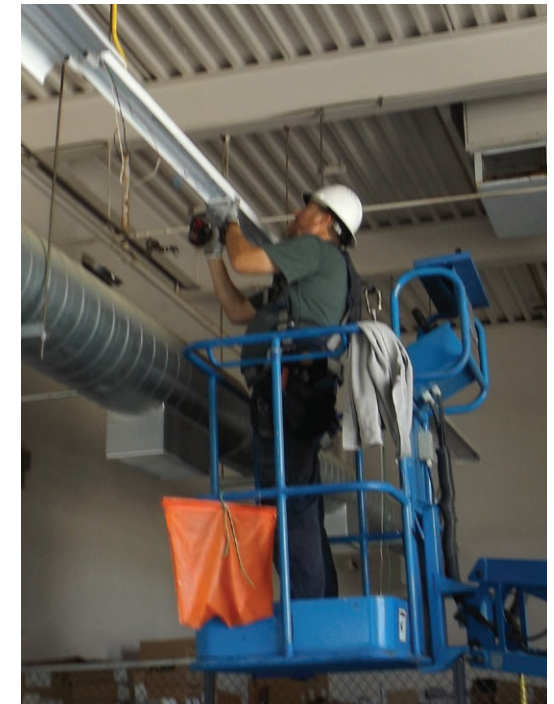
This measure directs Metropolitan to convert 50 percent of interior and exterior lighting to LED by 2030 and 100 percent by 2045. Staff coordinated with electrical team managers to develop an inventory of lighting converted to LED technology at all occupied facilities and unoccupied field sites as of February 2023. The results indicate an estimated 46 percent of all lighting has been converted to LED, an achievement driven by rapid LED conversion at Metropolitan's WTPs. The LED retrofits to date are summarized in Figure 10 and Figure 11.

Metropolitan is 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. In an effort to meet its target, Metropolitan will convert lighting at its WTPs, pumping plants, and field sites. With this initial momentum and progress, Metropolitan is likely to reach its 2045 LED conversion goals ahead of schedule.

PERSONNEL SPOTLIGHT:

Special recognition to Rob Rietveld, Jason Enns, and the team at the Mills WTP (Brandon Buckholtz, Farshid Gohari, Jonathan Holm, Raul Jaramillo, John Myer, Brice Paterson, Justin Pomeroy, Nicholas San Angelo, Braulio Trujillo, Kabel Wallace), the first facility to achieve 100 percent conversion to LED lighting!

Thank you to all the managers, plant specialists, and staff who helped achieve 100 percent compliance at the Mills WTP in such a short period of time.



1. 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

■ Estimated % LED Conversion ■ % Remaining non-LED (to be converted)

