Appendix P: Federal System Performance Report

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Transportation Performance Management

Introduction

Signed into law in 2012, the federal surface transportation bill Moving Ahead for Progress in the 21st Century (MAP-21) Act included provisions for the establishment of performance- and outcome-based planning and programming in seven areas: safety, infrastructure condition, congestion reduction, system reliability, freight movement and economic vitality, environmental sustainability, and reduced project delivery delays (23 U.S.C. §150[b]). This act significantly advanced the application of performance-based planning and programming in the field of transportation. It established a system to further inform transportation planning and programming with the unified application of observed data, performance measures, and performance targets in the areas of safety, asset condition, and system performance.

The subsequent federal surface transportation bills, Fixing America's Surface Transportation (FAST) Act and Bipartisan Infrastructure Law (BIL), continued these performance provisions. Starting in 2016, the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA) issued a series of Final Rules to implement the performance provisions. These rules establish the protocols, including the timelines, processes, data, and reporting requirements for performance compliance.

The rules were designed to be applicable nationwide and to provide meaningful information at regional, state, and national levels. FHWA released three rules: transportation safety; infrastructure conditions; and system performance, freight movement, and Congestion Mitigation and Air Quality (CMAQ) (CFR Part 490). The performance management (PM) rules are also referred to by the order they were released; Transportation safety performance management (PM 1), Infrastructure condition performance management (PM 2), and System performance, freight, and CMAQ (PM 3) (23 CFR Part 490). In addition, FTA released a Transit Asset Management (TAM) rule establishing procedures to help maintain key transit assets in a state of good repair and a Public Transportation Agency Safety Plan (PTASP) rule.

The metropolitan transportation planning rule (23 CFR Parts 450 and 771 and 49 CFR Part 613), jointly released by FHWA and FTA, guides how performance is integrated into planning and programming processes and documents. This rule states that:

- The regional transportation planning process "shall provide for the establishment and use of a performance-based approach to transportation decision-making to support the national goals described in 23 U.S.C. § 150(b) and the general purposes described in 49 U.S.C. § 5301(c)" (23 CFR 450.306).
- The Regional Transportation Plan "shall, at a minimum, include: . . . (4) A system performance report and subsequent updates evaluating the condition and performance of the transportation system with respect to the performance targets described in § 450.306(d)" (23 CFR 450.324).

In support of these rules, SANDAG has developed this Federal System Performance Report to document the performance-based process and evaluation of the transportation system. In addition, SANDAG has entered into data-sharing and target-setting coordination agreements with Caltrans, Metropolitan Transit System (MTS), and North County Transit District (NCTD).

- March 2018, SANDAG and Caltrans signed an addendum to the Memorandum of Understanding (MOU) on Planning and Programming to meet the performance-based planning and programming requirements established in MAP-21.
- April 2018, SANDAG and Caltrans entered into a data-concurrence agreement to enable the use of mutually agreed upon datasets for target-setting purposes.
- May 2018, SANDAG, MTS, and NCTD signed an addendum to the master MOU, adding coordination efforts on data collection and data sharing to support TAM regional targets.
- January 2021, SANDAG signed an additional addendum to the master MOU with MTS and NCTD on sharing performance information and data related to transit safety and system reliability.

Additional information, including performance data, can be found at FHWA's and FTA's performance management websites:

- **https://www.fhwa.dot.gov/tpm**
- **https://www.transit.dot.gov/PerformanceManagement**

In addition, Chapter 3: Implementation Actions includes continued efforts to implement a Transportation Performance Management Framework to improve transparency and reporting on SANDAG program effectiveness and project delivery, which aligns with federal transportation performance management.

Interagency Coordination

SANDAG uses the public process to coordinate and collaborate on performance target setting and performance monitoring. Coordination involves local jurisdictions, Caltrans, public transit providers, public safety agencies, and community members. Because representatives from those agencies make up the membership of several SANDAG task forces, working groups, and Policy Advisory Committees, those meetings are used in the public interagency coordination process, based on the particular performance management content area being covered. Beginning in November 2022, the SANDAG Transportation Committee has the authority to approve federal performance management targets for SANDAG.

Structure and Implementation Timeframe

The performance management process sets future performance targets using analyses of historical observed data and future projections as applicable. Targets are established using defined performance measures and data sources. Performance is monitored over time and evaluated against the established performance targets. State Departments of Transportation (DOTs) set statewide performance targets for safety, infrastructure conditions, and system performance, freight movement and CMAQ[1]. Metropolitan Planning Organizations (MPOs) have 180 days after the state DOT target adoption date to either support the statewide targets or develop regional targets. Similarly, transit operators set TAM and PTASP targets. MPOs with multiple transit providers facilitate the development of regional TAM and PTASP targets with the development of each regional plan.

[1] Only regional targets are set for CMAQ performance measures within PM 3. These require concurrence between state DOTs and MPOs.

The federal performance-management areas have been phased in over multiple years and have different implementation timeframes. This process began with PM 1 and was followed by PM 2, PM 3, and TAM. The staggered phasing of performance areas means that not all performance measures or performance-management areas have the same update schedule. Below is a summary of the key timeframe differences.

Table P.1: Federal Performance-Management Areas

Performance Management Area	Performance Period Length	Target Setting Frequency	Target Horizon Years
PM 1	1 year	1 year	1 year
PM 2	4 years	4 years	2 and 4 years
PM 3	4 years	4 years	2 and 4 years
TAM	4 years[2]	4 years	4 years
PTASP	4 years[2]	4 years	4 years

PM 1 targets are set and evaluated annually; they were first established in 2017 for calendar year 2018. The required data sources for these measures involve significant development time. There is a multi-year delay between when safety events occur and when observed data is finalized for safety performance measures. As a result, significant progress determination on target achievement, generally occurs two years after the target has passed. The Fatality Analysis Reporting System (FARS), maintained by the National Highway Traffic Safety Administration, has a two-year process for the data to become final. The Statewide Integrated Traffic Records System (SWITRS), maintained by California Highway Patrol, has a one-year process for the data to become final.

PM 2 consists of four-year performance periods; the first performance period ran from 2018-2022. In 2022, targets were set for the second four-year performance period (2022–2025). Targets were set for the midpoint (2023) and final year of the performance period (2025). Targets were documented in the Caltrans **Transportation Asset Management Plan** and performance baseline report that included existing conditions and anticipated changes to inform the targets. At the mid-performance date, the state DOTs and MPOs can choose to modify their full performance period targets. No target changes were made in 2023. Upon completion of the 2022–2025 performance period, SANDAG will develop a full performance period report. At the same time, a new four-year performance period will begin (2026–2029) with a new baseline report and targets.

PM 3 includes multiple schedules to cover six performance measures. System performance and freight performance follow the same four-year performance period as PM 2. The CMAQ performance measures are further broken down into emission-reduction measures and all other measures. Emission-reduction measures follow a four-year performance period matching the federal fiscal year (October to September) instead of the calendar year. All other PM 3 performance measures follow the four-year performance period aligned to the calendar year.

[2] Determined in coordination between SANDAG and transit operators.

TAM performance targets are set annually by transit operators. In the San Diego region, this includes MTS and NCTD. MPOs are required to develop regional TAM targets incorporating transit operator targets. Updates to regional TAM targets are required with each new Regional Plan. Targets cover four asset categories: equipment, facilities, infrastructure, and rolling stock. Each asset category consists of multiple asset types (see Table P.12). All asset types are evaluated for the proportion that is beyond its useful life or in need of repair/replacement.

PTASP performance targets are set annually by transit operators. In the San Diego region, this includes MTS and NCTD. MPOs are required to develop regional public transportation safety targets incorporating transit operator targets. Updates to regional public transportation safety targets are required with each new Regional Plan. Targets are required for the seven performance measures[3] and each measure includes three modal groups: fixed route bus, non-fixed route bus, and rail.

Federal System Performance Report Structure

The five federal performance management areas—PM 1, PM 2, PM 3, TAM, and PTASP—are included below. Each of the five areas begins with a description of the target-setting process and the specific performance targets. Next is a summary of the measures and methodology included in the performance management area. The following section details how the 2025 Regional Plan and 2025 Regional Transportation Improvement Program (RTIP) support the performance targets. The final section for each of the performance management areas addresses the current conditions and progress-to-target effort with available data.

