

Sustainability and Climate Action Plan



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MESSAGE FROM THE EXECUTIVE DIRECTOR



*It is NCTD's mission to operate an environmentally sustainable and fiscally responsible transit network for all North County San Diego residents and visitors. This **Sustainability and Climate Action Plan** is a critical step to doing just that, while doing our part to tackle the climate crisis and reduce harmful emissions across the San Diego region and beyond.*

North County Transit District is committed to operating a sustainable, high-quality and comprehensive transit and mobility system that connects the North County San Diego region in a way that increases mobility, promotes access to social and economic opportunity and fosters equity and environmental stewardship. While we have made great strides in reducing our impact on climate change, including an ambitious transition plan that will convert our BREEZE buses into a zero-emission bus fleet by 2042, the ongoing climate crisis calls for greater action.

Through this Sustainability and Climate Action Plan, we present a strategic framework that will guide us along the path toward carbon neutrality by 2050. It is the encapsulation of a data-driven effort to identify where we can most significantly reduce our greenhouse gas emissions at the lowest cost and impact to our operations and our riders. During the planning process, our efforts to date to cut emissions, train the green workforce of the future and create systematic efficiencies were recognized and affirmed. We are proud of those efforts, but there is more that we can and must do.

We recognize the hard work and coordination that will be required to achieve the goals of this plan. North County Transit District invites you to join us in our endeavor to create a healthier, more sustainable, and economically vibrant North County.

Paul J. Ballard
Executive Director

EXECUTIVE SUMMARY

About North County Transit District

Since its inception in 1975, North County Transit District (NCTD) has been helping people get where they need to be. NCTD provides public transportation and mobility services across Northern San Diego County (“North County”), covering a service area of 1,020 square miles and a service population of 947,000. NCTD provides multiple modes of transit, including COASTER commuter rail, SPRINTER hybrid rail, BREEZE bus system, FLEX on-demand and LIFT paratransit.

About the Sustainability and Climate Action Plan

According to the California Air Resources Board, transportation makes up nearly 40% of statewide greenhouse gas (GHG) emissions, underscoring the important role that NCTD and other transit agencies play in addressing climate change. As a public transit service provider, NCTD takes vehicles off the road and prevents emissions across the region, but its operations also generate emissions. Thus, NCTD has the responsibility to reduce its operational emissions to lessen the impacts of climate change across NCTD and North County more broadly.

This [Sustainability and Climate Action Plan \(SCAP\)](#) is NCTD’s strategic framework to reduce operational and regional emissions through 2030 and sets the agency on the path to achieve carbon neutrality by 2050. It provides decision-makers at the agency with a complete understanding of the pathways it can take to achieve those reductions, as well as the avenues it has available to embed sustainability and climate action into its operations, services, planning and leadership. It is also a signal of NCTD’s commitment to climate action to its stakeholders, to the San Diego region, to the state of California and the federal government. NCTD intends to regularly engage its stakeholders to ensure alignment with their efforts and work together in creating a more sustainable and resilient transportation system for North County.

Carbon Neutral by 2050

Through the SCAP, NCTD is committing to achieve carbon neutrality by 2050. This means that NCTD will cut emissions across all areas of operations and transit service – innovatively and cost-efficiently.



SCAP Planning Process

The SCAP was developed over the course of one year through a five-phase process:

- **Phase 1: Current State and Best Practice Assessment**
NCTD completed an assessment of existing initiatives, projects, and policies to set a qualitative baseline of sustainability- and climate-related activities across the agency.
- **Phase 2: Baseline Emissions Inventory and Forecasting**
NCTD prepared a baseline emissions inventory, covering GHG emissions from operations in fiscal year (FY) 2022 (July 2021 through June 2022) and forecasted emissions through 2030.
- **Phase 3: Goal Setting and Implementation Planning**
NCTD prepared an initial set of qualitative goals and quantitative objectives to mark and measure the achievement of agency-wide emissions reductions through 2030. Goals were vetted with internal leadership, resulting in a comprehensive implementation plan with specific strategies.
- **Phase 4: Draft Plan and Stakeholder Engagement**
NCTD prepared its first draft of the SCAP and completed a set of internal and external stakeholder meetings to review the plan goals, objectives and implementation plan.
- **Phase 5: Final Plan Adoption**
A final plan prepared and issued for adoption in December 2023. NCTD's Board of Directors officially adopted the *Sustainability and Climate Action Plan* in January 2024.

Existing Sustainability and Climate Action Initiatives

NCTD is committed to reducing GHG emissions. The District has taken significant steps to create a more sustainable transportation system. These include but are not limited to:

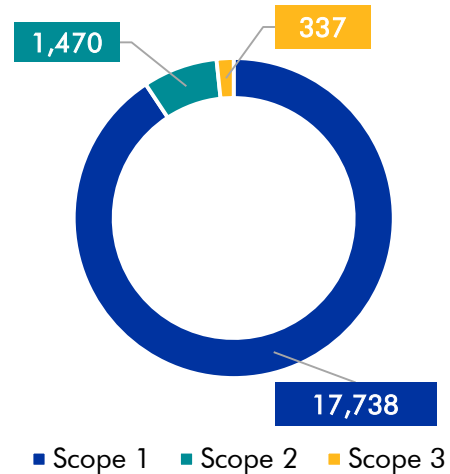
- ❖ Using **alternative vehicle fuels** like renewable diesel, renewable natural gas, and electricity to power NCTD transit and service vehicles
- ❖ Deploying **fuel efficient locomotives** across our COASTER commuter rail and SPRINTER hybrid rail services
- ❖ Converting our BREEZE Buses into a **zero emission bus fleet** powered by battery electric and hydrogen fuel cell electric buses
- ❖ Developing the **green transportation workforce** of the future through an innovative apprenticeship program with Palomar College



Current and Forecasted Emissions

As a part of this planning effort, NCTD assembled a baseline GHG emissions inventory, quantifying all emissions in FY 2022 within NCTD’s operational boundary (i.e., emissions from daily operational activities and NCTD assets). The inventory covers Scope 1 (i.e., direct emissions from stationary and mobile combustion), Scope 2 (i.e., purchased electricity), and select Scope 3 emissions (i.e., waste and water consumption).

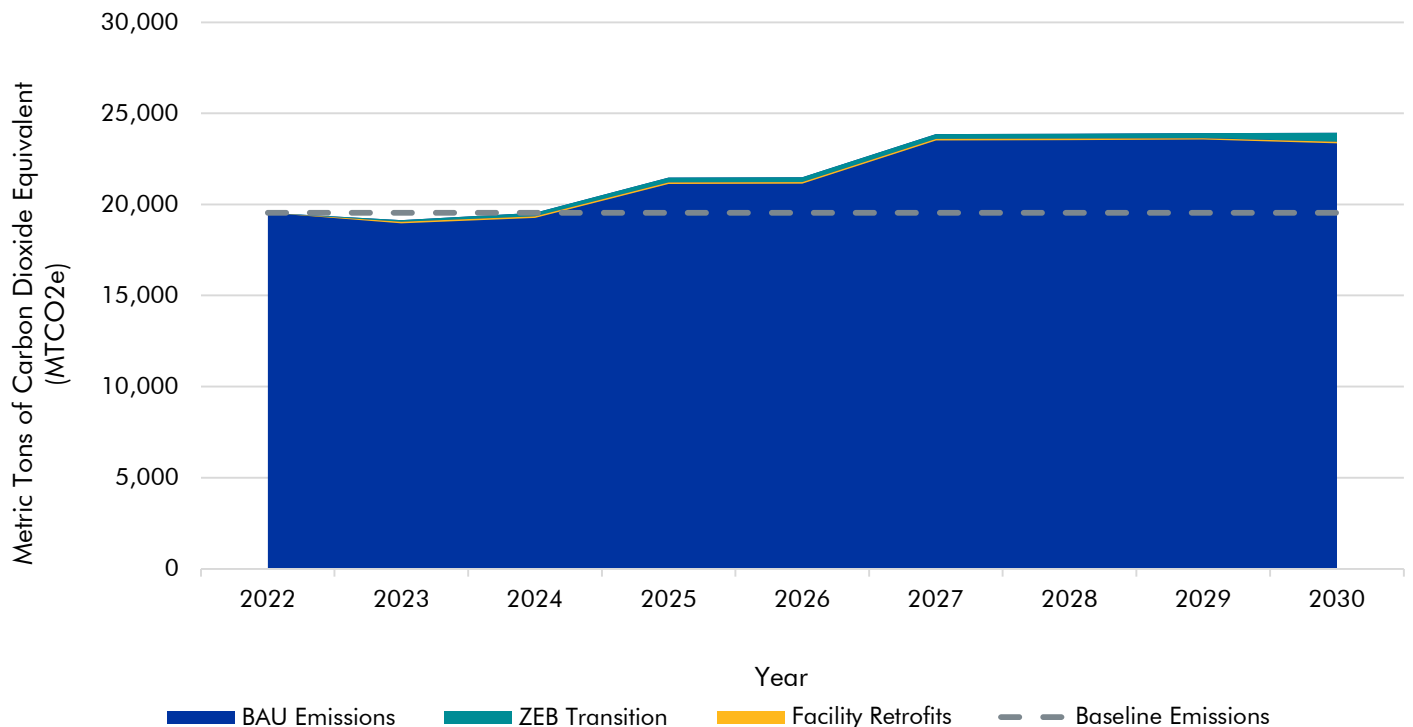
Figure E-1. NCTD GHG Emissions by Scope (FY 2022) in MTCO_{2e}



In FY 2022, the agency’s emissions totaled 19,547 metric tons of carbon dioxide equivalent (MTCO_{2e}), the vast majority of which are Scope 1 emissions from mobile combustion. Over 82% of NCTD’s emissions are tied to the use of fuels to power NCTD’s transit services and fleet vehicles. However, an accompanying analysis indicated that because NCTD services provide an alternative to on-road vehicles, NCTD helps prevent 15,504 MTCO_{2e} annually.

NCTD’s emissions forecast analysis indicated that, even with existing initiatives, NCTD’s operational emissions will increase by 19.5% percent from the FY 2022 baseline due to projected increases in ridership through 2030. The analyses affirmed the need for substantial effort to reduce GHG emissions across the agency – now and into the future.

Figure E-2. NCTD Projected GHG Emissions Through 2030



Goals, Objectives, and Strategies

The SCAP lays out eight goals cutting across various activity areas, accompanied by quantitative objectives and underlying strategies that will help drive achievement of and measure progress toward those goals. The goals, objectives, and strategies in this plan were informed by technical analyses and input from internal and external stakeholders.

Figure E-3. Sustainability and Climate Action Plan Goals

	Goal 1: Achieve carbon neutrality and embed climate action across NCTD operations
	Goal 2: Reduce GHG emissions from facilities
	Goal 3: Replace all BREEZE buses with zero-emission buses
	Goal 4: Replace all COASTER and SPRINTER rolling stock with zero-emission rail vehicles
	Goal 5: Replace all FLEX, LIFT, and non-revenue vehicles with zero-emission vehicles
	Goal 6: Quantify and reduce emissions from employee commuting and business travel
	Goal 7: Divert waste from landfill
	Goal 8: Reduce emissions from electricity consumption through 100% renewable energy procurement and on-site generation

Implementing the SCAP

To implement the SCAP, NCTD will mobilize internal resources to achieve the plan's goals and objectives, the stakeholder partners who must be engaged at a regional, state and federal level to move initiatives forward and the funding sources available to ensure that this plan is implemented in a cost-effective and resource-sensitive manner. NCTD will also move forward with putting the processes in place to monitor and evaluate its progress toward each goal and objective, as well as to report on that progress.

All strategies listed cannot be implemented immediately and concurrently, but the Roadmap serves as a menu of pathways for NCTD to reduce its emissions. NCTD will begin implementing this SCAP by using the following criteria to prioritize strategies for implementation:

- Financial costs and benefits
- Emissions reduction impact
- Staff resources
- Funding availability
- Equity and co-benefits.