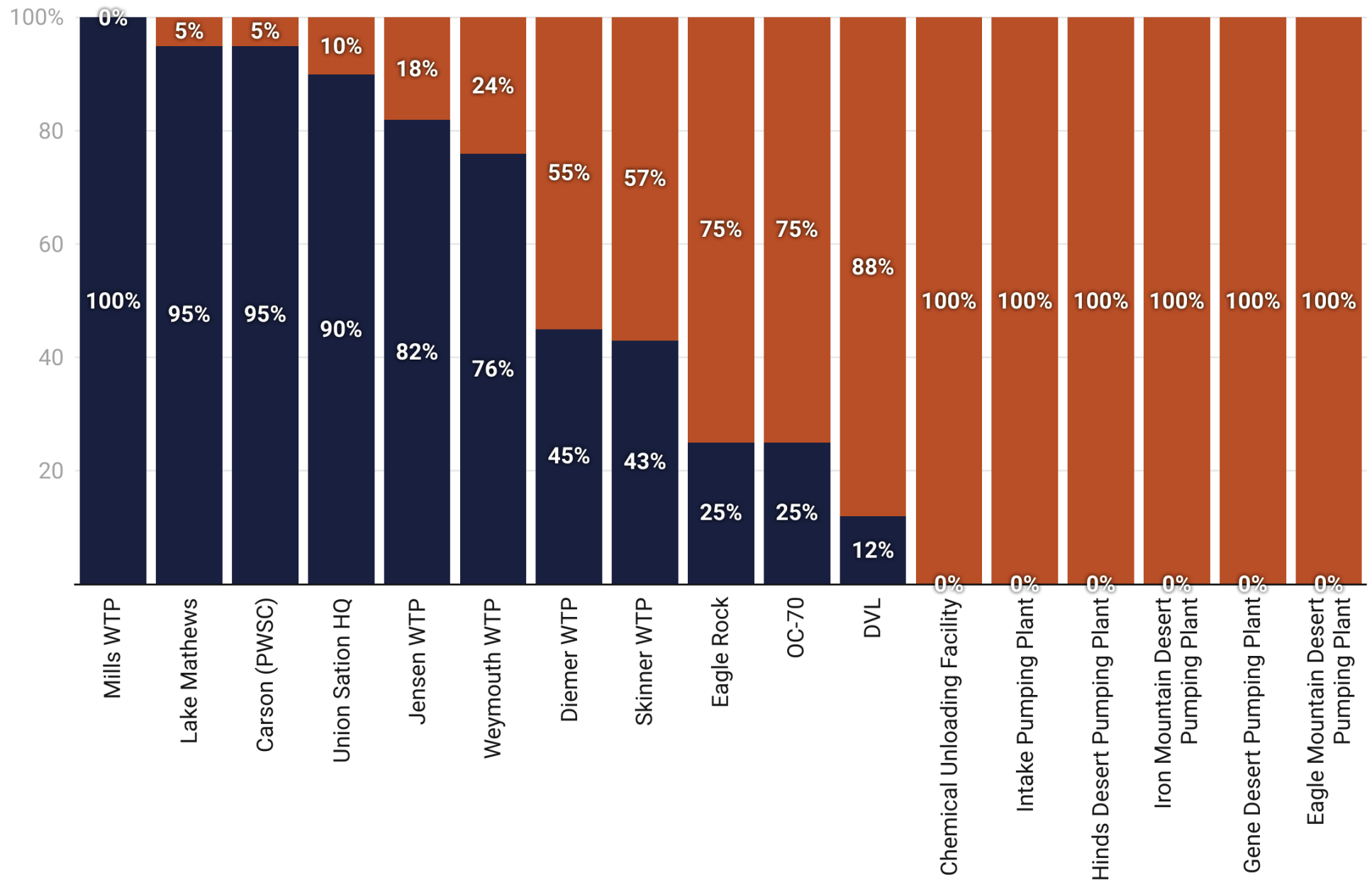
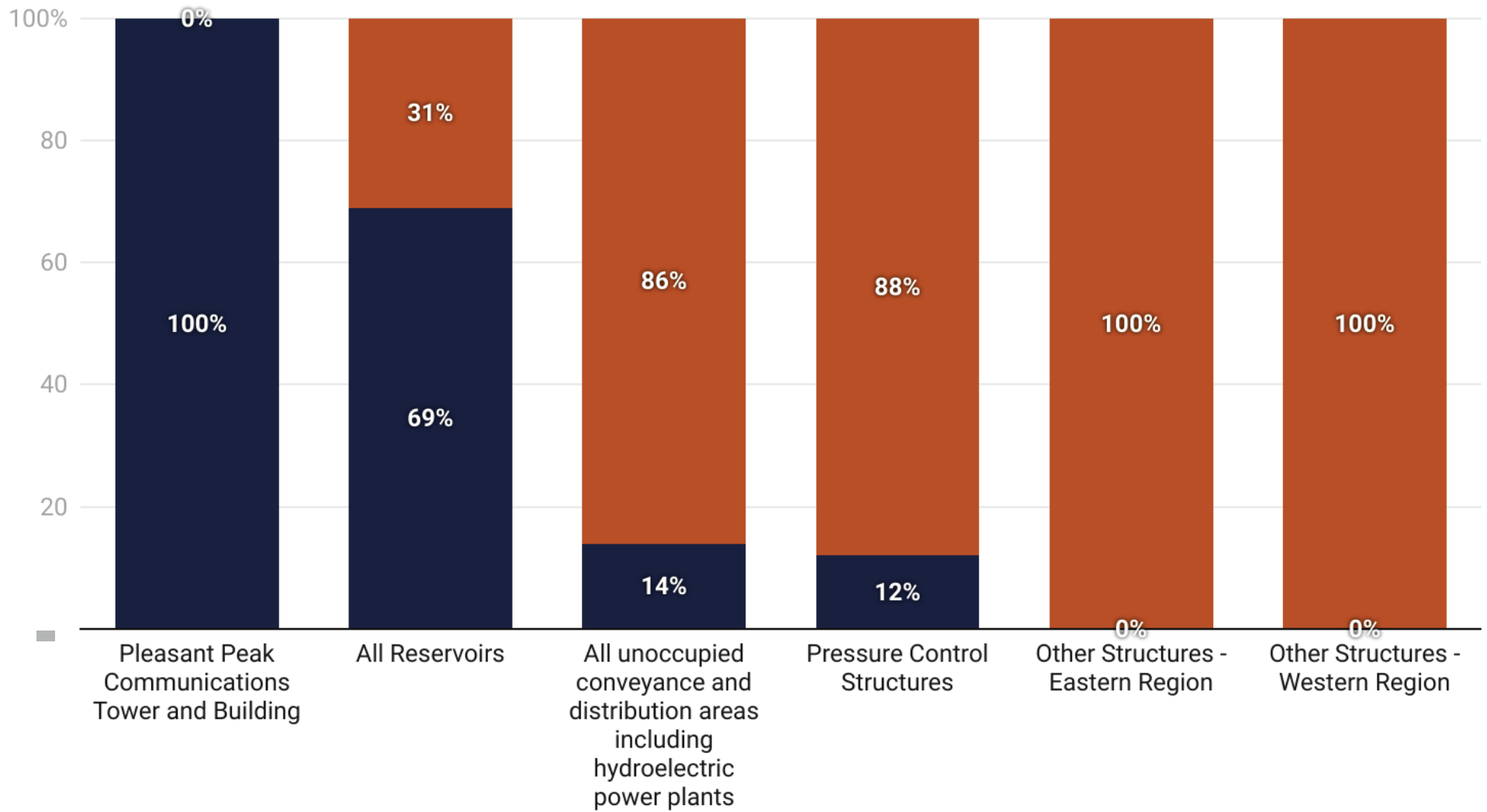