SANDAG coordinates and collaborates on federal performance management and projects with local jurisdictions, Caltrans, public transit providers, public safety agencies, and the public through a number of task forces, working groups and Policy Advisory Committees. The Board of Directors revised Policy No. 001 (Section 4.1.26) in November 2022, delegating authority to the Transportation Committee to approve the FHWA and FTA Transportation Performance Management targets required of MPOs.

Transportation Safety (PM 1)

Target-Setting Process

For PM 1 target-setting process, Caltrans, in consultation with state MPOs and the Office of Traffic Safety, establishes statewide safety targets. The statewide safety target-setting process is informed by safety plans, including the Caltrans Strategic Highway Safety Plan and Office of Traffic Safety Highway Safety Plan. Once Caltrans has established statewide targets, SANDAG has 180 days to take action to support the statewide targets or develop and support regional targets. PM 1 requires annually updated targets.

Starting in 2018, the Board, and continuing in 2023 the Transportation Committee, have taken action to support the annual statewide safety targets, including the most recent 2025 safety targets. With each target-setting cycle, SANDAG agrees to plan and program projects that will help reach the established targets. The 2018–2024 statewide safety targets for PM 1 are shown in Table P.2.

[3] In April 2024, FTA released six additional performance measures. Transit agencies will set targets for these new measures during their next regular Agency Safety Plan update. This report will follow transit agency target setting and include the new measure targets in a future update cycle.

Table P.2: Statewide Transportation Safety Targets - PM 1

Performance Measure	2018	2019	2020	2021	2022	2023	2024
1. Number of fatalities	3,590.8	3,445.4	3,518.0	3,624.8	3,491.8	3,808.2	4,080.6
2. Rate of fatalities per 100 million vehicle miles traveled (VMT)	1.029	0.995	1.023	1.044	1.042	1.216	1.300
3. Number of serious injuries	12,823.4	12,688.1	13,740.4	15,419.4	16,704.2	15,156.2	16,628.1
4. Rate of serious injuries per 100 million VMT	3.831	3.661	3.994	4.423	4.879	4.904	4.918
5. Number of nonmotorized fatalities and serious injuries	4,271.1	3,949.8	4,147.4	4,340.8	4,684.4	4,131.7	4,380.5

Source: Caltrans 2018-2024

Measures and Methodology

The performance measures included in PM 1 are applicable to all public roads, regardless of ownership or maintenance responsibility. Table P.3 provides an overview of the calculations and data sources for each performance measure included in PM 1. The desired trend for PM 1 performance measures is to see a decrease in fatalities and serious injuries.

Table P.3: Transportation Safety Performance Measure Methodology – PM 1

Performance Measure	Calculation	Data Source
1. Number of Fatalities	Five-year rolling average	• FARS
2. Rate of fatalities per 100 million VMT	Five-year rolling average of annual fatality rate	• FARS • Highway Performance Monitoring System (HPMS)
3. Number of serious injuries	Five-year rolling average	• SWITRS
4. Rate of serious injuries per 100 million VMT	Five-year rolling average of annual serious injury rate	• SWITRS • HPMS
5. Number of non-motorized fatalities and non-motorized serious injuries	Five-year rolling average of the annual sum of non-motorized fatalities and non-motorized serious injuries	• FARS • SWITRS

Source: 23 CFR 490

2025 Regional Plan and 2025 RTIP Investments

One of the four Regional Plan goal areas is a safe transportation network for all. This goal is supported by the regional Vision Zero Action Plan, and the Board's Vision Zero Resolution, both near-term implementation actions from the Amended 2021 Regional Plan (2021 Regional Plan). These efforts advance steps toward eliminating all traffic fatalities and severe injuries while increasing safe, healthy, and equitable mobility options for all. **Vision Zero** rejects the idea that traffic crashes are inevitable and instead views them as preventable incidents. The Regional Plan also includes a near-term implementation action to continue with the implementation of the regional Vision Zero Action Plan and supporting policies. The Regional Plan includes $258 million in Vision Zero program investments for member agency and project resource/coordination, community-based education, and capital and planning grants.

The Regional Plan also includes more than $5 billion in active transportation investments and the region is a vested partner in safety funding. TransNet, the region's half-cent sales tax, includes $280 million for bike paths and facilities, pedestrian improvements, neighborhood safety projects, and the Regional Bike Plan Early Action Program.

The Regional Plan also integrates safety into the evaluation criteria that are used to help prioritize projects for inclusion in the revenue-constrained network. For this process, evaluation criteria were developed to reflect plan goals and applied to the Unconstrained Transportation Network. Safety was one of the evaluation criteria areas. This criteria area includes evaluation of safety incidents (fatalities, and serious injuries) near proposed project areas. Selection of the transportation network used this safety data in conjunction with other evaluation criteria and factors, including project readiness, anticipated impacts to vehicle miles traveled, historically disadvantaged communities, and revenue phasing, among other criteria.

SANDAG is taking an active role to advance regional traffic safety goals for the San Diego Region. SANDAG has launched the **Traffic Safety Dashboard** that includes more than a decade of crash data in an easy to use and explore platform. SANDAG also provides guidance and funding to local jurisdictions to improve safety for all roadway users, including a Regional Complete Streets Policy and funding through the Smart Growth Incentive and Active Transportation Grant Programs.

Updates to the RTIP database (ProjectTrak) were initiated with the development of the 2018 RTIP to track projects that support PM 1 targets. Data fields were added to allow project sponsors to provide information related to investments in safety. The 2025 RTIP includes 242 safety-related projects. These projects were identified by the project sponsors and include more than $1.6 billion in investments for the five-year RTIP program (FY 2025–2029). Just over half of these projects are considered categorical safety projects with safety improvements being the main project goal. These safety category projects account for approximately 75% of the programmed safety dollars. The remaining projects include a variety of project categories and include projects where a portion of the overall investment includes safety-related elements, such as the addition of bike lanes as part of a roadway-widening project. Table P.4 summarizes the 2025 RTIP safety investments by project category.

Table P.4: 2025 RTIP Safety Program Summary by Project Area (FY 2025-2029)

Project Category	Safety Programming ($000)
Safety-Focused Projects *(Examples of projects: Safety Improvement Program projects, railroad/highway crossings, pavement resurfacing and/or rehabilitation, non-signalization traffic control, lighting improvements, increasing sight distance, hazard-elimination program, guardrails, median barriers, crash cushions, and adding medians.)*	$1,208,000
Intersection and Interchange Projects *(Traffic signal synchronization projects, intersection signalization, interchange channelization, and interchange reconfiguration)*	$32,000
Studies, Landscaping, and Enhancement Projects *(Examples of projects: engineering studies, landscaping, and transportation-enhancement projects)*	$110,000
Additional Safety Improvements included in other projects *(Includes safety elements that are part of a larger project)*	$26,000
Public Transit	$204
Bicycle and Pedestrian Improvements	$234,000
Total *(may not match due to rounding)*	**$1,609,000**