NCTD will also do the following to ensure successful implementation of the SCAP:

- **Engage stakeholders**
NCTD will coordinate with stakeholders (i.e., rail operators, local jurisdictions, non-profit and non-governmental organizations, etc.) to achieve operational and regional climate goals.
- **Leverage external funding**
NCTD has identified several additional funding sources through the development of the SCAP and will task staff with investigating and pursuing these opportunities.
- **Monitor, evaluate and report on progress**
NCTD will assign responsibility for achieving the SCAP to staff and integrate its goals and objectives into existing and new workflows. Going forward, NCTD will biennially prepare GHG emissions inventories to track its progress toward carbon neutrality and publicly report on its efforts. NCTD will also develop and administer supporting programs to enable behavioral change and integrate sustainability across NCTD operations.

Figure E-4. SCAP Implementation Process



1 INTRODUCTION



1.1 About North County Transit District

North County Transit District (NCTD) has provided public transportation and mobility services across Northern San Diego County (“North County”) for nearly five decades. NCTD is governed by a Board of Directors, comprising representatives from each incorporated city in the NCTD service area (Solana Beach, Carlsbad, Del Mar, Encinitas, Escondido, Oceanside, San Marcos, Vista and San Diego), the Ex Oficio from the City of San Diego, and the Fifth District County Supervisor, which covers the unincorporated areas of North County.

NCTD’s Mission

North County Transit District’s mission is to operate an environmentally sustainable and fiscally responsible transit network that provides seamless mobility for all while achieving organizational and operational excellence.

NCTD’s operational service area covers approximately 1,020 square miles and services a population of 947,000 people. Since its inception in 1975, NCTD has been helping people get where they need to be, serving over 6.7 million passengers annually across its portfolio of revenue transit services. NCTD provides multiple modes of transit, including COASTER Commuter Rail, SPRINTER Hybrid Rail, BREEZE Bus System, FLEX On-Demand and LIFT Paratransit.

COASTER Commuter Rail

NCTD’s COASTER commuter rail, which began service in 1995, provides train service that runs 41 miles north and south between Oceanside and downtown San Diego. More than 190 trains operate each week, taking passengers along the coastal corridor. The COASTER serves as an alternative to congested highways, which not only connects passengers to popular destinations in the region, but also to NCTD’s other transit services (e.g., BREEZE buses, SPRINTER trains) as well as other regional transportation services such as Amtrak, Metrolink, San Diego Metropolitan Transit System (MTS) and the San Diego Trolley. The COASTER rail fleet includes nine diesel-powered locomotives and 28 bi-level coaches.

SPRINTER Hybrid Rail

The SPRINTER hybrid rail, which began service in 2008, runs 22 miles east and west between Escondido and Oceanside. SPRINTER operates 455 train trips every week. Like COASTER, the SPRINTER offers an alternative to highly trafficked highways, such as Highway 78, and provides similar connectivity to destinations and transit services across the region. The SPRINTER rail fleet includes 12 hybrid rail diesel multiple-unit passenger trains.

BREEZE Buses

The BREEZE bus system is NCTD’s oldest transit service founded in 1976. BREEZE currently runs over 152 buses across North County covering 1,020 square miles. The BREEZE service territory encompasses nearly 40 routes, servicing over 1,600 bus stops and nine transit centers. The vast majority of NCTD buses are powered by renewable compressed natural gas (RNG) and a limited number are fueled with renewable diesel.

FLEX On-Demand

NCTD's FLEX service, which started operating in 2011, provides multiple fixed-route services for customers. The FLEX deviated fixed-route service offers a set schedule and route but can deviate up to three-quarters of a mile for customer pick-up and drop-off. The point-deviated fixed-route service has a set schedule and deviates only to certain points along the route. There are 3 total FLEX routes between the two services, which cover 80.9 square miles and run through over 150 bus stops and two transit centers. FLEX service vehicles include 8 buses, which are powered by RNG and unleaded gasoline.

LIFT Paratransit

The LIFT Paratransit service has provided origin-to-destination service for individuals with disabilities since 1993. The LIFT service is available for trips within $\frac{3}{4}$ mile of fixed bus routes or SPRINTER rail stations and is supported by 53 gasoline-powered cutaway vans and minivans.

Non-revenue Fleet

NCTD also owns and operates a fleet of non-revenue service vehicles. This fleet is made up of various gasoline- and diesel-powered light- to medium- duty vehicles that are used to move staff across NCTD facilities to support maintenance and operations.



1.2 NCTD's Role in Climate Action

The transportation sector is a significant contributor to regional and statewide greenhouse gas (GHG) emissions. According to the California Air Resources Board's (CARB) 2022 AB 32 Scoping Plan Update, transportation makes up approximately 40% of statewide GHG emissions.¹ In the San Diego region, on-road transportation is even more significant, making up nearly 48% of regional GHG emissions.² These figures underscore the important role that NCTD and other transit agencies play in addressing climate change. Public transportation provides alternatives to single-occupancy vehicles, taking vehicles off the road, thereby avoiding emissions. However, despite the vast impact transit has on reducing regional emissions, NCTD's operations also generate emissions. As such, NCTD has the responsibility to lower emissions from operations, infrastructure and employees to reduce the impacts of climate change on the communities it serves.

Existing Climate Action

NCTD is deeply committed to reducing regional GHG emissions and creating a resilient transportation system for Northern San Diego County. To date, the agency has already taken substantial steps to advance sustainable transportation throughout the region, which are grounded in NCTD's comprehensive plans, studies and operational practices. These include:

- **Reducing generated operational emissions using alternative fuels.**
NCTD uses a mix of alternative fuels, including renewable compressed natural gas (RNG), renewable diesel and electricity to power its transit services. These alternative fuels generate fewer emissions than traditional compressed natural gas (CNG) or traditional diesel.
- **Using less emissions-intensive and more fuel-efficient locomotives.**
NCTD has replaced all its locomotives with Tier IV locomotives as defined by the California Air Resources Board (CARB), which deliver an estimated 70-90% reduction in criteria air pollutant emissions and an increase in horsepower compared to previous locomotives.
- **Converting to a zero-emission bus (ZEB) fleet.**
NCTD has committed to replacing the entire BREEZE bus fleet with zero-emission buses, including a mixed fleet of battery-electric buses (BEBs) and hydrogen fuel-cell-electric buses (FCEBs). In April 2020, NCTD issued its *Innovative Clean Transit Zero-Emission Bus Rollout Plan* to CARB, laying out a plan to complete a full transition to ZEBs by 2042.³ In June 2023, the Federal Transit Administration (FTA) awarded NCTD with \$29.3 million to drive the purchase of 23 zero-emission hydrogen FCEBs.⁴

¹ California Air Resources Board. "2022 Scoping Plan for Achieving Carbon Neutrality." December 2022. <<https://ww2.arb.ca.gov/sites/default/files/2023-04/2022-sp.pdf>>.

² San Diego Association of Governments. "Greenhouse Gas Emission Targets." n.d. <<https://www.sandag.org/regional-plan/sustainable-growth-and-development/greenhouse-gas-emission-targets>>.

³ North County Transit District. "Innovative Clean Transit Zero-Emission Bus Rollout Plan." April 2020. <https://ww2.arb.ca.gov/sites/default/files/2020-09/NCTD-%20ROP%20_Reso_ADA08122020.pdf>.

⁴ North County Transit District. "NCTD Awarded \$29.3 Million for Zero-Emission Bus Transition." 26 June 2023. <<https://gonctd.com/nctd-awarded-29-3-million-for-zero-emission-bus-transition/>>.

Following this grant award, NCTD will have 41 ZEBs in operation by 2025, representing a quarter of the existing bus fleet.

- **Developing the green transportation workforce.**

Through a Federal Transit Administration (FTA) grant, NCTD received funding to train the existing NCTD workforce and develop an innovative apprenticeship program in collaboration with Palomar College. This apprenticeship program provides training on hydrogen fuel cell bus and battery electric bus systems and operations.

- **Powering transit services and facilities with clean electricity.**

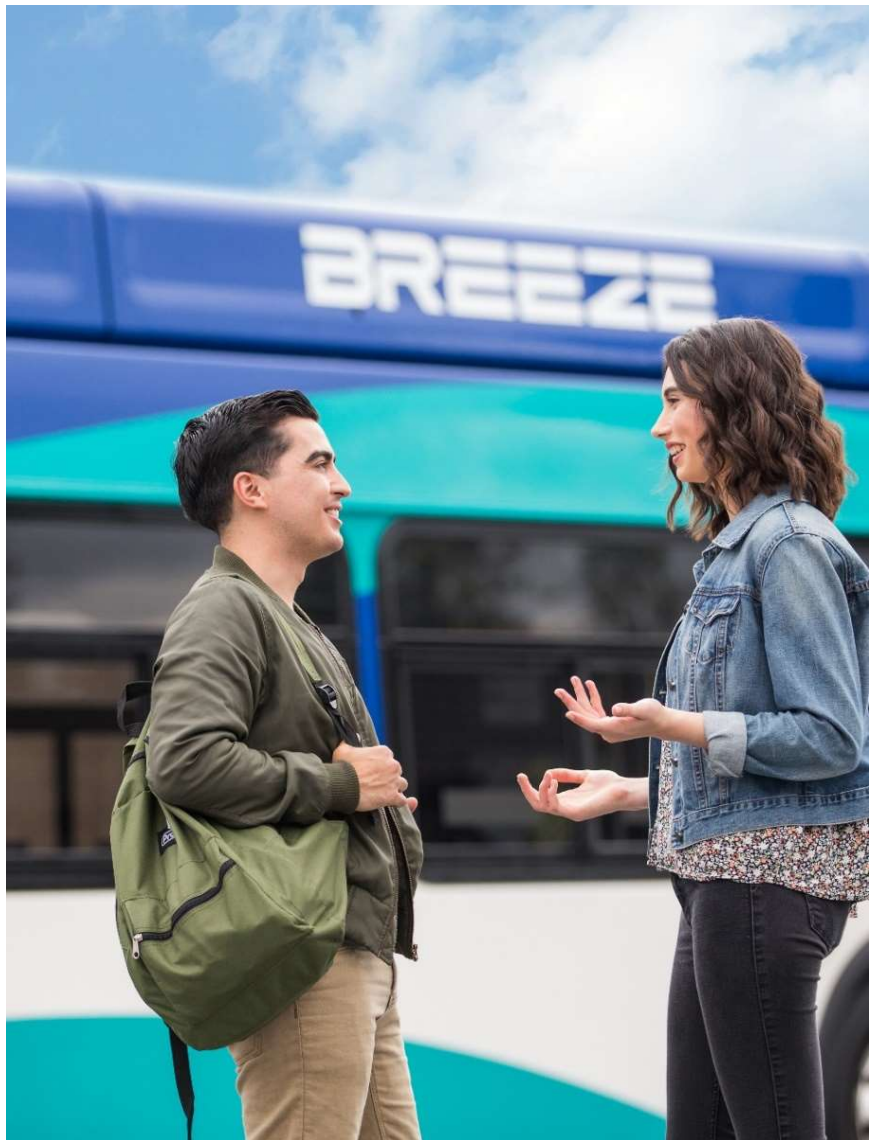
NCTD has installed solar panels at five NCTD locations,⁵ and most of NCTD's electricity meters are enrolled under community choice aggregation (CCA) programs that provide 100% renewably-sourced electricity.

- **Supporting electric mobility.**

NCTD has installed ten public electric vehicle charging stations (EVCS) at the Escondido Transit Center.

- **Leveraging energy-efficient and low-footprint technologies.**

NCTD uses efficient lighting and biodegradable cleaning supplies across all facilities and stations.



⁵ North County Transit District. "Adopted FY2022 Operating Budget and FY2022-FY2026 Capital Improvement Program."