Figure 11. Percent Conversion to LED Technology at Unoccupied Facilities

■ Estimated % LED Conversion ■ % Remaining non-LED (to be converted)





Metropolitan fleet vehicles

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 commute. Metropolitan has made continuous progress on Scope 3 emissions reduction and is moving to increase the accuracy of its data tracking. In addition, Metropolitan has already exceeded its goals for turf removal, increasing water conservation and lowering emissions.

STRATEGY 6: Incentivize More Sustainable Commutes

Measure EC-1. Expand Subsidized Transit Commute Program to Reduce Employee Commute Miles.

STATUS:
Ongoing



Metropolitan has a robust employee commute program that has seen a radical shift in dynamics both during and post-COVID. Many staff are working a hybrid schedule that has shifted how Rideshare programs are utilized. For example, vanpool participation is down due to minimum ridership requirements, but other modes of transportation, such as train and bus travel, have seen an increase in participants. Metropolitan continues to educate and encourage new and existing employees to participate in the many transit programs available at Metropolitan and will continue supporting subsidized transit programs to reduce employee commute miles.

Measure 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, ZEV Options, and Vanpools.

STATUS:
Ongoing



Metropolitan has created an ongoing quarterly newsletter informing staff of the many transit options available to them. Metropolitan also continues to support the transition of employee vehicles to ZEV by providing chargers at its Union Station headquarters (USHQ) building and some field facilities. In addition, the ZEV Task Force is evaluating expansion of chargers at additional facilities.

Measure EC-4. Continue to Offer Benefits to Employees Who Use Alternative Modes of Transportation (e.g., Public Transportation, Bikes).

STATUS:
Ongoing



Metropolitan continues to provide transit subsidies to employees who use alternative modes of transportation. This measure supports the implementation of measure EC-1 by furthering the benefits Metropolitan will provide to employees who use alternative forms of transportation.