Source: ProjectTrak, May 2024

Target Achievement and Future Target Setting

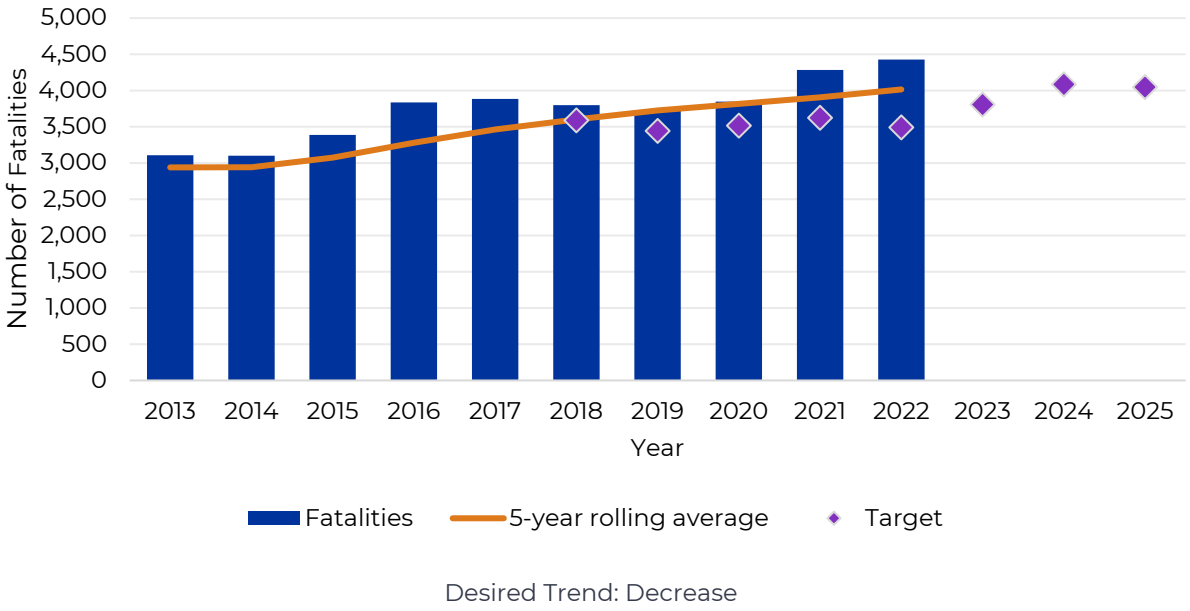
The Board approved supporting the statewide safety targets established by Caltrans for 2018–2022 and the Transportation Committee approved supporting statewide safety targets for 2023-2025. Starting in 2020, the finalized observed data from the first target year (2018) became available. FHWA has since been able to assess the observed data and the targets to determine whether significant progress had been made.

On April 24, 2020, FHWA determined that California did not make significant progress for calendar year 2018. FHWA made the same determination for the following years where data is available. The requirement for significant progress is to meet or exceed the established target or perform better than the baseline conditions for four out of the five performance measures. Targets and significant progress are based on the five-year rolling average for each performance measure.

As a result of FHWA's determination, Caltrans is required to develop an implementation plan for the primary federal safety funding source, the Highway Safety Improvement Program (HSIP). The HSIP implementation plan will cover the following year and will continue to be updated annually until FHWA determines that the state has made significant progress. SANDAG will continue to collaborate with Caltrans, FHWA, other California MPOs, and regional partners on the HSIP implementation plan and future safety targets to help achieve adopted safety targets.

Figures P.1 through P.5 show statewide traffic safety data for the five required performance measures under PM 1. The charts show available observed data and adopted targets.

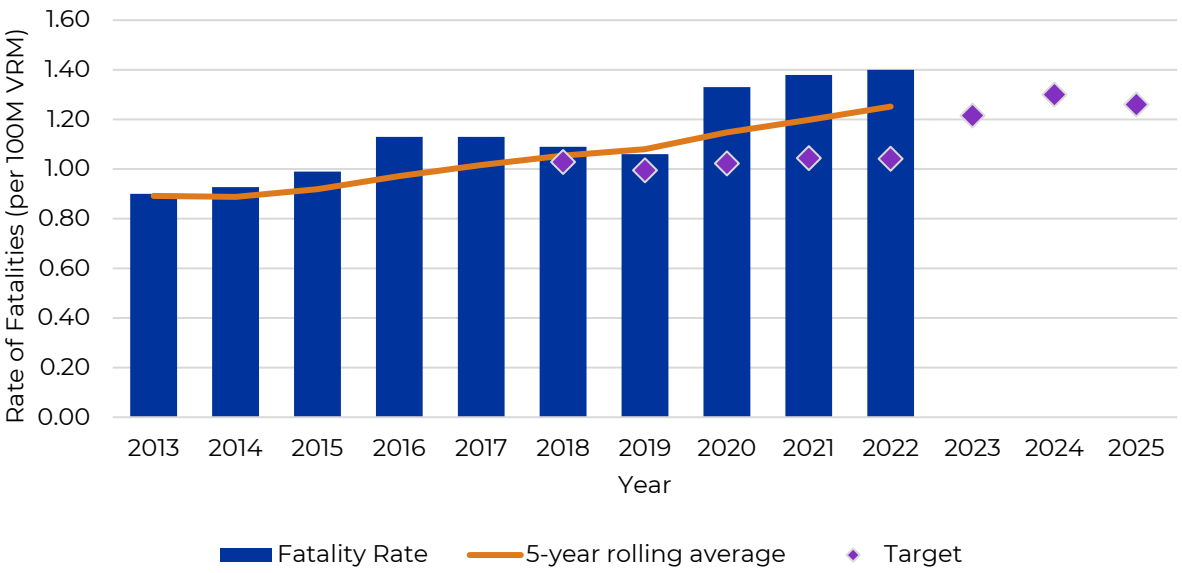
Figure P.1: Statewide Fatalities



Desired Trend: Decrease

Source: Fatalities – Fatality Analysis Reporting System (FARS) 2024; Targets – Caltrans 2024

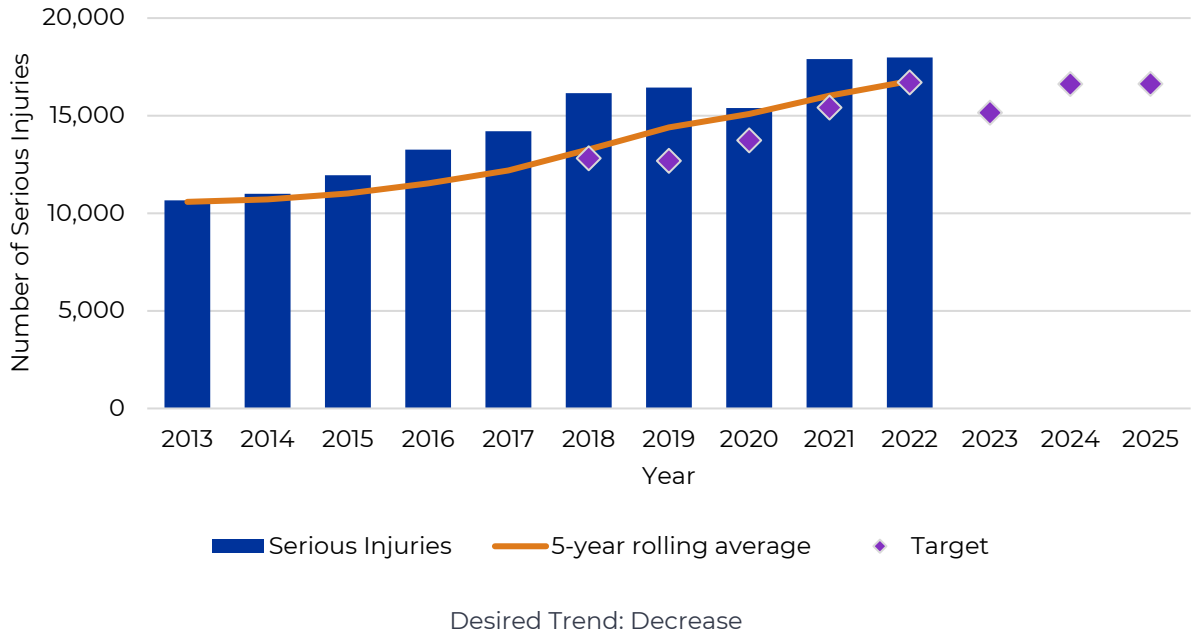
Figure P.2: Statewide Fatality Rates



Desired Trend: Decrease

Source: Fatality Rate – Fatality Analysis Reporting System (FARS) 2024; Targets – Caltrans 2024