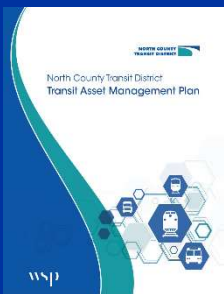
<<https://lfportal.nctd.org/WebLink/0/edoc/181090/FY2022%20Adopted%20Operating%20Budget%20and%20Capital%20Improvement%20Program.pdf>>

TRANSPORTATION PLANS AND PROJECTS

NCTD Strategic Plans and Studies

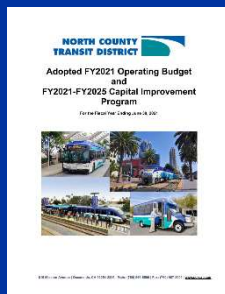
While this is NCTD's first sustainability or climate action plan, NCTD is developing and implementing several plans that support regional climate action by improving transportation services and mobility for all North County residents.

2018



Transit Asset Management Plan

2019



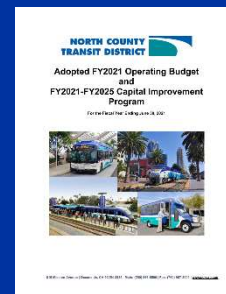
District-Wide Public Benefits Study

2020



Innovative Clean Transit Zero-Emission Bus Rollout Plan

2021



Facilities Maintenance Plan

2021



Operating Budget and Capital Improvement Plan

NCTD Transportation Projects

NCTD continues to enhance its existing services and infrastructure with projects that not only bring additional ease of use to NCTD patrons, but also sustainability and climate co benefits through increased resource efficiency.

LOSSAN Corridor Projects

NCTD is collaborating with SANDAG to double track the coastal corridor, expand parking and improve customer experience

Escondido Subdivision

Efforts are underway to update signals and double track sections of the Escondido Subdivision

Positive Train Control (PTC)

NCTD has implemented PTC, using digital and GPS technology to prevent train collisions and hazards along 58.5 miles

Joint Development Projects

NCTD is focusing on large scale joint development projects near transit stations to maximize access to public transit

BREEZE Speed and Reliability Study

The results of this study will enhance service on ten high priority bus routes and find opportunities to improve speed and reliability

Regional Emissions

NCTD also plays a critical role in avoiding regional emissions that would otherwise be generated in the transportation sector if not for NCTD's transit services. NCTD helps avoid regional emissions in two ways: first, through **mode shift**, or the direct transition from single-occupancy vehicles to public transit or other sustainable modes of transportation; and second, through **land use** changes, whereby transit-oriented development (TOD) and increased density/connectivity to other sustainable modes of transit reduce emissions by reducing community need for car use.

NCTD is advancing several TOD and mixed-use development projects across its service area. These projects focus on siting housing and businesses in proximity to transit to encourage the use of public transportation and reduce first/last-mile trips for NCTD patrons. These sites include but are not limited to Oceanside Transit Center, Carlsbad Village Station, Poinsettia Station and the Escondido Transit Center as well as seven SPRINTER stations. Each of these sites offer enhanced connectivity for residents, businesses and visitors to NCTD bus and rail, as well as other recreational and hospitality amenities.

Climate Adaptation and Resilience

As the climate changes, NCTD must consider current and potential future impacts on NCTD operations, infrastructure, services and customers. Extreme heat, sea-level rise, coastal and inland flooding and wildfire will have varying effects over time, with potentially significant social, economic and environmental ramifications. While climate adaptation and resilience are not within the scope of this plan, NCTD received grant funding from the California Department of Transportation (Caltrans) in 2023 to conduct a *Climate Adaptation and Infrastructure Resiliency Plan* of its service area and facilities. This study will identify and assess climate change risks and adaptation strategies for NCTD rail and bus infrastructure, facilities and surrounding populations, including disadvantaged communities.

1.3 Equity at NCTD

NCTD recognizes that widespread societal inequities have resulted in significant, observable and persistent consequences across North County and beyond. The ways in which land has been used, and resources and services have been distributed, have shaped the experiences of certain communities, and put them at significant disadvantage. From an environmental perspective, many of these communities reside or work in areas with significant pollution burden, vulnerability to climate hazards and/or lack of access to vital natural resources. From a transportation perspective, these communities tend to be distant from public transit or otherwise have limited access to mobility resources.

NCTD recognizes and is striving to provide service and promote equitable investment and practices in these communities. This includes ongoing work to expand existing or provide new transit and mobility services to disadvantaged communities (DACs) as designated under Senate Bill (SB) 535, as well as to find ways to reduce the harmful impacts of air pollution and GHG emissions for the most vulnerable communities.

In 2023, NCTD initiated the process of preparing a *Comprehensive Equity Assessment*. The intent of the assessment is to enhance NCTD’s organizational culture and understanding to support the inclusion of equity considerations in planning and decision-making, with a bottom-line goal to ensure that NCTD’s services help marginalized populations to thrive. The final assessment will identify strategies, activities, investments and other actions that NCTD needs to consider or advance to foster equity in the provision of transit operations and interfaces that impact the customer riding experience.

In addition, NCTD is implementing several fare programs to promote equity and increase transit access for communities of need. These include the regionwide Youth Opportunity Pass, funded by SANDAG and the County of San Diego, to provide free fares for youth aged 18 or under. NCTD is also exploring the possibility of a discounted COASTER fare for low-income riders.

1.4 About NCTD’s Sustainability and Climate Action Plan

NCTD presents the agency’s first **Sustainability and Climate Action Plan (SCAP)**. The SCAP is a strategic framework by which NCTD will achieve significant operational and regional emissions reductions through 2030 and sets the agency on the path to achieve carbon neutrality by 2050, in alignment with California Assembly Bill 1279’s (AB 1279) target for the state to achieve carbon neutrality and reduce anthropogenic GHG emissions to 85% below 1990 levels by no later than 2045.⁶ The plan also aligns with federal targets set by the Biden-Harris administration to achieve a 50-52% reduction in net GHG emissions from 2005 levels by 2030, as well as the San Diego Association of Governments’ (SANDAG) *2021 Regional Plan* goal to achieve a 20% reduction in per capita GHG emissions from cars and light-duty trucks by 2035 (pursuant to SB 375).^{7,8} Additional regulatory drivers are shown in Figure 1-1.

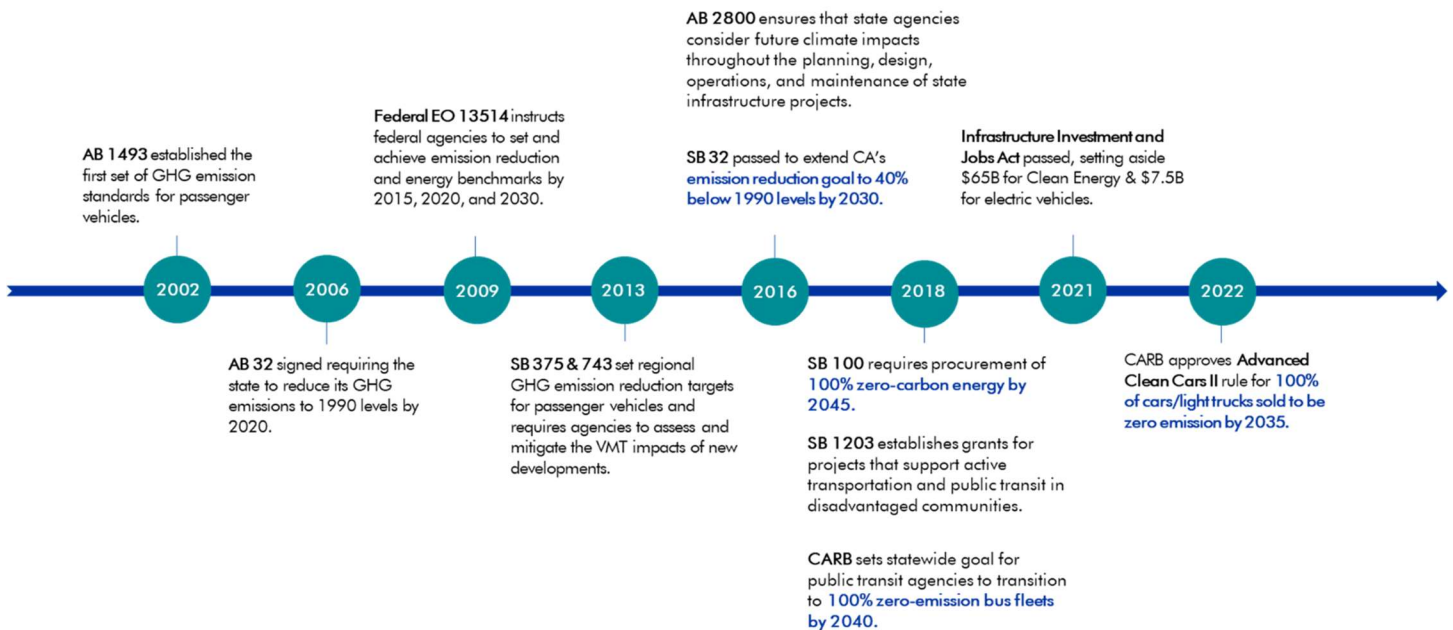


⁶ California Legislative Information. “AB-1279 The California Climate Crisis Act.” 16 September 2022. <https://leginfo.ca.gov/faces/billNavClient.xhtml?bill_id=202120220AB1279>.

⁷ San Diego Association of Governments. “Final 2021 Regional Plan.” 10 December 2021. <<https://www.sandag.org/regional-plan/2021-regional-plan/final-2021-regional-plan>>.

⁸ California Legislative Information. “SB-375 Transportation planning: travel demand models: sustainable communities strategy: environmental review.” 30 September 2008. <https://leginfo.ca.gov/faces/billNavClient.xhtml?bill_id=200720080SB375>.

Figure 1-1. Timeline of Regulatory Drivers



The purpose of this plan is to provide decision-makers at the agency with an understanding of the pathways it can take to achieve these reductions, as well as the avenues it has available to embed sustainability and climate action into its operations, services, planning and culture.

This plan is more than a strategic framework for reducing GHG emissions. It is also a signal of NCTD's commitment to climate action to its stakeholders, to the San Diego region, to the state of California and the federal government. While the SCAP is primarily focused on NCTD operations, it is not a plan that NCTD intends to implement in isolation. True climate action is collaborative, and it is NCTD's obligation to collaborate with regional, state, and federal stakeholders toward achieving its goals. NCTD intends to regularly engage these stakeholders to ensure alignment with their efforts and to find every opportunity to work together in creating a more sustainable and resilient transportation system for North County.

What this Plan Does

The SCAP lays out eight goals cutting across a variety of activity areas, accompanied by quantitative objectives that measure progress and achievement of those goals. The SCAP goals were informed by a comprehensive current state assessment that evaluated NCTD's existing sustainability and climate action initiatives, an inventory of NCTD's generated and avoided GHG emissions as well as by input from internal and external stakeholders. Consequently, the SCAP also established a formal baseline against which NCTD can track its progress over time.

This plan also presents an implementation plan for NCTD, identifying specific strategies that NCTD can pursue to achieve each individual goal and objective. Each strategy is accompanied by the department(s) that will be assigned to lead or support the effort, recommendations for partners and rough-order-of-magnitude (ROM) estimates regarding cost and emissions reduction impact. Collectively, this information will empower decision-makers within NCTD to prioritize and implement strategies with a mind toward equity, emissions reduction, cost effectiveness and feasibility, staff capacity, service impacts and other co-benefits. The implementation plan

concludes with details regarding the monitoring, evaluation, and reporting of progress on all goals and strategies, as well as funding opportunities to support the implementation of those strategies.

Table 1-1. NCTD Sustainability and Climate Action Plan Goals

	Goal 1 Achieve carbon neutrality and embed climate action across NCTD operations
	Goal 2 Reduce GHG emissions from facilities
	Goal 3 Replace all BREEZE buses with zero-emission buses
	Goal 4 Replace all COASTER and SPRINTER rolling stock with zero-emission rail vehicles
	Goal 5 Replace all FLEX, LIFT, and non-revenue vehicles with zero-emission vehicles
	Goal 6 Quantify and reduce emissions from employee commuting and business travel
	Goal 7 Divert waste from landfill
	Goal 8 Reduce emissions from electricity consumption through 100% renewable energy procurement and on-site generation

Planning Process

The SCAP was developed over the course of one year through a five-phase process.