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

STATUS:

NO DATA



This measure directs Metropolitan to allow 50 percent of the employees located at USHQ to telecommute or utilize flexible schedules through 2030 to reduce travel time, Vehicle Miles Traveled (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. The hybrid schedule ultimately exceeded the 50 percent goal in reduction of travel time, VMT, and GHG emissions. Metropolitan is in the process of developing a more robust commute tracking program to quantify the benefits of the hybrid schedule and increase the accuracy of the GHG inventory for future years. While Metropolitan is currently still using the hybrid schedule, negotiations between Metropolitan and its bargaining units are in progress and the current hybrid schedule may 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:

NO DATA

Metropolitan's USHQ building was LEED-EB (Leadership in Environmental Engineering Design, Existing Building) Silver certified in 2008 to 2013 for existing building operation and maintenance. As part of the certification process, Metropolitan developed Operating Policy HQ-2, Headquarters Building Sustainability Policy, to monitor and maintain its waste program to continually meet the LEED-EB Silver standard. The Metropolitan USHQ building Facility Operations team has maintained its waste policy and remain committed to new local regulations to ensure continual compliance.

The next step is to implement a tracking system to determine how much waste is produced and diverted following the waste policy at the USHQ 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.

Measure WA-2. Implement a Program to Reduce Organic Waste at Metropolitan's Headquarters 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.

STATUS:
Ongoing



On November 16, 2021, the Los Angeles County Board of Supervisors adopted the Mandatory Organic Waste Disposal Reduction Ordinance to promote the diversion of organic waste and edible food from landfills and reduce methane emissions that exacerbate climate change. The ordinance is also required per SB 1383, which states that 20 percent of organics be diverted from landfills. Metropolitan's USHQ building, located within Los Angeles County, complies with the Ordinance as of 2022. The organics waste recycling is continuous and ongoing.

Measure WA-3.

Develop and Implement a Sustainable Procurement Policy.

STATUS:
Underway



This measure 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, SRI, and Metropolitan's Risk Manager are in the process of revising Metropolitan's G-05, Operating Policy for Procurement of Goods and Services, and the Metropolitan Contracting Procedures Manual, to include Metropolitan-wide sustainable procurement practices. Improvements to these policies that help reduce GHG emissions are expected in 2023.

STRATEGY 8: Increase Water Conservation and Local Water Supply

Measure WC-2.

Continue to Implement Innovative Water Efficiency Programs.

STATUS:
Ongoing



Metropolitan's Local Resources Program (LRP) provides incentives for member and local agencies to develop new local supply projects, such as water recycling and groundwater recovery. Metropolitan's LRP has provided financial assistance to more than 100 projects across Southern California, producing over 1.3 trillion gallons of recycled water and recovered groundwater. In addition to the LRP, Metropolitan supports innovation through a number of incentive programs, including the Innovative Conservation Program that offers competitive grant funding to evaluate water savings and reliability of devices, technologies and strategies; the Water Savings Incentive Program, which supports innovative conservation efforts in business through a regional pay-for-performance initiative that focuses on water-use efficiency within Metropolitan's service area; and the Residential and Commercial Rebate Program that provides both residential and commercial rebates for water-saving- devices like high-efficiency clothes washers and low-flush toilets.

Measure WC-3.