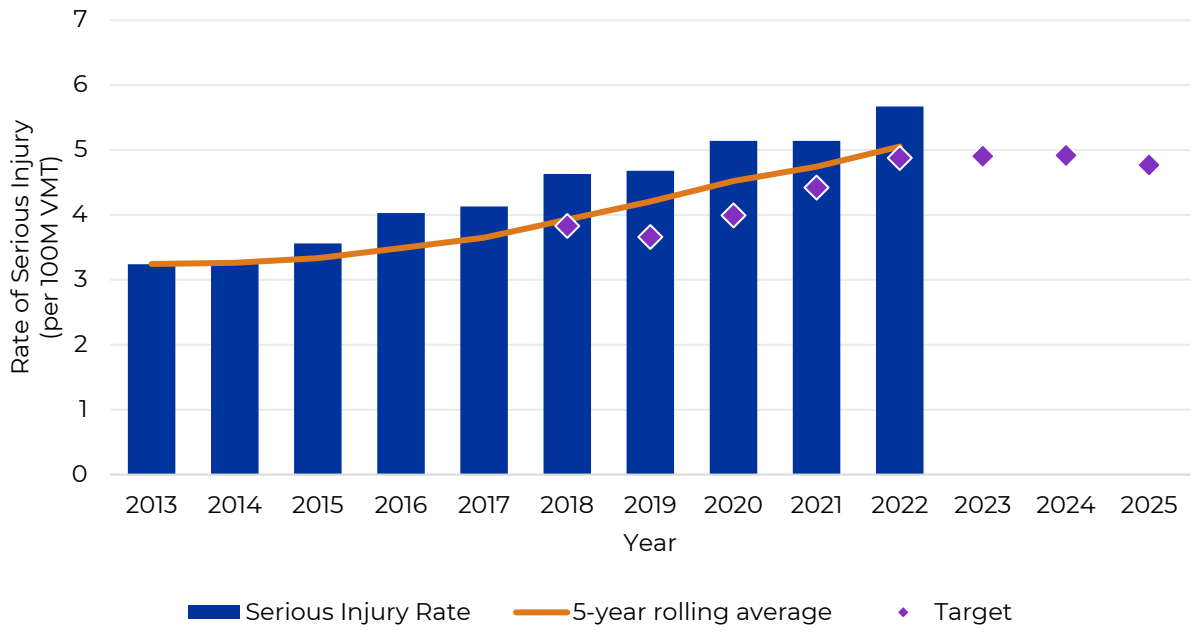
Figure P.3: Statewide Serious Injuries



Desired Trend: Decrease

Source: Serious Injuries – Caltrans 2024; Targets – Caltrans 2024

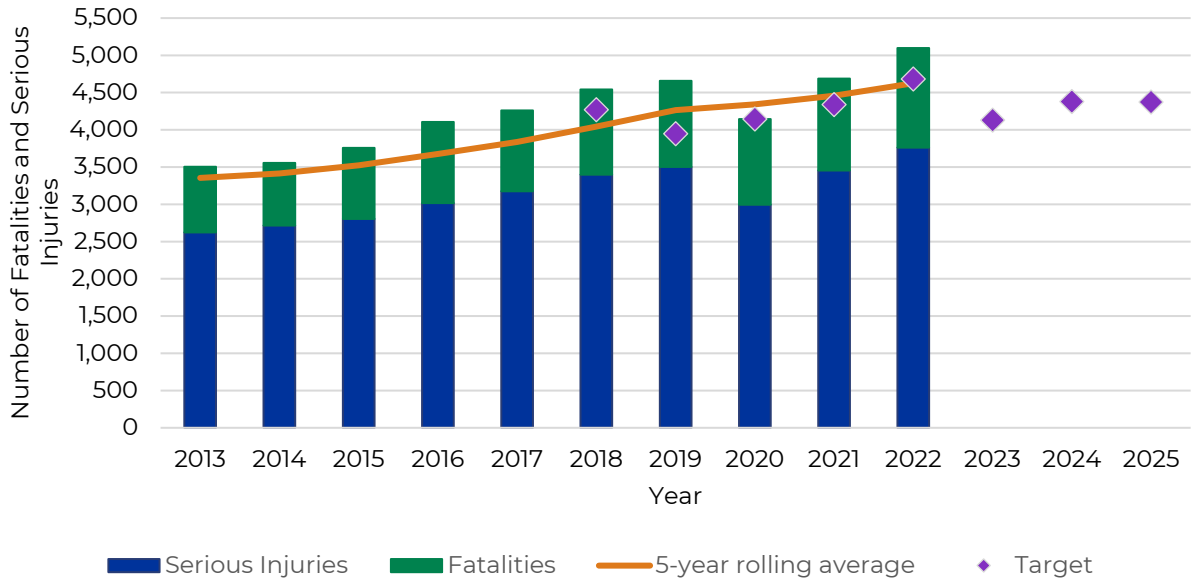
Figure P.4: Statewide Serious Injuries Rates



Desired Trend: Decrease

Source: Serious Injury Rate – Caltrans 2024; Targets – Caltrans 2024

Figure P.5: Statewide Non-Motorized Fatalities and Serious Injuries



Desired Trend: Decrease

Source: Serious Injuries – Statewide Integrated Traffic Records System (SWITRS), 2024; Fatalities – Fatality Analysis Reporting System (FARS), 2024; Targets – Caltrans, 2024

Pavement and Bridge Condition (PM 2)

Target-Setting Process

Similar to the process for PM 1, MPOs have the option of supporting the state DOT's PM 2 targets or developing regional targets. The statewide targets were informed by the 2022 Caltrans Transportation Asset Management Plan (TAMP), which considers life-cycle costs, risk, and cost-effectiveness. On August 18, 2022, the California Transportation Commission adopted Caltrans' TAMP establishing the statewide targets for the PM 2 performance measures, shown in Table P.5. On February 3, 2023, the Transportation Committee approved supporting the statewide targets for pavement and bridge condition established by Caltrans.

Performance targets for these measures only apply to the National Highway System (NHS), which generally consists of interstate highways and select arterial roadways. Targets for PM 2 are based on a four-year performance period. The current performance period spans from 2022-2025. In addition to the four-year target, a midcycle two-year target was established. The target years are 2023 for the mid-performance period, and 2025 for the last year of the performance period. At the midpoint of the performance period, Caltrans and MPOs can evaluate the progress to the four-year target and may elect to update the four-year target at that time. In 2023 Caltrans reviewed asset condition data and elected not to update the 2025 targets.

Table P.5: Statewide Pavement and Bridge Condition Targets (Good) – PM 2

Performance Measures	Two-Year NHS Targets 2023	Four-Year NHS Targets 2025	Desired Trend
Pavements on the NHS: Interstate	47.2%	49.2%	Increase
Pavements on the NHS: Non-Interstate	21.7%	28.2%	Increase
Bridges on the NHS	49.1%	47.3%	Increase

Source: Caltrans, 2024

Table P.6: Statewide Pavement and Bridge Condition Targets (Poor) – PM 2

Performance Measures	Two-Year NHS Targets 2023	Four-Year NHS Targets 2025	Desired Trend
Pavements on the NHS: Interstate	1.9%	1.7%	Decrease
Pavements on the NHS: Non-Interstate	10.5%	9.0%	Decrease
Bridges on the NHS	5.9%	4.4%	Decrease