- **Phase 1: Current State and Best Practice Assessment**
NCTD completed a comprehensive assessment of existing initiatives, projects, and policies to set a qualitative baseline of sustainability- and climate-related activities across the agency. External research on best practices from other transit agencies accompanied this assessment, serving as a partial gap analysis to identify potential sustainability and climate measures for the SCAP.
- **Phase 2: Baseline Emissions Inventory and Forecasting**
NCTD prepared a baseline emissions inventory, covering GHG emissions from its operations in fiscal year (FY) 2022 (running from July 2021 through June 2022). Using internal and external data, operational emissions were forecasted through 2030. Together, the baseline inventory and forecasts constitute the remaining pieces of the gap analysis, pointing out the most significant opportunities for reducing emissions.
- **Phase 3: Goal Setting and Implementation Planning**
Drawing from the current state assessment and emissions data, NCTD prepared an initial set of qualitative goals and quantitative objectives to mark and measure the achievement of agency-wide emissions reductions. After vetting goals with internal stakeholders, an implementation plan was prepared, detailing specific strategies to achieve the goals and objectives with supporting data on lead and supporting implementers, rough-order-of-magnitude costs, external funding sources and emissions impact.
- **Phase 4: Draft Plan and Stakeholder Engagement**
NCTD prepared its first draft of the SCAP and completed a set of internal and external stakeholder meetings to review the plan goals, objectives and implementation plan.
- **Phase 5: Final Plan Adoption**
Input received during Phase 4 was consolidated and integrated into the draft plan, with a final plan prepared and issued for adoption in December 2023. NCTD's Board of Directors officially adopted the *Sustainability and Climate Action Plan* in January 2024.



2 GREENHOUSE GAS EMISSIONS



2.1 Background

As a first step in understanding the agency's climate impact, NCTD prepared a baseline inventory of greenhouse gas (GHG) emissions generated from its operations to determine the agency's most significant sources of GHG emissions. The baseline inventory covers the 2022 fiscal year (July 2021 through June 2022). After preparing its baseline inventory, NCTD produced forecasts of generated emissions through 2030 to project changes to its carbon footprint over time, as well as areas where it may have the most impact in the future. Consequently, the baseline inventory and 2030 forecast were used to establish the goals, objectives and strategies listed under the Roadmap in Chapter 3. NCTD also estimated the emissions that are avoided due to NCTD services, or the emissions that are prevented by North County residents using public transportation instead of personal vehicles.

What are greenhouse gas emissions?

Greenhouse gases, or GHGs, are specific gases that trap heat that is radiated from the sun and reflected off the Earth's surface. These gases include, though are not limited to, carbon dioxide (CO₂), methane (CH₄) and nitrous oxide (N₂O). Fundamentally, these gases are important: the process of preventing heat from escaping the Earth's atmosphere, or the 'greenhouse effect', is essential to life on earth. However, the increasing concentration of GHGs in the atmosphere from burning fossil fuels is trapping more heat in the atmosphere and warming the planet. This 'global warming' is shifting temperature and weather patterns across the globe, which may harm or significantly affect human, animal and plant life now and into the future.

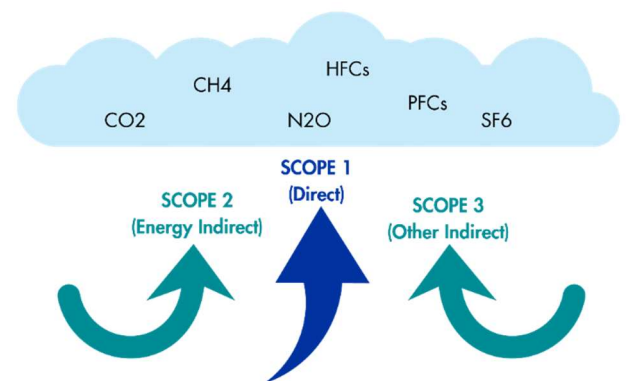
Some GHG emissions are naturally occurring (or 'biogenic'), but an increasing volume of emissions contributing to climate change and global warming is caused by human activity (or 'anthropogenic'), such as burning fossil fuels for vehicles and heat. Measuring these emissions enables individuals and institutions alike to understand their contributions to climate change and, more importantly, where and how to reduce that impact.

2.2 Baseline GHG Emissions Inventory

Scope, Boundary and Methodology

NCTD's FY22 baseline GHG emissions inventory accounts for generated GHG emissions from NCTD operations across the following sources of emissions within NCTD's operational control boundary:

Figure 2-1. GHG Emissions by Scope



- **Scope 1 emissions**

These are direct emissions from stationary combustion (e.g., facilities), mobile combustion (e.g., vehicles, rail) and fugitive sources (e.g., refrigerants).

- **Scope 2 emissions**

These are indirect emissions from procured electricity.

- **Scope 3 emissions**

These include select indirect emissions from other areas in NCTD's value chain. In the case of this emissions inventory, Scope 3 emissions include those from municipal solid waste and water consumption.

Generated GHG emissions across these three scopes were calculated in alignment with internationally recognized standards, including the U.S. Environmental Protection Agency (EPA), the World Resources Institute, The Greenhouse Gas Protocol and the American Public Transportation Association (APTA). Emissions across all scopes were calculated using aggregated data collected within NCTD, fuel and electricity emission factors as available from the U.S. EPA and San Diego Gas & Electric (SDG&E) and global warming potentials from the United Nations Intergovernmental Panel on Climate Change (IPCC). Additional details on the calculation methodology are featured in the plan appendices.

Baseline GHG Emissions

Emissions are summarized in Figure 2-2 and Table 2-1 below, shown in metric tons of carbon dioxide equivalent (MTCO_{2e}).

Figure 2-2. NCTD GHG Emissions by Scope (FY 2022) in MTCO_{2e}

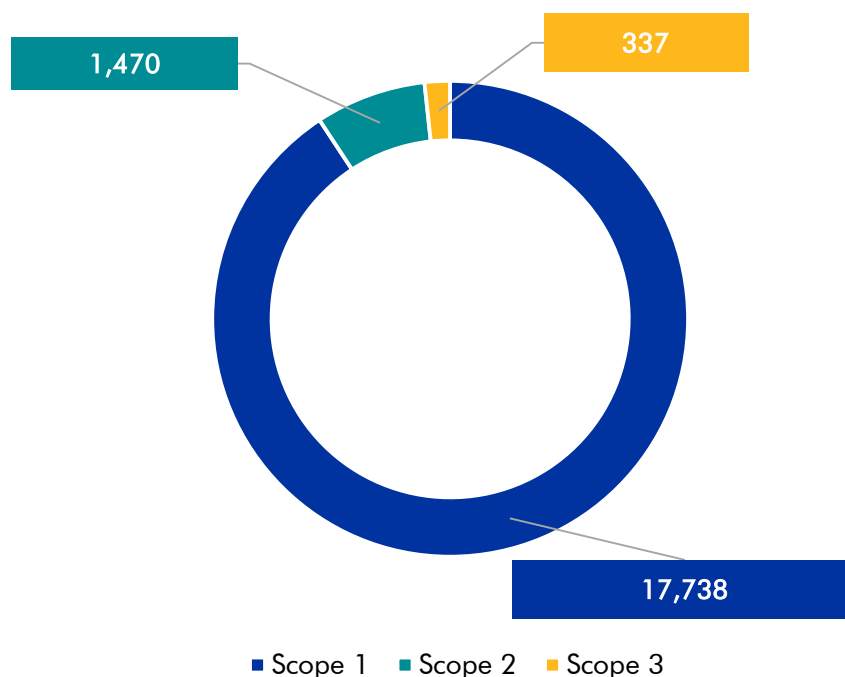


Table 2-1. NCTD Baseline GHG Emissions Inventory (FY 2022)

Scope	Category	Activity	Emissions (MTCO _{2e})	Percentage
Scope 1	Stationary combustion	Facilities	127	0.65%
	Mobile combustion	BREEZE Buses	1,346	6.88%
		COASTER Trains	8,769	44.86%
		SPRINTER Hybrid Rail	4,394	22.48%
		FLEX Deviated	270	1.38%
		LIFT	892	4.56%
	Non-revenue vehicles	445	2.28%	
Fugitive emissions	Refrigerants	1,496	7.66%	
Scope 2	Purchased electricity	Facilities	1,080	5.52%
		Rail signals	131	0.67%
		Fuel compression	260	1.33%
Scope 3	Indirect emissions	Water consumption	78	0.40%
		Municipal solid waste	259	1.32%
Total			19,547	100.00%

The majority of NCTD emissions are Scope 1 emissions, primarily from mobile combustion. Nearly three-quarters of NCTD's Scope 1 emissions can be attributed to the agency's COASTER trains and SPRINTER hybrid rail, which is due to the use of diesel fuel. Scope 2 emissions make up a very small segment of NCTD's emissions portfolio, in large part due to the steadily improving carbon intensity of the San Diego Gas & Electric (SDG&E) grid and the enrollment of several meters in select jurisdictions under the San Diego Community Power and Clean Energy Alliance community choice aggregation (CCA) programs. Under these programs, all meters are enrolled to receive 100% renewably sourced electricity. Scope 3 emissions including solid waste and water only make up 1.72% of total generated emissions, though this does not yet include employee commuting, business travel and other Scope 3 sources that may generate more emissions. These additional Scope 3 emission sources will be added to NCTD's GHG inventories in the future.

2.3 Avoided GHG Emissions

Scope, Boundary and Methodology

To assess the net GHG emissions that are avoided due to NCTD providing transit service to the region, NCTD first calculated the number of annual vehicle miles traveled (VMT) that are generated by NCTD services, as well as the number of VMT avoided by NCTD services. In alignment with recognized third-party standards, GHG emissions were derived from VMT estimations to calculate net avoided emissions.

NCTD collected internal data related to transit and vehicle operations and utilized regional travel trends from the San Diego Association of Governments' (SANDAG) Regional Model and SANDAG Annual Ridership Survey to estimate annual VMT and GHG emissions. The emissions generated by vehicles associated with NCTD include employee commuting, riders accessing transit, and the operation of transit vehicles. To determine the emissions NCTD avoids or prevents across the region each year by providing transit services (at fiscal year 2022 levels), NCTD applied the assumption that riders would default to driving if NCTD services were not available or did not exist. Additional details on the calculation methodology are featured in the plan appendices.

Net Avoided GHG Emissions

VMT generated by employees, riders, and operations were aggregated to determine the total VMT generated by NCTD (see Table 2-2).

Table 2-2. Total Annual VMT Generated by NCTD (FY 2022)

VMT Category	Annual Generated VMT
Employee-generated VMT	2,902,068
Rider-generated VMT	4,694,601
Operations-generated VMT	6,726,132
Total Annual VMT Generated	14,322,801

NCTD calculated the annual VMT avoided by NCTD services using the annual number of rides and the average trip distance on NCTD transit services. If NCTD services were not available and all riders defaulted to vehicular modes, the avoided VMT estimation assumes that trip distances would remain the same. Avoided VMT is shown as a negative value. As shown in Table 2-3, it is estimated that NCTD avoids nearly 41 million VMT annually.

Table 2-3. Total Annual VMT Avoided by NCTD (FY 2022)

VMT Category	Annual Avoided VMT
Total annual VMT generated	14,322,801
Total annual avoided VMT	-55,122,644
Total Annual VMT Avoided	-40,799,843

NCTD then converted VMT into annual emissions in MTCO_{2e} using an emission factor consistent with the GHG analysis in the 2021 SANDAG Regional Plan EIR. Avoided emissions are shown as a negative value. As shown in Table 2-4, it is estimated that NCTD avoids approximately 15,504 MTCO_{2e} annually.