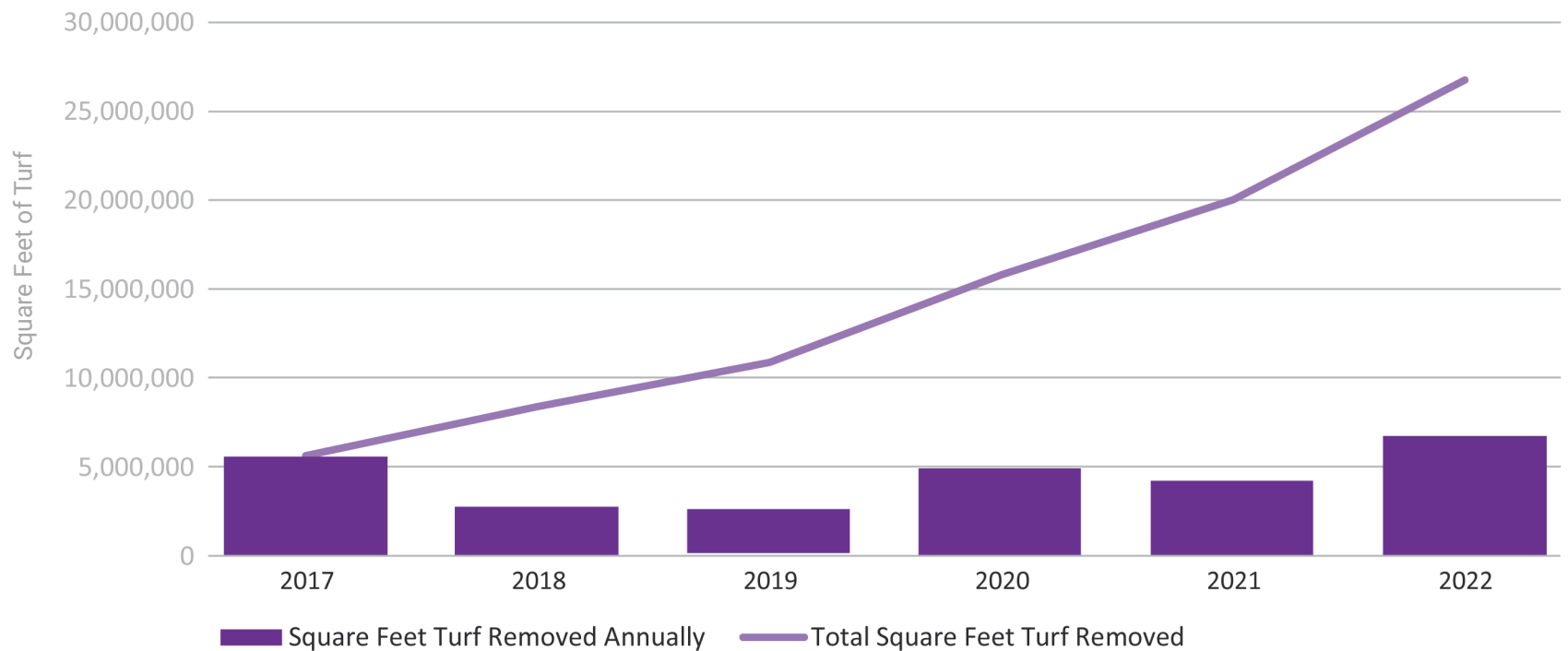
Continue Turf Removal Program to Install an Average of 1.5 Million Square Feet of Water Efficient Landscapes per Year Through 2030 Through the Use of a Rebate Program.

STATUS:

88%

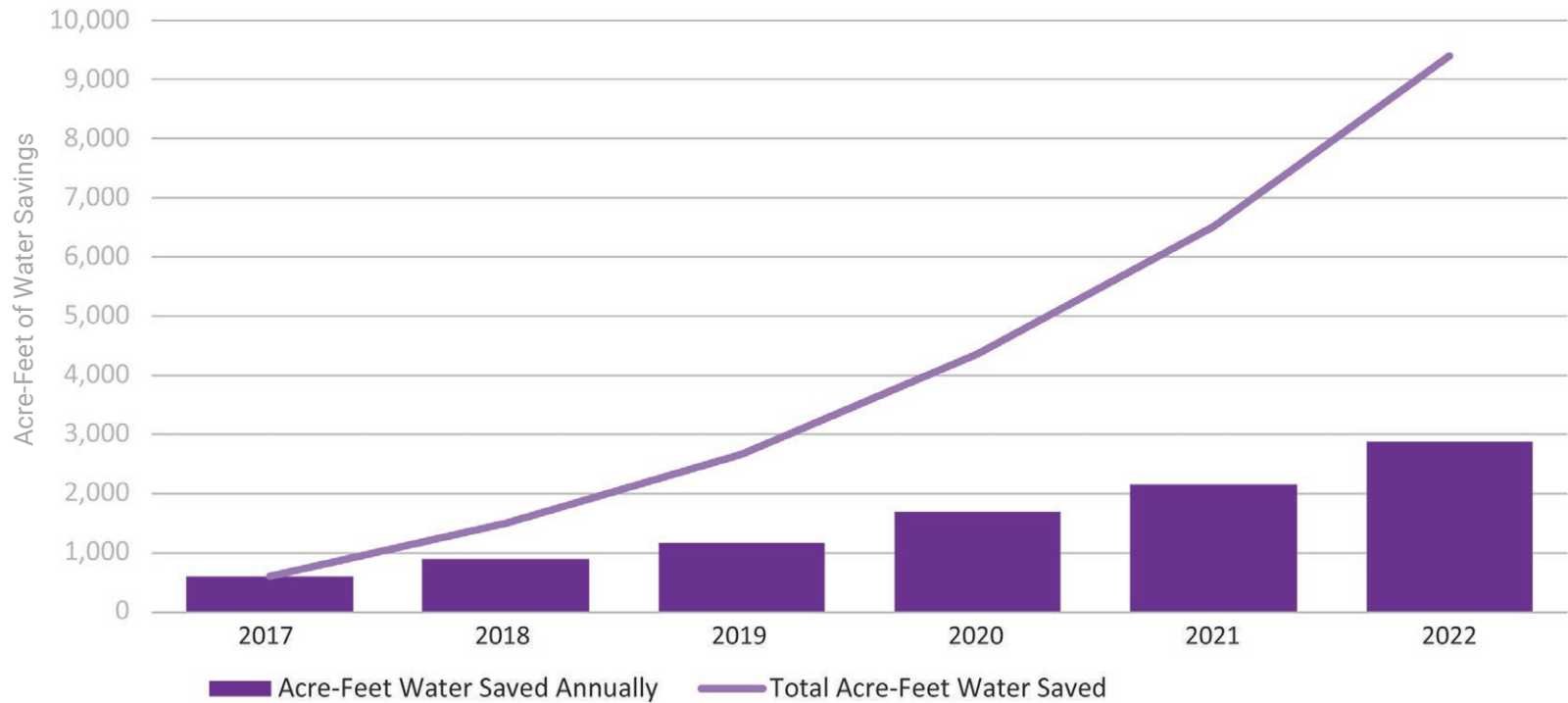
Metropolitan's goal is to replace an average of 1.5 million square feet of grass with water-efficient landscape per year through 2030, incentivized through a rebate program. Metropolitan's progress on this measure is a major achievement for water stewardship, as more sustainable, climate-friendly landscapes use significantly less water than turf long-term. As shown in Figure 12, Metropolitan removed a total of 26,780,690 square feet of turf between 2017 and 2022, representing an annual average of 4.4 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 removal projects in Metropolitan's service area from 2017 through 2022 is approximately 9,393 acre-feet, which translates to saving an average of 855 MT CO₂e per year as shown in Figure 13.¹

Figure 12. Square Feet of Turf Removal



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

Figure 13. Acre-Feet of Water Savings



Measure WC-4.

Provide Funding for the Development and Monitoring of Local Stormwater Recharge and Use Projects to Evaluate the Water Supply Benefit of Stormwater.

STATUS:
Ongoing



In 2021, Metropolitan launched its Stormwater for Recharge Pilot Program, which provides funding for the installation of monitoring equipment to help evaluate the water supply benefits of stormwater for recharge projects in Southern California. Metropolitan is in the process of evaluating the success of the pilot program.

Measure WC-5.

Continue to Promote Water Efficiency Technologies and Innovative Practices That Can be Adopted Into Future Water Conservation Program Updates.

STATUS:
Ongoing



As mentioned in Measure WC-2, Metropolitan supports a variety of programs that promote water efficiency technologies and innovative practices that will be incorporated into future water conservation programs.

Looking Ahead

Priorities and Projects in the Coming Year

- **Measure AF-3 (Renewable Diesel):** All accounts that have not switched to renewable diesel will be switched to renewable diesel, where available.
- **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.
- **Measure E-3 (Switch to Green Energy):** Continue to identify accounts that can be converted to a green energy portfolio.
- **Measure E-4 (BESS):** Ribbon cutting celebration for BESS at F. E. Weymouth WTP in fall/winter 2023.
- **Measure EC-5 (Telecommute at USHQ to Reduce VMT):** Develop a telecommute tracking program to capture USHQ staff telecommuting frequency, mode of public transportation, and mileage to calculate VMT.
- **Measure FL-1 (ZEV/EV Feasibility Study):** Identify a schedule, locations for replacement, and which vehicles and associated infrastructure will be replaced.
- **Measure WA-1 (Zero Net Waste):** Research, develop, and implement a tracking system to capture the volume of water, wastewater, and solid waste utilized at occupied facilities.