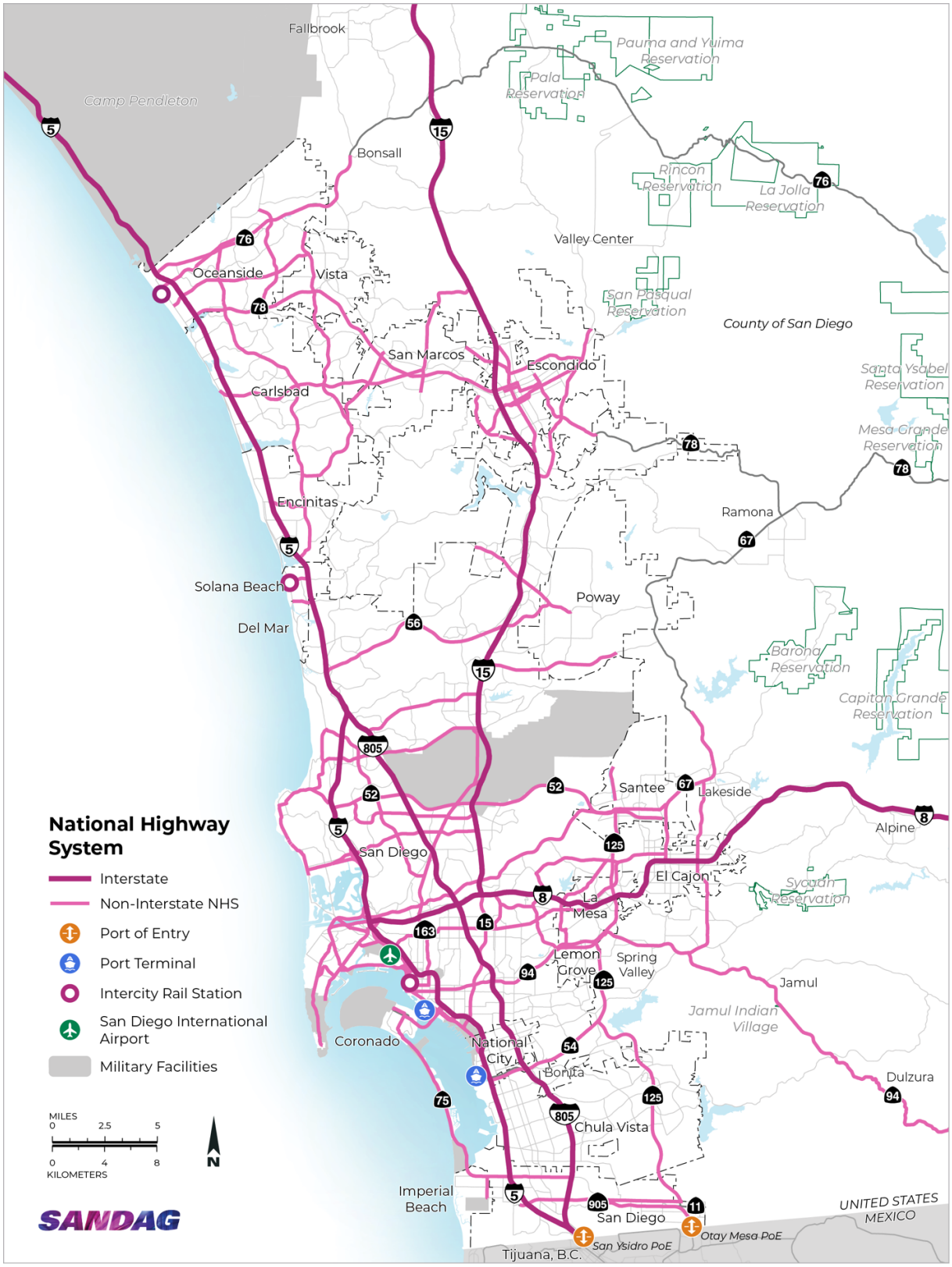
Source: Caltrans, 2024

Measures and Methodology

The performance measures included in PM 2 only apply to the NHS (). In general, pavement condition for PM 2 is based on roughness, cracking, and rutting for asphalt pavement. Faulting is used for concrete pavement. The pavement measures are aggregated to lane miles, based on measurement and observation of the curb lane.

Bridge condition is based on engineering assessment of the deck and support structures. The bridge performance measures are weighted by the bridge deck area. This section, including Tables P.5 and P.6, summarizes the calculation and data sources for each performance measure included in PM 2.

Figure P.6: National Highway System



Source: SANDAG

Table P.7 summarizes the six performance measures in this category. The table below expands on the pavement and bridge conditions on the interstate and non-interstate NHS, explains the calculation for each performance measure, and provides the data source.

Table P.7: Pavement and Bridge Performance Measures Methodology - PM 2

Performance Measure	Calculation	Data Source
1. Pavement on the interstate in good condition	Lane miles with all metrics rated as good	HPMS
2. Pavement on the interstate in poor condition	Lane miles with two or more metric rated poor	HPMS
3. Pavement on the non-interstate NHS in good condition	Lane miles with all metrics rated as good	HPMS
4. Pavement on the non-interstate NHS in poor condition	Lane miles with two or more metric rated poor	HPMS
5. Percentage of NHS bridges by deck area in good condition	Deck area of NHS bridges with condition index of 7 or above (deck, superstructure, and substructure) divided by deck area of all NHS bridges	National Bridge Inventory (NBI)
6. Percentage of NHS bridges by deck area in poor condition	Deck area of NHS bridges with any condition index of below 5 (deck, superstructure, and substructure) divided by deck area of all NHS bridges	NBI

For performance monitoring, pavement is categorized into asphalt, jointed concrete pavement (JCP), and continuously reinforced concrete pavement (CRCP). Each category of pavement is assessed using rating systems listed below. The pavement category rating system is included in Table P.8.

Table P.8: Pavement Category Rating System

Category System	Good	Fair	Poor
IRI (inches/mile)	<95	95–170	>170
Rutting (inches)	<0.20	0.20–0.40	>0.40
Faulting (inches)	<0.10	0.10–0.15	>0.15
Cracking (%)	<5	5–20 (asphalt) 5-15 (JCP) 5–10 (CRCP)	>20 (asphalt) >15 (JCP) >10 (CRCP)

Source: FHWA, Transportation Performance Management

Notes: Asphalt – International Roughness Index (IRI), rutting, cracking percent; JCP – IRI, faulting, cracking percent; CRCP – IRI, cracking percent

2025 Regional Plan and 2025 RTIP Investments

PM 2 performance is limited to the NHS, which is a select group of corridors within the larger transportation network. The SANDAG region accounts for 2.8 percent of statewide NHS lane miles and 0.5 percent of statewide NHS bridge deck area. Although the percentage of the NHS in the SANDAG region is small, the Regional Plan supports PM 2 target achievement through long-term investments throughout the network. The financial plan for the Regional Plan includes funding for maintenance and operations on highways as well as local streets and roads through 2050 (Appendix I: Funding and Revenues).

The Regional Plan also includes a policy related to infrastructure asset management. The Fix It First policy aims to help local agencies track the condition of infrastructure with reporting and funding through a framework to support the preservation of existing facilities and incorporate new facilities into the preservation framework.

As projects from the Regional Plan are programmed into the RTIP, project sponsors provide investment information related to the NHS. This includes 32 pavement and 14 bridge projects on the NHS, totaling approximately $480 million in the first four years of the 2025 RTIP. Tables P.9 and P.10 summarize the investments currently programmed in the 2025 RTIP that support the pavement and bridge performance targets, respectively.

Table P.9: 2025 RTIP NHS Pavement Program Summary (FY 2025-2029)

Project Phase	Investment ($000)
Environmental / Preliminary Engineering / Design	$62,000
Right-of-Way	$3,000
Construction	$235,000
Total	**$300,000**

Source: ProjectTrak, September 2024

Table P.10: 2025 RTIP NHS Bridge Investments (FY 2025-2029)

Project Phase	Investment ($000)
Environmental / Preliminary Engineering / Design	$25,000
Right-of-Way	$1,000
Construction	$154,000
Total	**$180,000**

Source: ProjectTrak, September 2024

Target Achievement and Future Target-Setting

Performance measures in PM 2 are based on a four-year performance period and include a mid-performance period at the two-year mark. The target years are the mid-performance period, 2023, and the last year of the performance period, 2025. In 2023, Caltrans reviewed the 2025 targets and data from prior years and elected not to update the 2025 targets. Upon the completion of the current performance period at the end of 2025, coordination will begin on target setting for the subsequent four-year performance period.

At the end of the performance period, FHWA will determine if California has made significant progress toward meeting the targets established for pavement and bridge condition targets. SANDAG continues to collaborate with Caltrans, FHWA, and other California MPOs on the monitoring of progress toward targets.

Each year, SANDAG creates the **State of the Commute** report that captures a high-level summary of performance outcome data related to pavement and bridge conditions. This report helps track regional infrastructure condition performance and informs investment and target setting processes.

Figures P.7 through P.9 show observed conditions and targets for the performance measures included in PM 2. Data collection cycles vary for asset types and observe conditions data may not be for the same year for each asset type.