Table 2-4. Net Annual VMT Avoided by NCTD (FY 2022)

Emissions Category	Annual Emissions (MTCO_{2e})
Total annual emissions from generated VMT	5,443
Total annual emissions from avoided VMT	-20,947
Total Annual Emissions from Avoided VMT	-15,504

2.4 Projected GHG Emissions Generation

Emissions Scenarios

Drawing from the baseline inventory and underlying data, NCTD projected GHG emissions generation out through 2030. Using an additional set of assumptions (detailed in the plan appendices), two emissions scenarios were developed:

- **Business as usual (BAU)**

In a BAU scenario, it is assumed that NCTD takes no additional action to reduce or generate GHG emissions, and that any changes in emissions are exclusively due to factors outside the agency's direct control (e.g., ridership, grid carbon intensity, population change, CCA meter enrollment).

- **Business as planned (BAP)**

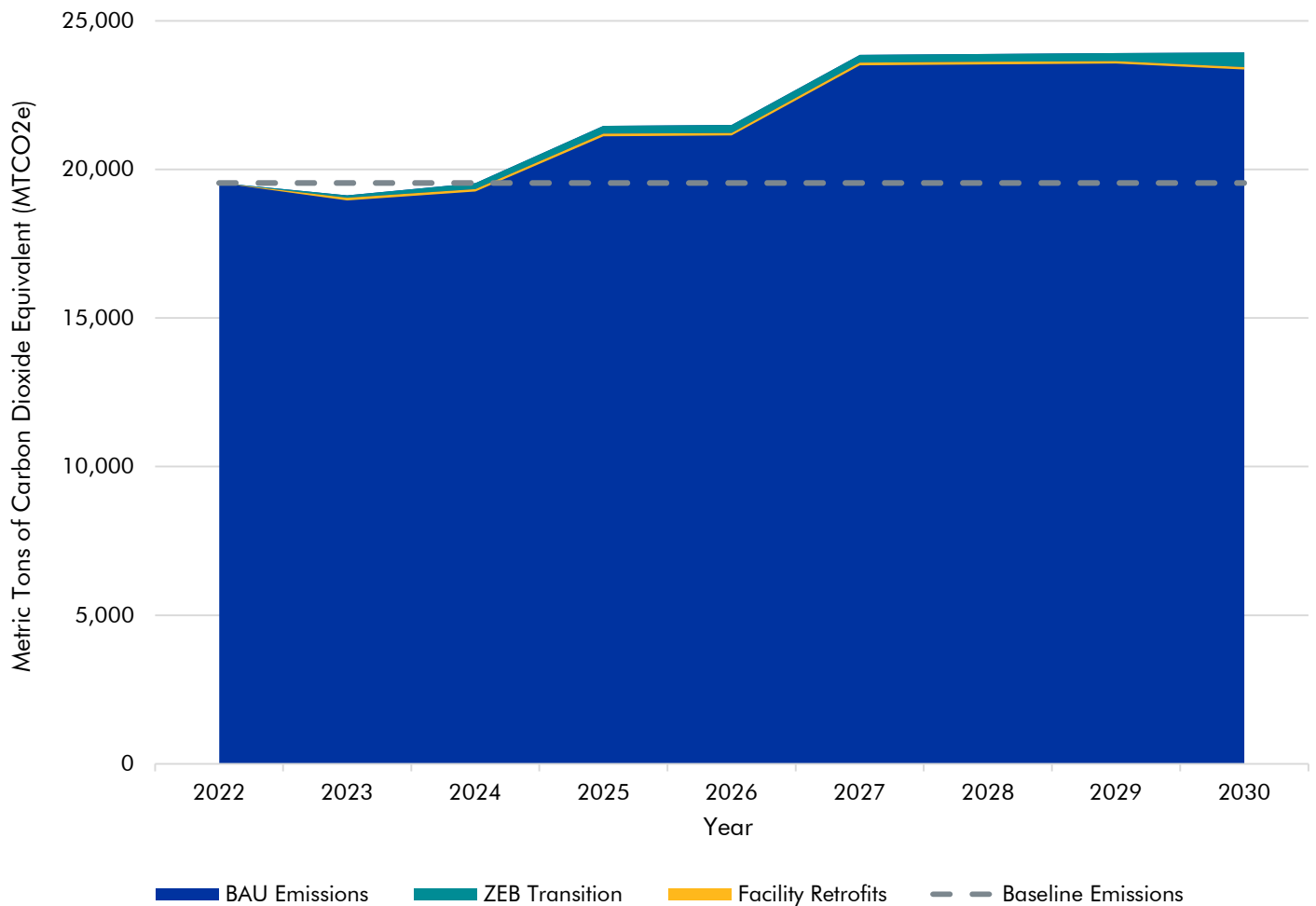
In a BAP scenario, similar factors are applied, but in-progress or already-planned initiatives are factored into emissions projections. In this case, the existing initiatives that are included are planned facility retrofits and NCTD's zero-emission bus rollout as projected through 2030. It also accounts for new buses to be procured on an expedited timeline following the award of an FTA grant in 2023.

Neither emissions scenario accounts for any new emissions reduction strategies.

Projected GHG Emissions through 2030

Figure 2-3 shows projected emissions through 2030. The dotted line represents generated emissions at the FY 2022 baseline. The top of the emissions chart represents emissions in a BAU scenario, and each colored wedge represents a specific planned initiative. The line underneath the wedge of the initiatives represents emissions in a BAP scenario.

Figure 2-3. NCTD Projected GHG Emissions Through 2030



In the business-as-usual scenario, emissions are projected to rise by over 22% from the FY 2022 baseline when accounting for projected growth in NCTD-generated VMT and ridership (as increases in both are expected to generate more emissions in the short- and medium- term), as well as emissions reductions due to improving grid carbon intensity and CCA enrollment. In the business-as-planned scenario, which accounts for additional emissions reductions from NCTD's planned ZEB rollout (through 2030) and planned facility retrofits, emissions growth over time is reduced slightly. In the BAP scenario, emissions increase by 19.5% from the FY 2022 baseline.

In each scenario, NCTD's operational emissions are expected to temporarily rise because of agency-wide growth, population growth and related increases in ridership and VMT. NCTD's existing initiatives reduce some emissions over time, but they are not enough to keep emissions at, or reduce emissions from, the baseline.

3 SCAP ROADMAP AND IMPLEMENTATION PLAN

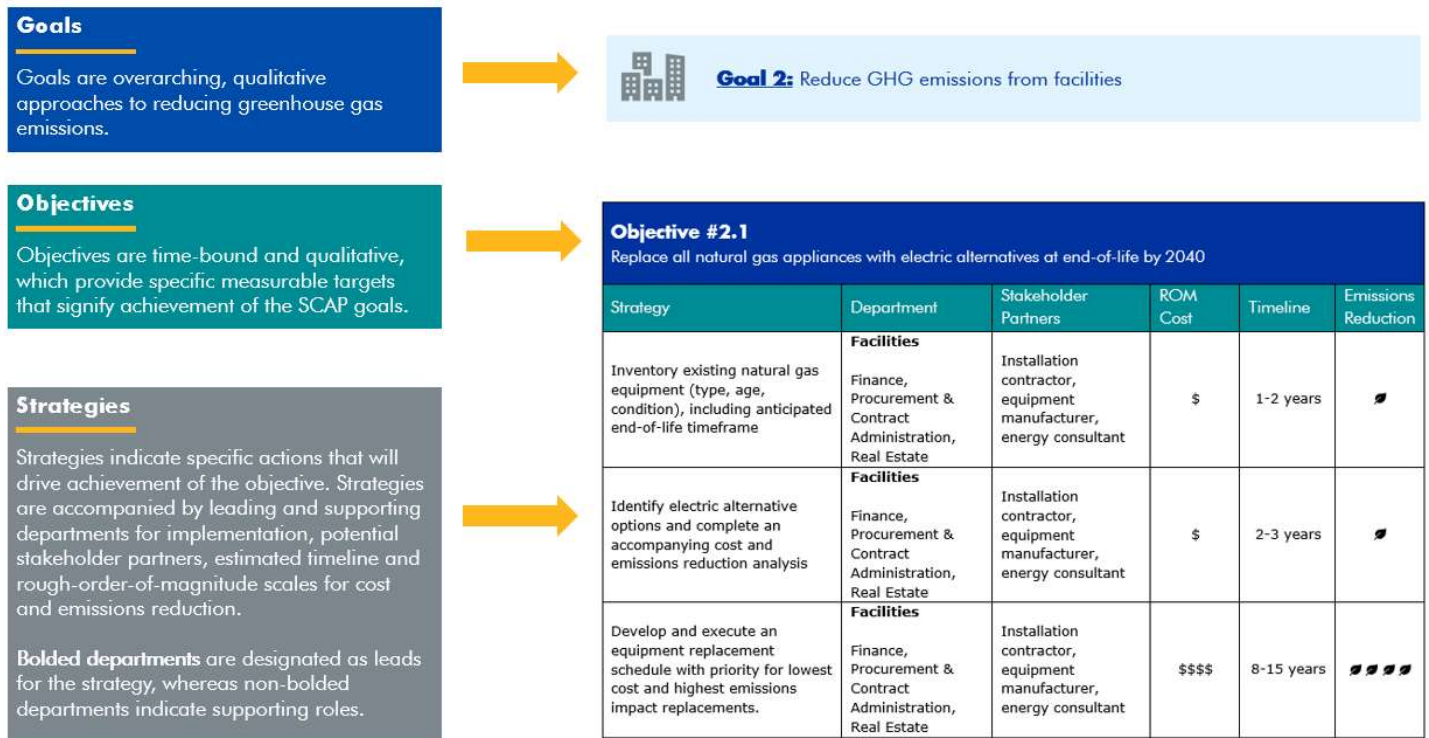


3.1 Roadmap Overview

NCTD has set eight overarching goals and 17 quantitative objectives to reduce GHG emissions. These are supported by 41 strategies to help guide their achievement. Together, these strategies will drive substantial emissions reductions agency-wide through 2030 and beyond. The strategies listed include additional information to support decision-makers at NCTD with prioritizing and implementing this plan. This information includes lead and supporting departments, anticipated timeframes for completion, and scales indicating rough-order-of-magnitude (ROM) cost and potential emissions reduction impact.

Figure 3-1 shows and defines each element of this Sustainability and Climate Action Roadmap.

Figure 3-1. SCAP Roadmap Elements and Definitions



Cost and Emissions Keys

Table 3-1. Rough-Order-of-Magnitude (ROM) Cost Legend

ROM Cost	Cost Range
Very Low (\$)	\$0 - \$100,000
Low (\$\$)	\$100,001 - \$500,000
Medium (\$\$\$)	\$500,001 - \$1,000,000
High (\$\$\$\$)	> \$1,000,000

Table 3-2. Emissions Reduction Legend

Emissions Reduction	Emissions Reduction Potential
🍃	Very low direct emissions reduction potential
🍃🍃	Low direct emissions reduction potential
🍃🍃🍃	Moderate direct emissions reduction potential
🍃🍃🍃🍃	High direct emissions reduction potential
🍃🍃🍃🍃🍃	Very high direct emissions reduction potential



3.2 Goals, Objectives, and Strategies



Goal 1: Achieve carbon neutrality and embed climate action across NCTD operations

NCTD’s first goal is to work towards operational carbon neutrality over the next 25+ years and to incorporate climate action and sustainability into the agency’s operations, services and practices. All subsequent goals and objectives laid out in the SCAP are designed to support and drive achievement of this first objective: to achieve an interim emissions reduction target of 75% below our baseline by 2040 and carbon neutrality by 2050.

The primary steps to achieving this objective are to ensure that internal leadership and personnel are designated to oversee and guide the implementation of this plan, and all resulting sustainability and climate action initiatives.