Request for Statement of Interest

In March 2023, Metropolitan issued a Request for Statements of Interest (RFSI) to solicit concept ideas for developing carbon-free energy and storage on seven Metropolitan-owned properties. Metropolitan will assess the level and type of interest shared by energy developers and investors to lease, license, develop and/or use temporary easements to contribute to California's transition to carbon neutrality and support Metropolitan's CAP. This process will be followed by a formal Request for Proposals process if Metropolitan determines that adequate interest exists.

Envision

In January 31, 2023, SRI held a Technical Brown Bag Series on Envision Sustainable Infrastructure Framework. Envision is an environmental and social certification aimed at civil infrastructure (i.e., built structures that are not inhabited, such as pipelines, railways, dams, pumping plants, reservoirs, laboratories, and warehouses). Envision provides a consistent, consensus-based framework for assessing civil infrastructure sustainability, resiliency, and equity. The goal was to present and introduce participants to the Envision framework and foster conversations on opportunities throughout Metropolitan. Dr. Akima Cornell (Akima Consulting, LLC) led the presentation, and over 100 Metropolitan staff comprised of various teams attended the in-person and virtual presentation. The next step is to register Metropolitan staff for the 2-day course, prepare them to take the exam, and determine how the Envision measures would apply to Metropolitan's capital improvement projects.

Metropolitan has undertaken many projects and actions simultaneously, and is already achieving water savings, energy efficiency, and emissions reductions as a result. This progress towards the goals outlined in the CAP will continue to build as the additional projects, such as those outlined above, are completed in the years to come.

Appendices



Native plant garden at Weymouth Water Treatment Plant

Supportive Measures - Status Summary Table

Strategy ID	Action Number	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	Underway
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	Pending
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	Pending
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	E-1	Analyze marginal emissions rates and evaluate the feasibility of shifting energy use to lower emission periods.	1	2030	Ongoing
Strategy 4	EE-3	Investigate feasibility of a large-scale (100 MW) battery storage system for the CRA.	2	2045	Ongoing
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-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 ID	Action Number	Strategy Language	Phase	Target Year	Status
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 5	EE-5	If the proposed RRWP is ultimately constructed, install an inter-stage pumping system on the reverse osmosis brine stream to reduce energy use.	2	2045	Ongoing
Strategy 6	EC-1	Expand subsidized transit commute program to reduce employee commute miles.	1	2030	Ongoing
Strategy 6	EC-2	Expand employee use of carbonfree 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 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	CS-3	Establish baseline soil carbon quantities through sciencebased 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-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 Number	Strategy Language	Phase	Target Year	Status
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-1	Study carbon capture protocols in the Sacramento-San Joaquin River Delta.	1	2030	Complete
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 Number	Strategy Language	Sector	Metric/ Goal	Metric/ Unit	Implementation Target Year	Percentage 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	17%
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	26%
Strategy 4	E-2	E-2: Connect the Yorba Linda Hydroelectric Power Plant (YLHEP) behind Metropolitan's Southern California Edison (SCE) electricity meter to directly utilize carbon free electricity at Metropolitan's Diemer facility 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 4	E-4	E-4: Install 3.5 MW battery storage systems at the Jensen, Skinner, and Weymouth treatment plants. 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	45%
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	92%
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	0%

Strategy ID	Action Number	Strategy Language	Sector	Metric/ Goal	Metric/ Unit	Implementation Target Year	Percentage Complete
Strategy 6	EC-5	EC-5: Allow 50 percent of employees located at Metropolitan’s USHQ to telecommute or utilize flexible schedules through 2030 to reduce travel time, vehicle miles traveled (VMT), and GHG emissions.	Employee Commute	15.56 Million	Reduced Commuter VMT	2030	No Data
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	2,143	Tons	2030	No Data
Strategy 8	WC-3	WC-3: Continue Turf Removal Program to install an average of 1,500,000 square feet (sq. ft.) of water efficient landscapes per year through 2030 through the use of a rebate program.	Water/ Wastewater	10,634	Acre Feet	2030	88%



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