Figure P.7: Statewide Interstate NHS Pavement Conditions and Targets

Desired Trend: Good Pavement – Increase; Poor Pavement – Decrease

*Source: **State Performance Dashboard - California - State - Reporting - Transportation Performance Management - Federal Highway Administration (dot.gov)** and **2022 TAMP (ca.gov)***

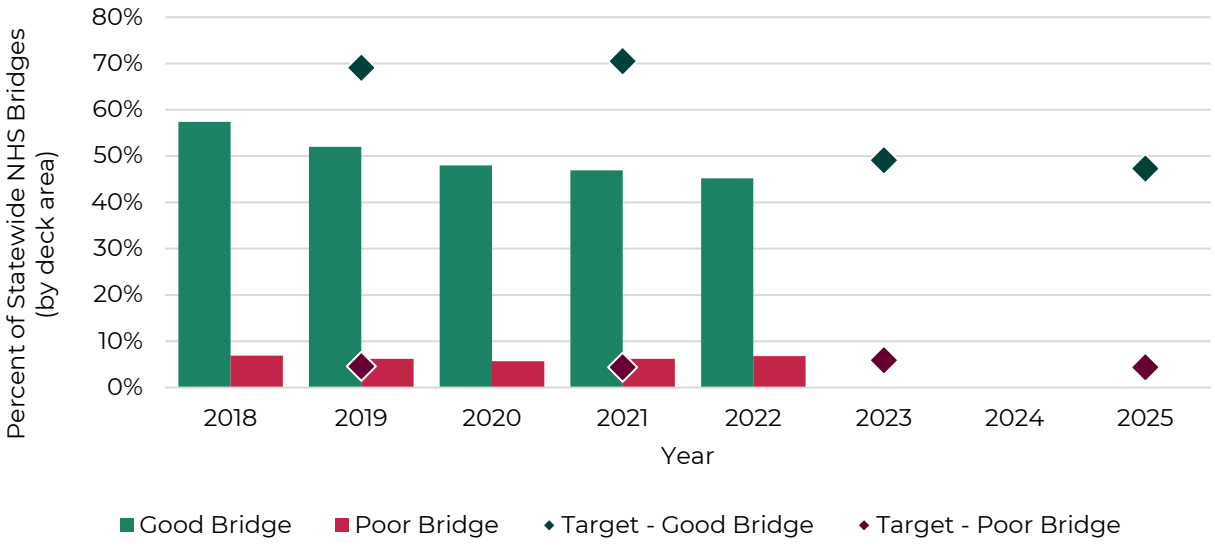
Figure P.8: Statewide Non-Interstate NHS Pavement Conditions and Targets

Desired Trend – Good Pavement: Increase; Poor Pavement: Decrease

Notes: Observed data for 2018 was collected under a different reporting structure and excluded from this chart.

*Source: **State Performance Dashboard - California - State - Reporting - Transportation Performance Management - Federal Highway Administration (dot.gov)** and **2022 TAMP (ca.gov)***

Figure P.9: Statewide NHS Bridge Conditions and Targets (Good Condition)



Desired Trend: Good Bridge – Increase; Poor Bridge – Decrease

*Source: **State Performance Dashboard - California - State - Reporting - Transportation Performance Management - Federal Highway Administration (dot.gov)** and **2022 TAMP (ca.gov)***

System Performance, Freight, and Congestion Mitigation and Air Quality – (PM 3)

Target-Setting Process

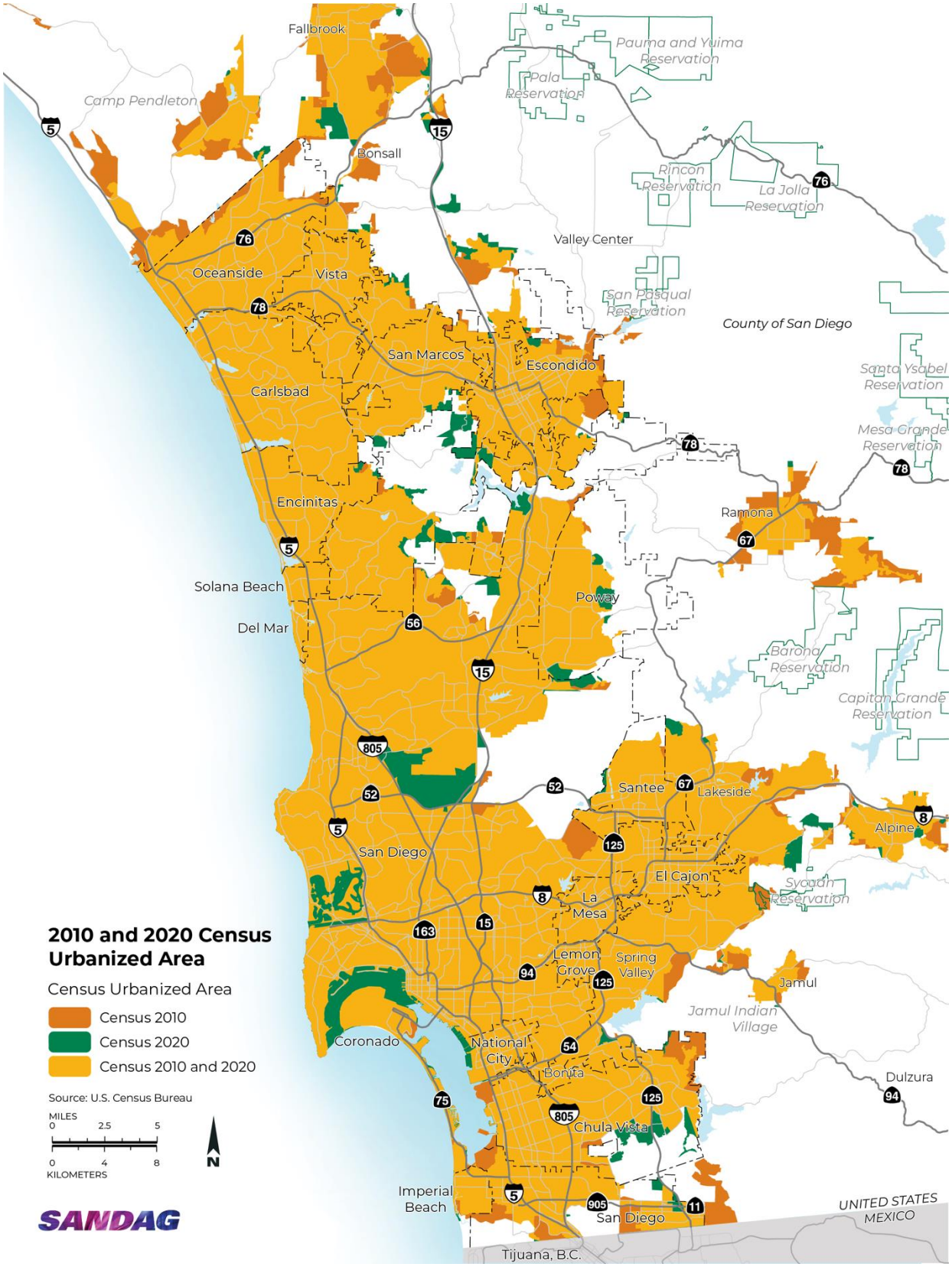
System Performance consists of six performance measures that support three federal programs—the National Highway Performance Program (NHPP), freight movement, and CMAQ. The target-setting process and timeframe are specific to each of these programs. This section summarizes the target-setting timeframes, processes, and performance periods for the performance measures included in PM 3.

Three of the performance measures included in PM 3 allow MPOs the option of supporting the state DOT's targets or developing regional targets. For these performance measures, the Board and Transportation Committee have supported the statewide targets. These measures include percentage of reliable person-miles traveled on the interstate, percentage of reliable person-miles traveled on the non-interstate NHS, and percentage of interstate system mileage providing reliable truck travel time.

The performance measure related to total emissions reductions by applicable pollutants under the CMAQ program allows MPOs to establish regional targets based on emissions anticipated to be reduced from CMAQ-funded projects.

The following two performance measures for annual hours of peak-hour excessive delay per capita and percent of non-single-occupancy vehicle (SOV) travel require Caltrans and SANDAG to establish single, unified targets for the Census defined urbanized area within the SANDAG planning area. shows the SANDAG urbanized area.

Figure P.10: 2010 and 2020 Census Urbanized Area



Source: SANDAG

The target-setting timeframes for PM 3 performance measures vary by the associated federal program. Table P.11 summarizes the target-setting dates for each of the PM 3 performance measures. The Transportation Committee approved supporting the Regional CMAQ targets on September 16, 2022, and on February 3, 2023, approved supporting the remaining PM 3 targets established by Caltrans. In 2023 Caltrans reviewed the performance data and elected not to update the 2025 targets.