Table 3-3. Objective #1.1 Strategies

Objective #1.1 Reduce emissions by 75% from the baseline by 2040 and achieve carbon neutrality by 2050					
Strategy	Department	Stakeholder Partners	ROM Cost	Timeline	Emissions Reduction
Establish a climate action working group to drive initiatives and projects across operations	General Management All Departments	-	\$	1-2 years	
Hire a lead or chief sustainability officer to champion efforts across NCTD	Office of the Executive Director All Departments	-	\$	1-2 years	

This goal is supported by two additional objectives. First, NCTD will integrate sustainability into all department workplans by 2026. This will take on the form of establishing sustainability- and climate-related objectives and performance goals that are specific to the department and align with the SCAP. Emissions reduction will be integrated into performance criteria for department leadership and project evaluations.

Second, NCTD will supplement its existing outreach and advocacy efforts with internal and community-facing programs that are centered on reducing individual and institutional carbon footprints. These include training and workforce development programs, organizational partnerships across the San Diego region and a comprehensive review and update of project design specifications to reflect and advance NCTD’s climate goals.

Table 3-4. Objective #1.2 Strategies






Objective #1.2 Integrate carbon neutrality into all department work plans and activities by 2026					
Strategy	Department	Stakeholder Partners	ROM Cost	Timeline	Emissions Reduction
Work with leadership to build carbon neutrality into department work plans	General Management All Departments	-	\$	1-3 years	
Establish emissions reductions as performance criteria for leadership and project evaluations across departments	General Management All Departments	-	\$	1-3 years	

Table 3-5. Objective #1.3 Strategies

Objective #1.3 Establish internal and community facing programs and resources to encourage sustainable and emissions reducing activities, practices and design over the next six years					
Strategy	Department	Stakeholder Partners	ROM Cost	Timeline	Emissions Reduction
Establish internal employee training programs around sustainable best practices, topics and green job development	Learning and Development All Departments	Non-profit/ community-based organizations, Established training programs	\$-\$\$	3-5 years	
Partner with local agencies, regional authorities and community organizations to collaborate on community-facing or region-facing climate action efforts	Planning & Communications All Departments	Non-profit/ community-based organizations, Cities, County of San Diego, SANDAG	\$-\$\$	Ongoing	
Review and revise project design criteria and specifications across operations to integrate sustainable and low-carbon practices and products	Development Services Oversight All Departments	-	\$	1-5 years	



Goal 2: Reduce GHG emissions from facilities




While emissions from NCTD’s facilities and building assets are relatively minimal, they are still an important contributor to agency emissions. As such, NCTD has set a goal to reduce GHG emissions from its facilities. To achieve this goal, NCTD will work towards replacing all current and future end-of-life natural gas appliances with electric alternatives by 2040. This is an effective strategy because as California’s grid transitions to zero-emissions, emissions from use of electricity will be mitigated (while emissions from use of natural gas will persist). Additionally, NCTD will deploy energy efficiency upgrades and new high-efficiency lighting fixtures and equipment wherever possible through 2050.

To achieve each objective, NCTD will direct resources to complete comprehensive energy audits and develop inventories of all equipment and lighting fixtures at each facility. NCTD will also identify preferred alternatives supported by lifecycle cost-benefit and emissions impact analyses, which will in turn be used to develop and execute equipment replacement schedules across facilities. NCTD will prioritize replacements that achieve the highest emissions reductions at the lowest cost lifecycle possible.

Table 3-6. Objective #2.1 Strategies

Objective #2.1					
Replace all natural gas appliances with electric alternatives at end of life by 2040					
Strategy	Department	Stakeholder Partners	ROM Cost	Timeline	Emissions Reduction
Inventory existing natural gas equipment (type, age, condition), including anticipated end-of-life timeframe	Facilities Finance, Procurement & Contract Administration, Real Estate	Installation contractor, equipment manufacturer, energy consultant	\$	1-2 years	🍃
Identify electric alternative options and complete an accompanying cost and emissions reduction analysis	Facilities Finance, Procurement & Contract Administration, Real Estate	Installation contractor, equipment manufacturer, energy consultant	\$	2-3 years	🍃
Develop and execute an equipment replacement schedule with priority for lowest cost and highest emissions impact replacements.	Facilities Finance, Procurement & Contract Administration, Real Estate	Installation contractor, equipment manufacturer, energy consultant	\$\$\$\$	8-15 years	🍃🍃🍃🍃

Table 3-7. Objective #2.2 Strategies

Objective #2.2 Identify opportunities for and deploy energy efficiency upgrades at facilities through 2050					
Strategy	Department	Stakeholder Partners	ROM Cost	Timeline	Emissions Reduction
Conduct energy audits across all NCTD facilities	Facilities Finance, Procurement & Contract Administration, Real Estate	Installation contractor, equipment manufacturer, energy consultant	\$	2-3 years	
Identify energy efficiency options and complete an accompanying cost and emissions reduction analysis	Facilities Finance, Procurement & Contract Administration, Real Estate	Installation contractor, equipment manufacturer, energy consultant	\$	3-4 years	
Develop and execute an equipment replacement schedule with priority for lowest cost and highest emissions impact replacements	Facilities Finance, Procurement & Contract Administration, Real Estate	Installation contractor, equipment manufacturer, energy consultant	\$\$\$	8-15 years	



Goal 3: Replace all BREEZE buses with zero-emission buses (ZEBs)

NCTD has already taken steps to date to reduce the emissions impact of its BREEZE buses by using alternative fuels such as renewable natural gas and renewable diesel, which have significantly lower emissions than conventional fuels. Additionally, NCTD has also committed to the **full transition of its bus fleet to zero-emission buses by 2042** under CARB’s Innovative Clean Transit regulation. To achieve this goal, NCTD will successfully execute its *Zero-Emission Bus Roll-Out Plan* (as submitted to CARB in 2020) to procure a mix of battery-electric and hydrogen fuel-cell-electric buses (FCEBs) over the next 10-15 years.

Table 3-8. Objective #3.1 Strategies

Objective #3.1					
Achieve a 100% ZEB bus fleet through the procurement of battery electric and hydrogen fueled buses by 2042					
Strategy	Department	Stakeholder Partners	ROM Cost	Timeline	Emissions Reduction
Execute zero-emission bus roll-out plan as submitted to CARB under the Innovative Clean Transit regulation	Bus Operations Finance, Procurement & Contract Administration, Safety	CARB, SANDAG, NSDCTDB, Bus and fueling OEMs, SDG&E	\$\$\$\$	10-15 years	🌿🌿🌿🌿
Pursue 100% renewably-sourced electricity and hydrogen where possible for bus fueling	Bus Operations Finance, Procurement & Contract Administration, Safety	CARB, SANDAG, NSDCTDB, Bus and fueling OEMs, SDG&E	\$\$\$\$	10-15 years	🌿🌿🌿🌿



Goal 4: Replace all COASTER and SPRINTER rolling stock with zero-emission rail vehicles

A majority of NCTD’s GHG emissions can be attributed to the fuel used to power the COASTER and SPRINTER rail fleets. To mitigate these emissions, NCTD will focus on advancing the following objectives: completing an agency-wide transition to renewable diesel (in place of conventional diesel) by 2028, and transitioning both fleets to zero-emission technologies by 2047.⁹

Table 3-9. Objective #4.1 Strategies

Objective #4.1 Substitute fossil diesel with renewable diesel for all COASTER and SPRINTER fueling by 2028					
Strategy	Department	Stakeholder Partners	ROM Cost	Timeline	Emissions Reduction
Develop and execute contracts for renewable diesel for all COASTER and SPRINTER fueling	Maintenance of Way Finance, Procurement & Contract Administration, Safety	-	\$\$\$\$	1-2 years	▀▀▀▀▀

⁹ Per CARB’s In-Use Locomotive Regulation, approved April 27, 2023, the COASTER locomotive fleet must be 50% zero-emission by 2042 and 100% zero-emission by 2047. Although the regulation does not currently apply to multiple units (e.g., the SPRINTER fleet), regulations to address multiple units are expected.

Table 3-10. Objective #4.2 Strategies

Objective #4.2 Replace the existing SPRINTER and COASTER fleets with zero emission rail vehicles by 2047.					
Strategy	Department	Stakeholder Partners	ROM Cost	Timeline	Emissions Reduction
Develop a fleet transition strategy, complete with feasibility and cost-benefit assessments of zero-emission propulsion systems for each service	Maintenance of Way Finance, Procurement & Contract Administration, Safety	-	\$\$\$	Ongoing	🌿
Develop and implement a replacement plan for the SPRINTER service, complete with a cost assessment and funding plan	Maintenance of Way Finance, Procurement & Contract Administration, Safety	-	\$\$\$\$	2-11 years	🌿🌿🌿🌿
Develop and implement a replacement plan for the COASTER service, complete with a cost assessment and funding plan	Maintenance of Way Finance, Procurement & Contract Administration, Safety	-	\$\$\$\$	6-23 years	🌿🌿🌿🌿





Goal 5: Replace all FLEX, LIFT, and non-revenue fleet vehicles with zero-emission vehicles (ZEVs)

To address the remaining emissions from NCTD’s transit services, supporting operations and maintenance vehicles, NCTD will work toward replacing all FLEX and LIFT services vehicles, as well as its non-revenue fleet vehicles, with ZEVs. NCTD will prioritize replacing light-duty vehicles first by 2040, followed by medium- and heavy-duty vehicles by 2050.

Table 3-11. Objective #5.1 Strategies

Objective #5.1					
Replace all light duty vehicles across all fleets with zero emission alternatives by 2040					
Strategy	Department	Stakeholder Partners	ROM Cost	Timeline	Emissions Reduction
Develop and implement a light-duty fleet management plan that mandates new procurements to be ZEVs	Mechanical Department Finance, Procurement & Contract Administration, Safety	NSDCTDB, Vehicle and charging OEMs, SDG&E	\$\$\$\$	10-15 years	🍃🍃🍃🍃
Develop and implement an EV charging station installation plan to meet projected demand from fleet vehicles	Mechanical Department Finance, Procurement & Contract Administration, Safety	NSDCTDB, Vehicle and charging OEMs, SDG&E	\$\$\$	10-15 years	🍃🍃🍃🍃

Table 3-12. Objective #5.2 Strategies

Objective #5.2 Replace all medium and heavy duty vehicles across all fleets with zero emission alternatives by 2050					
Strategy	Department	Stakeholder Partners	ROM Cost	Timeline	Emissions Reduction
Develop and implement an MD/HD fleet management plan that mandates new procurements to be ZEVs	Mechanical Department Finance, Procurement & Contract Administration, Safety	NSDCTDB, Vehicle and charging OEMs, SDG&E	\$\$\$\$	15-25 years	★★★★★
Develop and implement an EV charging and hydrogen fueling installation plan to meet projected demand from fleet vehicles	Mechanical Department Finance, Procurement & Contract Administration, Safety	NSDCTDB, Vehicle and charging OEMs, SDG&E	\$\$\$\$	15-25 years	★★★★★
Explore opportunities for zero-emission vehicles for future micro-transit solutions where possible	Mechanical Department Finance, Procurement & Contract Administration, Safety	NSDCTDB, Vehicle and charging OEMs, SDG&E	\$\$\$\$	15-25 years	★★★★★



Goal 6: Quantify and reduce emissions from employee commuting and business travel

NCTD will work toward quantifying and ultimately reducing Scope 3 emissions from employee commuting and business travel. Calculating emissions from NCTD employee travel is critical to understanding NCTD’s contributions to regional emissions through increased VMT. Based on existing placeholder assumptions, employee commuting is estimated to account for over 15% of all VMT associated with NCTD services. At the time of drafting, NCTD is conducting an employee commuting survey, which will examine travel mode trends across the agency.

Upon quantifying emissions, NCTD will seek to reduce the employee drive-alone rate by 15% compared to the baseline by 2035, and from there it will explore opportunities to offset any remaining emissions by 2050.