The CMAQ emissions-reduction measure four-year performance period follows the federal fiscal year (October 1 to September 30). The remaining performance measures follow the calendar year. The current performance period spans 2022-2025.

Table P.11: System Performance Target Approval Dates – PM 3

Program	Performance Measure	Dates Targets Established
NHPP	1. Percent of Reliable Person-Miles Traveled on the Interstate 2. Percent of Reliable Person-Miles Traveled on the Non-Interstate NHS	February 3, 2023
Freight movement on the interstate system	3. Percent of Interstate System Mileage Providing Reliable Truck Travel Time (Truck Travel Time Reliability Index)	February 3, 2023
CMAQ	4. Percent of Non-SOV Travel 5. Annual Hours of Peak-Hour Excessive Delay per Capita 6. Total Emissions Reductions by Applicable Pollutants under the CMAQ Program	September 16, 2022

Source: 23 CFR 490, SANDAG

Table P.12: System Performance Statewide and Regional Targets – PM 3

Performance Measures	Baseline Data (2021)	Two-Year Target 2023	Four-Year Target 2025	Desired Trend
Percent of Reliable Person-Miles Traveled on the Interstate	73.8%	74.3% (+0.5%)	73.8% (0.0%)	Increase
Percent of Reliable Person-Miles Traveled on the Non-Interstate NHS	83.7%	84.2% (+0.5%)	83.7% (0.0%)	
Percent of Interstate System Mileage Providing Reliable Truck Travel Time (Truck Travel Time Reliability Index)	1.60	1.60 (0.00)	1.60 (0.00)	
Total Emissions Reductions by Applicable Pollutants under the CMAQ Program				Increase
San Diego Urban Area (UA)[4]				
VOC (kg/day)		66	137	
CO (kg/day)		0	0	
NOx (kg/day)		82	168	
Statewide				
VOC (kg/day)	2,551.00	2,862.00	5,724.00	
CO (kg/day)	21,771.00	12,798.00	25,596.00	
NOx (kg/day)	7,213.00	4,317.00	8,635.00	
PM 10 (kg/day)	3,830.00	2,152.00	4,305.00	
PM 2.5 (kg/day)	1,537.00	1,830.00	3,659.00	
Annual Hours of Peak-Hour Excessive Delay per Capita				Decrease
San Diego UA	11.9 hours	11.9 hours	11.9 hours	
Percent of Non-SOV Travel				Increase
San Diego UA	36.20%	36.20%	36.20%	

Sources: Caltrans and SANDAG 2023; National Performance Management Research Data Set (NPMRDS) Analytics Tool; U.S. Census Bureau, 2012–2016 American Community Survey 5-Year Estimates

Notes: Statewide emissions targets established by Caltrans

Measures and Methodology

For performance measures related to reliable person-miles-traveled, the Level of Travel Time Reliability (LOTTR) is first calculated for each applicable roadway segment for four time periods: 6 to 10 a.m., 10 a.m. to 4 p.m., and 4 to 8 p.m. on weekdays and 6 a.m. to 8 p.m. during weekends. The LOTTR is the 80th-percentile travel time divided by the 50th-percentile travel time. The LOTTR is weighted by the facility segment length, annual traffic volume, and vehicle occupancy value.

[4] The CMAQ total emission-reduction performance target reflects the anticipated cumulative emission reduction to be reported in the CMAQ Public Access System.

Freight movement is assessed by a Truck Travel Time Reliability (TTTR) Index. Reporting is divided into five periods: morning peak (6 to 10 a.m.), midday (10 a.m. to 4 p.m.), and afternoon peak (4 to 8 p.m.) Mondays through Fridays; weekends (6 a.m. to 8 p.m.); and overnights for all days (8 p.m. to 6 a.m.). The TTTR ratio is generated by dividing the 95th percentile time by the normal time (50th percentile) for each segment. Then, the TTTR Index is generated by multiplying each segment's largest ratio of the five periods by its length, then dividing the sum of all length-weighted segments by the total length of interstate.

The Annual Hours of Peak Hour Excessive Delay per Capita is the amount of time spent in congested conditions, which are defined as conditions that result in excess delay at speeds of 20 miles per hour (mph) or 60% of the posted speed limit, whichever is greater. Travel time data is aggregated in 15-minute intervals per vehicle. The morning period is 6 to 10 a.m. on weekdays. The afternoon period is 3 to 7 p.m. or 4 to 8 p.m., providing flexibility to state DOTs and MPOs.

Additional details on the methodology used in calculating the six performance measures included in PM 3 are summarized in Table P.13.

Table P.13: PM 3 Performance Measure Methodology

Performance Measure	Calculation	Data Source	Desired Trend
1. Percent of Reliable Person-Miles Traveled on the Interstate	Percent of Interstate by length with an LOTTR less than 1.5	National Performance Measure Research Data Set (NPMRDS)	Increase
2. Percent of Reliable Person-Miles Traveled on the Non-Interstate NHS	Percent of non-Interstate NHS by length with an LOTTR less than 1.5	NPMRDS	Increase
3. Percent of Interstate System Mileage Providing Reliable Truck Travel Time (Truck Travel Time Reliability Index)	Weighted sum of reliable segments divided by all segments	NPMRDS	Increase
4. Total Emissions Reductions by Applicable Pollutants under the CMAQ Program	Daily Kilograms of Emission Reductions	CMAQ Public Access System	Increase
5. Annual Hours of Peak-Hour Excessive Delay per Capita	Time of excess delay weighted by average vehicle volume and occupancy by vehicle class	NPMRDS, HPMS	Decrease
6. Percent of Non-SOV Travel	Commute to work totaled by mode, five-year estimate	American Community Survey (ACS)	Increase

2025 Regional Plan and 2025 RTIP Investments

The Regional Plan helps support the targets in PM 3 by increasing reliability through more travel options and advancing smart and adaptive transportation solutions. Fostering travel choices between the places where people live, work, and play supports travel time reliability, promotes non-SOV travel, and reduces excessive delay and pollutant emissions. The Regional Plan includes investments of more than $24 billion for Complete Corridors, which include more than $8 billion in managed lane improvements and $4 billion in transportation technology and Smart Intersection Systems to improve travel time reliability.

The Regional Plan was informed by several processes that support the PM 3 targets. The 2025 Regional Plan was developed using the transit propensity analysis work from the 2021 Regional Plan and an analysis of areas with a concentration transportation options, jobs, and housing, in addition to corridor capacity analysis. These approaches support multimodal transportation, opportunities for additional non-SOV travel, and increased reliability with a more diversified transportation system. The Regional Plan also used PM 3 observed person-hours of excessive delay data, data on goods movement routes, and areas supporting the TTTR Index in its evaluation criteria. Several performance measures which highlight the revenue-constrained Regional Plan transportation network's non-SOV travel options, as well as information on the initial concept development and evaluation criteria, can be found in **Appendix N: Network Development and Performance**.

The first four years of the 2025 RTIP includes more than $5.9 billion of project programming. More than a third of the RTIP, or $2.1 billion, is programmed for multimodal facilities, transit, active transportation, transportation systems, and demand management. This also includes more than $28 million in the region's rideshare programs.