Table 3-13. Objective #6.1 Strategies

Objective #6.1 Calculate emissions from employee commuting and business travel by 2025					
Strategy	Department	Stakeholder Partners	ROM Cost	Timeline	Emissions Reduction
Develop and conduct an annual employee commuting survey to calculate Scope 3 emissions	Administration Human Resources	-	\$	Ongoing	🍃
Collect and consolidate business travel data to calculate Scope 3 emissions	Administration Human Resources	-	\$	Ongoing	🍃

Table 3-14. Objective #6.2 Strategies

Objective #6.2 Decrease employee drive alone rate by 15% compared to baseline by 2035 and implement programs to reduce emissions from employee commuting					
Strategy	Department	Stakeholder Partners	ROM Cost	Timeline	Emissions Reduction
Conduct focused outreach to employees to identify common barriers to using alternative, low-carbon modes of transportation	Administration Human Resources	-	\$	1-3 years	🍃
Implement programs to encourage rideshare and mode shift, as well as reduced/low-carbon transportation, on behalf of employees	Administration Human Resources	-	\$\$	4-10 years	🍃🍃

Table 3-15. Objective #6.3 Strategies

Objective #6.3 Offset remaining emissions from employee commuting and business travel by 2050					
Strategy	Department	Stakeholder Partners	ROM Cost	Timeline	Emissions Reduction
Conduct a market analysis to determine opportunities (i.e., insets and offsets) to neutralize residual emissions from employee commuting and business travel	Planning and Development Procurement & Contract Administration Oversight	-	\$	2-5 years	🍃
Identify opportunities to develop insets and purchase offsets as necessary to neutralize emissions based on analysis findings and market status	Planning and Development Procurement & Contract Administration Oversight	-	\$\$-\$\$\$\$	10-20 years	🍃🍃🍃





Goal 7: Divert waste from landfill

Waste is currently estimated to be a relatively small contributor to NCTD’s total GHG emissions, but diverting waste from landfill does more for NCTD than simply reduce emissions. To achieve this goal, NCTD will need to better its understanding the material resources that are used by NCTD, used within NCTD’s transit services, and ultimately disposed at NCTD facilities. This may also yield other co-benefits, including improved cleanliness and safety, as well as reduced expenses from procurement, maintenance and waste hauling.

As such, NCTD will focus on completing agency-wide waste characterization studies (or audits) by 2030 and follow up with plans to achieve zero-waste (<90% waste diversion) across NCTD operations and facilities by 2050, as well as adopt a sustainable procurement policy by 2030.

Table 3-16. Objective #7.1 Strategies

Objective #7.1 Complete comprehensive waste characterization studies of all major facilities and stations by 2030					
Strategy	Department	Stakeholder Partners	ROM Cost	Timeline	Emissions Reduction
Execute comprehensive audits of facilities and stations per CalRecycle guidelines	Facilities All Departments	Contractors/ Consultants, CalRecycle	\$\$	4-6 years	
Prepare a waste characterization report summarizing and reviewing audit results against regulatory targets with initial recommendations for zero-waste strategies	Facilities All Departments	Contractors/ Consultants, CalRecycle	\$	4-6 years	

Table 3-17. Objective #7.2 Strategies








Objective #7.2 Achieve zero waste (>90% waste diversion) across all NCTD operations and facilities by 2050					
Strategy	Department	Stakeholder Partners	ROM Cost	Timeline	Emissions Reduction
Develop and implement agency-wide zero-waste plan based on waste characterization findings, inclusive of intermediary goals and targets cutting across landfill, recyclable, and organic waste	Administration Operations – Rail, Bus Operations, Administrative Services, Planning & Communications	San Diego County Department of Public Works, waste haulers, organics processing vendors	\$\$\$	1-5 years	 
Develop and adopt an agency-wide zero-waste policy and coordinate with departments to install appropriate infrastructure in NCTD buildings and stations	Office of the CEO All Departments	Contractors/ Consultants, CalRecycle	\$\$-\$\$\$	4-8 years	 
Establish ongoing zero-waste education through trainings for staff and custodians, tips embedded in memos, and other communications	HR, Training & Org Development All Departments	-	\$	1-5 years	

Table 3-18. Objective #7.3 Strategies

Objective #7.3 Develop and adopt a sustainable procurement policy agency wide by 2030					
Strategy	Department	Stakeholder Partners	ROM Cost	Timeline	Emissions Reduction
Prepare an agency-wide report characterizing inventory, associated emissions, and costs with the intent to identify the top purchasing categories	Procurement & Contract Administration All Departments	-	\$	1-3 years	
Establish a sustainable procurement policy that designates criteria for agency-wide purchases (e.g., third-party certification, non-toxic materials, etc.)	Procurement & Contract Administration All Departments	-	\$	1-3 years	



Goal 8: Reduce emissions from electricity consumption through 100% renewable energy procurement and on-site generation

NCTD has benefited from the improving carbon intensity of the SDG&E grid, as well as the participation of several jurisdictions within NCTD’s service area in community choice aggregators (CCAs) to procure renewable-sourced electricity. By 2025, most of NCTD’s electricity meters will be enrolled under San Diego Community Power or the Clean Energy Alliance, with only a handful of low-use meters residing in other jurisdictions. Wherever possible, NCTD will explore opportunities to expedite the enrollment of meters at its facilities into CCAs or renewable energy programs through SDG&E. In addition, it will identify opportunities to increase on-site renewable energy generation to reduce emissions and increase energy resilience across NCTD.

Table 3-19. Objective #8.1 Strategies



Objective #8.1 Enroll all electricity meters onto SDG&E EcoChoice or into 100% renewable CCA rate options by 2035					
Strategy	Department	Stakeholder Partners	ROM Cost	Timeline	Emissions Reduction
Prepare and establish a comprehensive list of all electric meters, inclusive of end use, rates, and CCA or SDG&E EcoChoice enrollment	Facilities Real Estate, Bus Operations, Rail Operations, Accounting	SDG&E, Clean Energy Alliance, San Diego Community Power	\$	1-2 years	
Enroll all remaining meters onto the EcoChoice program or into 100% renewable rate options	Facilities Real Estate, Bus Operations, Rail Operations, Accounting	SDG&E, Clean Energy Alliance, San Diego Community Power	\$	2-5 years	

Table 3-20. Objective #8.2 Strategies

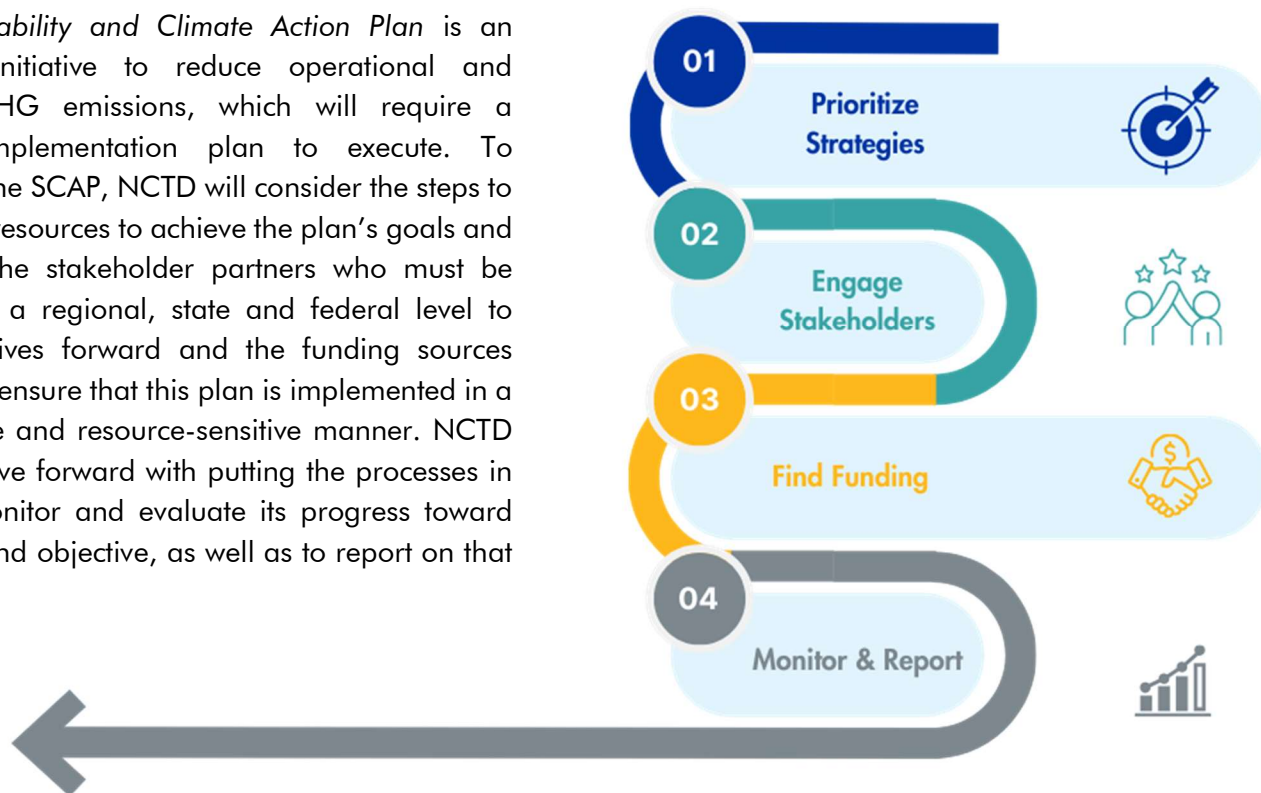
Objective #8.2 Install or procure at least 15 MW of on-site/off site solar (or other renewables) across NCTD facilities by 2040					
Strategy	Department	Stakeholder Partners	ROM Cost	Timeline	Emissions Reduction
Conduct solar feasibility assessments for major operating divisions and building assets and select locations for on-site solar and battery storage	Facilities Real Estate, Bus Operations, Rail Operations	Vendors	\$\$	3-5 years	🌿
Coordinate with electric utilities and vendors to install solar arrays and battery energy storage systems	Facilities Real Estate, Bus Operations, Rail Operations	Vendors, SDG&E	\$\$\$-\$\$\$\$	5-15 years	🌿🌿🌿🌿
Work with local and regional agencies to identify opportunities for power purchase agreements for additional renewable energy procurement	Facilities Real Estate, Procurement & Contract Administration, Financial Oversight	Cities, SANDAG, County of San Diego	\$\$-\$\$\$\$	5-15 years	🌿🌿🌿🌿



3.3 Implementing the SCAP

Figure 3-2. SCAP Implementation Process

The *Sustainability and Climate Action Plan* is an ambitious initiative to reduce operational and regional GHG emissions, which will require a cohesive implementation plan to execute. To implement the SCAP, NCTD will consider the steps to mobilize its resources to achieve the plan's goals and objectives, the stakeholder partners who must be engaged at a regional, state and federal level to move initiatives forward and the funding sources available to ensure that this plan is implemented in a cost-effective and resource-sensitive manner. NCTD will also move forward with putting the processes in place to monitor and evaluate its progress toward each goal and objective, as well as to report on that progress.



Prioritizing Strategies

All strategies listed cannot be implemented immediately and concurrently, but this Roadmap serves as a menu of pathways for NCTD to reduce its emissions. NCTD will begin implementing this SCAP by using the following criteria to prioritize strategies for implementation:

- Financial costs and benefits**
 NCTD will evaluate actions in the context of their costs to NCTD, and the potential revenues or cost savings they may yield. Strategies with lower costs and/or higher savings for NCTD will be prioritized.
- Emissions reduction impact**
 NCTD will prioritize the actions that reduce or prevent the greatest volume of GHG emissions.
- Staff resources**
 NCTD will consider the staff available, or the additional staff that may be needed, to implement certain strategies. Strategies that can be deployed with existing staff resources will be prioritized.
- Funding availability**
 NCTD has identified potential funding sources through the development of this SCAP that it will explore

more thoroughly. The SCAP will be used to support grant applications at the federal and state level to support District-wide decarbonization. NCTD will prioritize the strategies that are most likely to or can be immediately supported by external funding.

- **Equity and co-benefits**

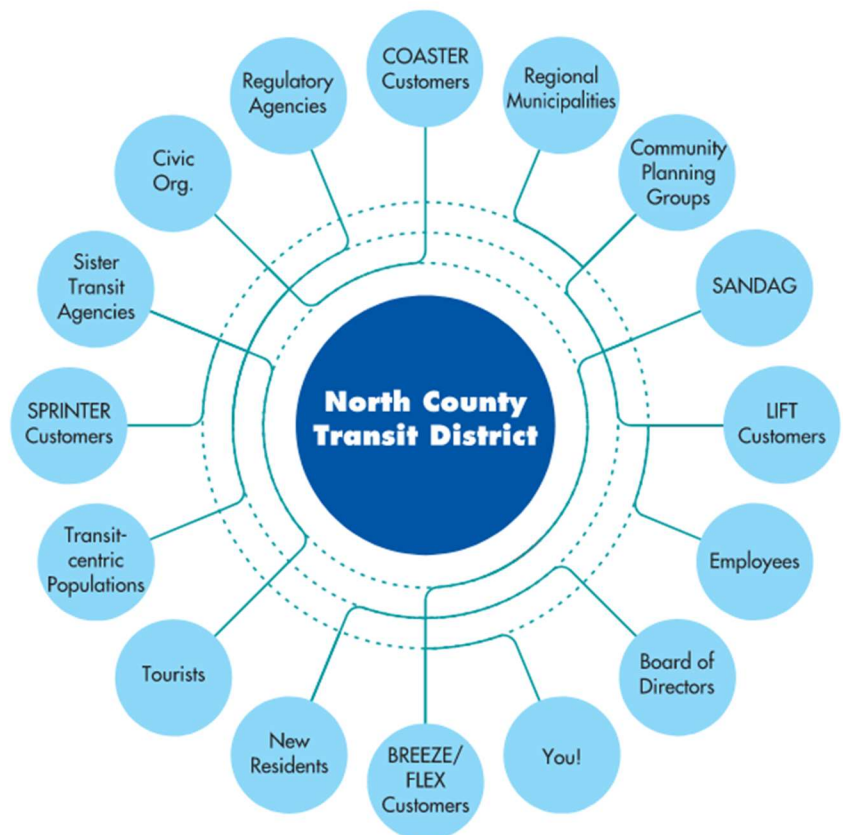
In alignment with NCTD's values, NCTD will evaluate strategies in the context of community equity in NCTD's service area. It will also consider the potential co-benefits of each action, which can include but may not be limited to reduced air pollution, improved resilience to specific climate hazards, reduced waste and resource use and so forth.

Engaging Stakeholders

NCTD recognizes that achieving its climate goals will not be possible without ongoing and meaningful coordination with stakeholders across the San Diego region and beyond. NCTD is committed to upholding its relationship with its stakeholders, who graciously provided input into the development of this SCAP. These include, though are not limited to:

- Alliance for Regional Solutions (ARS)
- Amtrak
- BNSF Railway
- California Department of Transportation (Caltrans)
- Circulate San Diego
- City of Carlsbad
- City of Del Mar
- City of Encinitas
- City of Escondido
- City of Oceanside
- City of San Diego
- City of San Marcos
- City of Solana Beach
- City of Vista
- County of San Diego
- LOSSAN Rail Corridor Agency
- North County Climate Change Alliance
- NCTD Customers
- San Diego Association of Governments (SANDAG)
- San Diego Metropolitan Transit System (MTS)
- SD350
- Sierra Club
- Southern California Regional Rail Authority (Metrolink/SCRRA)

Figure 3-3. SCAP Key Stakeholder Map



Funding Solutions

While NCTD has successfully pursued and received funding for existing sustainability and climate action initiatives, NCTD has identified several additional funding sources through the development of the SCAP Roadmap (see Section 3.2). NCTD will task staff to investigate and pursue these opportunities to support the successful execution of this SCAP.

Table 3-21. Funding Solutions by SCAP Objective

SCAP Objective	Funding Solution
Objective #2.1	California Energy Commission - Energy Partnership Program
Objective #2.2	U.S. Department of Energy's Property-Assessed Clean Energy (PACE) Program
Objective #3.1	California Energy Commission – Clean Transportation Program
Objective #4.2	
Objective #5.1	
Objective #3.1	Federal Transit Administration
Objective #4.1	California State Transportation Agency
	CARB Carl Moyer Memorial Air Quality Standards Attainment Program
	Federal Consolidated Rail Infrastructure and Safety Improvements (CRISI)
Objective #5.1	Clean Vehicle Rebate Project (CVRP) for Fleets
Objective #5.2	SDG&E Power Your Drive for Fleets
	EnergllZE Commercial Vehicles Project
	California Hydrogen Fuel Cell Partnership
Objective #7.2	CalRecycle Greenhouse Gas Reduction Loan Program
	CalRecycle Beverage Container Recycling Grants
	CalRecycle Co-Digestion Grant Program
Objective #8.2	California Alternative Energy and Advanced Transportation Financing Authority
	Affordable Housing and Sustainable Communities Program

Monitoring, Evaluation and Reporting

Finally, NCTD will take these steps to ensure the implementation of the SCAP:

- **Assign responsibility**

NCTD will create and deploy the infrastructure to implement the SCAP and monitor progress toward its achievement. Under Objective 1.1, NCTD will establish and/or hire new personnel to oversee the plan's implementation. Those personnel will be responsible for coordinating amongst business units and external stakeholders toward implementing the SCAP.

- **Integrate the SCAP into workflows and evaluate progress**

Personnel assigned to oversee SCAP implementation will be responsible for evaluating progress toward all goals and objectives in this plan. They will collaborate with department leads toward integrating progress on the SCAP into performance evaluation, department workplans, and specifications. These personnel will also be responsible for determining if any existing milestones or objectives laid out in this plan should be modified or updated every 4-6 years.

- **Routine GHG emissions inventories**

In addition, NCTD is committed to the routine preparation and publication of its GHG emissions inventory on a biennial basis (at minimum). This is a critical step toward tracking progress on NCTD's decarbonization efforts and ensuring that it achieves carbon neutrality. GHG emissions inventories will be used to help NCTD prioritize strategy implementation, drawing upon data to determine where progress is being made and where further action is needed. NCTD will task staff with collecting and managing data to ensure that comprehensive and accurate inventories are available for evaluation and reporting.

- **Public reporting**

NCTD will report on its progress through online reports or dashboards that will include NCTD's GHG emissions inventories and progress on goals and objectives. The agency will also use existing mailing lists and stakeholder contacts to communicate progress on a routine basis, emphasizing progress on the SCAP and opportunities for the public to engage with NCTD on its sustainability and climate action initiatives. Finally, NCTD will further its participation in the American Public Transportation Association's (APTA) Sustainability Commitment and report on certain key performance indicators to benchmark against other public transit providers.

- **Programmatic support**

In addition to selecting and executing these strategies, NCTD will develop and administer supporting programs to enable behavioral change and integrate sustainability into workflows. Programs may include training and workforce development, community engagement, design standards review, construction specifications updates and policy reviews.

4 CONCLUSION

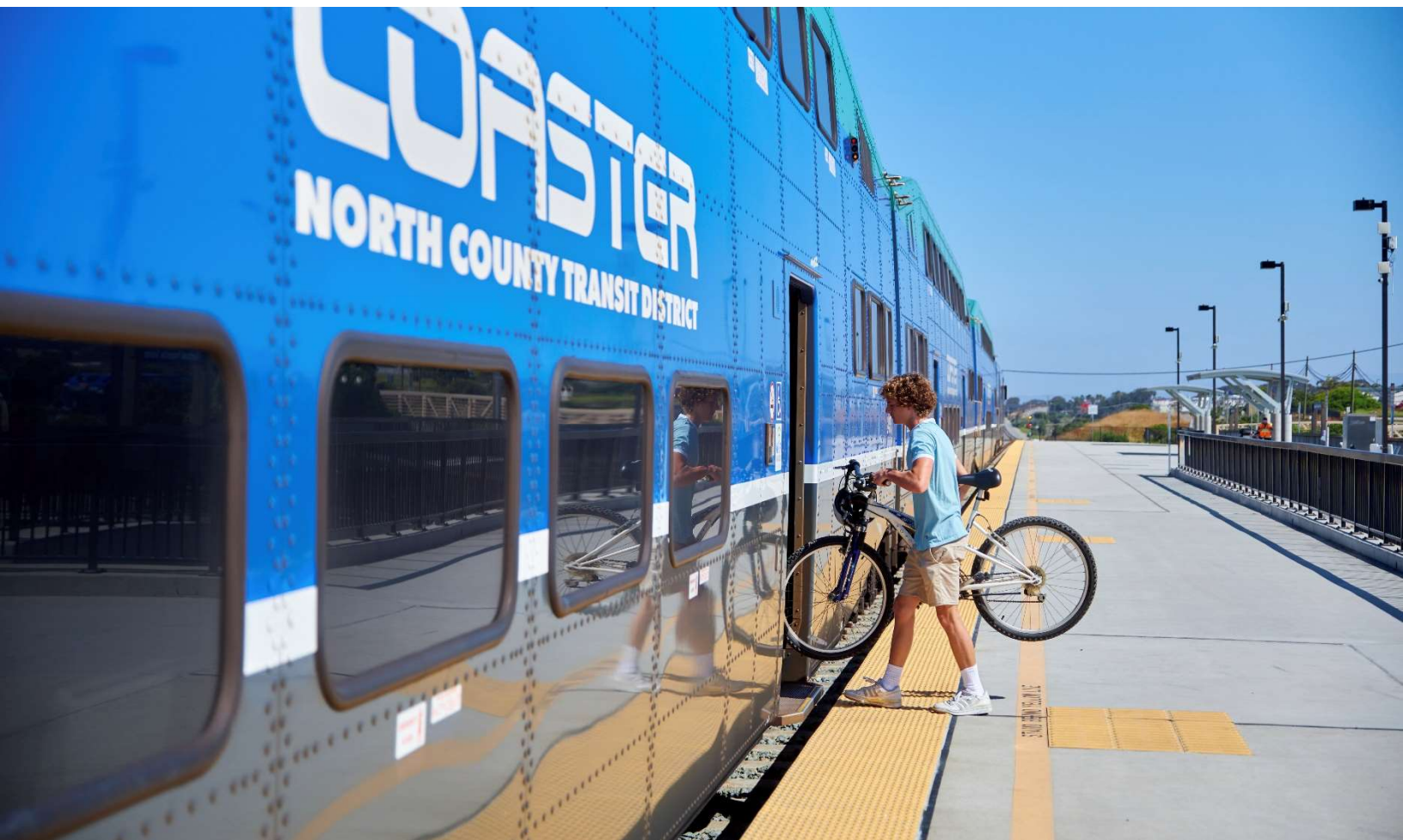


4 Conclusion

It is NCTD's mission to operate an environmentally sustainable and fiscally responsible transit network that provides seamless mobility for all while achieving organizational and operational excellence. This *Sustainability and Climate Action Plan* is, first and foremost, a critical step toward fulfilling that mission, serving as both a statement of NCTD's commitment to tackling climate change and a strategic framework for the agency to neutralize its own greenhouse gas emissions.

Second, this SCAP also an essential effort on a regional scale, leading to a decarbonized future for North County. Public transportation offers tremendous opportunity to take vehicles off the road and wipe out emissions from cars and trucks, and it is NCTD's highest priority to bring mobility services to residents across North County that not only provide them with an alternative to their vehicles, but also connect them to essential resources and important destinations. However, NCTD recognizes that, as a public transportation agency, it must provide those services in a way that does not pose additional risk with respect to climate change and to the communities it affects. The SCAP lays out the avenues NCTD can and must take to decarbonize those services without compromising their availability and affordability for North County residents.

Finally, this SCAP is a call to action to NCTD employees, business units and stakeholders to continue their efforts to address climate change. This tool serves as a resource for future emission strategies to empower peer agencies and jurisdictions and to connect them with the financial and organizational resources to reduce their own environmental footprints and actualize a better future for the San Diego region and globally.



Sustainability and Climate Action Plan



Prepared for NCTD by:

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Fehr and Peers