Table P.14: 2025 RTIP PM 3 Program Summary (FY 25–FY 29)

Performance Measures	Investment ($000)
Percent of Reliable Person-Miles Traveled on the Interstate	$450,000
Percent of Reliable Person-Miles Traveled on the Non-Interstate NHS	$12,000
Percent of Interstate System Mileage Providing Reliable Truck Travel Time (Truck Travel Time Reliability Index)	$93,000
Total Emissions Reductions by Applicable Pollutants under the CMAQ Program	$513,000
Annual Hours of Peak-Hour Excessive Delay per Capita	$52,000
Percent of Non-SOV Travel	$952,000
Total	**$2,072,000**

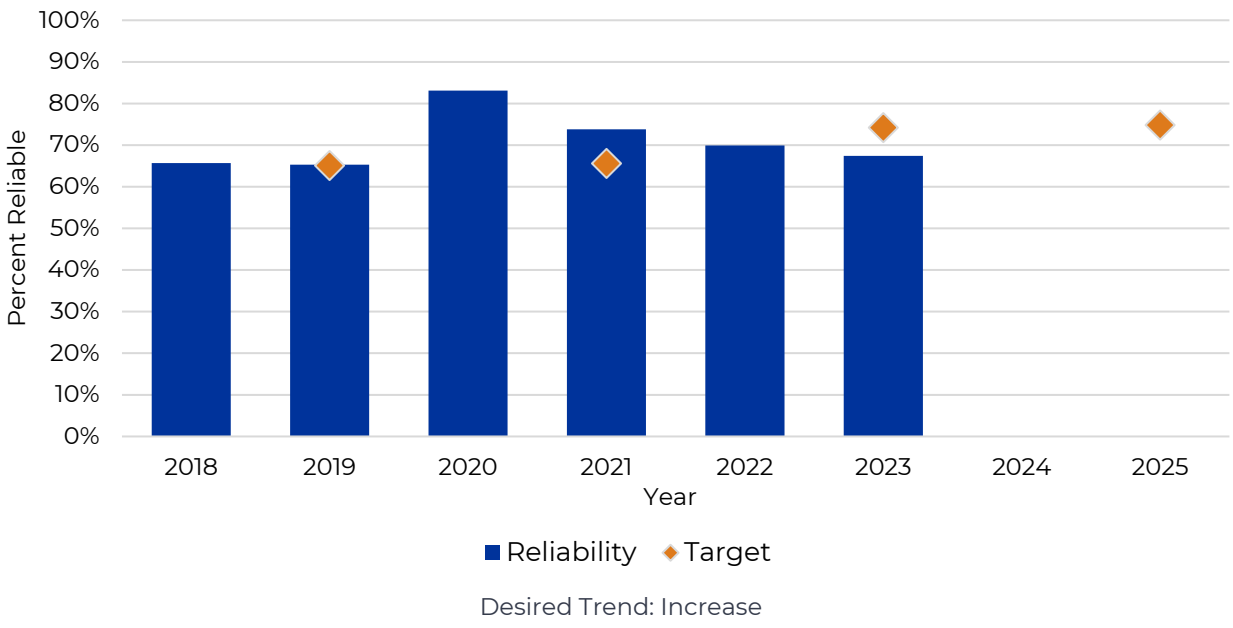
Source: ProjectTrak, September 2024

Target Achievement and Future Target Setting

Performance measures in PM 3 are based on a four-year performance period and include a mid-performance period at the two-year mark. At the end of the performance period, FHWA will determine if California has made significant progress toward meeting the targets established for Interstate and non-Interstate NHS travel time reliability and freight reliability measures. SANDAG continues to collaborate with Caltrans, FHWA, and other California MPOs on the monitoring of progress toward targets. At the midpoint of the four-year performance period, SANDAG, Caltrans, and other California MPOs will evaluate progress toward achieving the 2021 targets. At the midpoint, MPOs and Caltrans can elect to update the 2025 targets. In 2023 Caltrans reviewed the 2025 targets and data from prior years and elected not to update the targets. Upon the completion of the current performance period at the end of 2025, coordination will begin on target setting for the subsequent performance period ending in 2029.

Data and targets for the travel time reliability measures under PM 3 are summarized in Figures P.11 through P.13. Figures P.14 and P.15 display the percent of non-SOV commute travel and annual person-hours of excessive delay. Total emissions-reduction performance is on track with project programming.

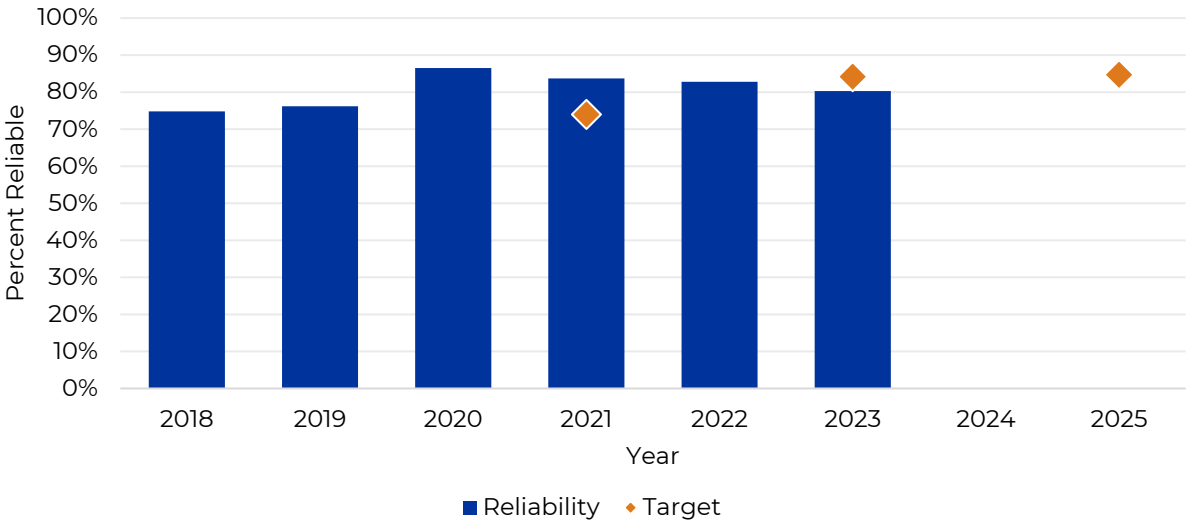
Figure P.11: Percent of Reliable Interstate Person-Miles Traveled



Desired Trend: Increase

*Source: National Performance Management Research Data Set **(NPMRDS) Analytics Tool**, 2024*

Figure P.12: Percent of Reliable Non-Interstate NHS Person-Miles Traveled



Desired Trend: Increase

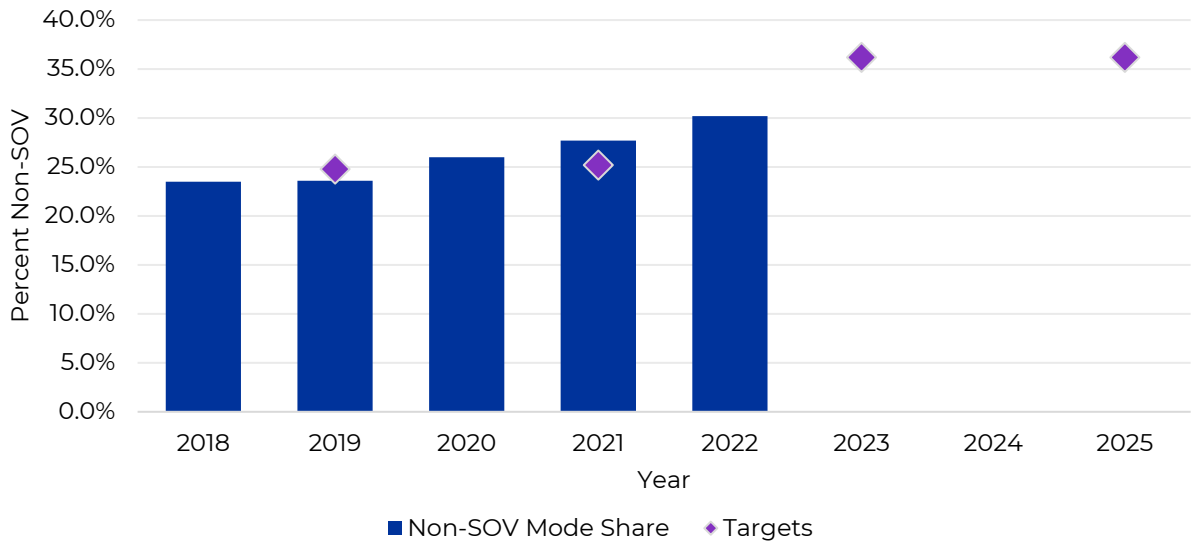
*Source: National Performance Management Research Data Set **(NPMRDS) Analytics Tool**, 2024*

Figure P.13: Truck Travel Time Reliability Index

Desired Trend: Decrease

*Source: National Performance Management Research Data Set **(NPMRDS) Analytics Tool**, 2024*

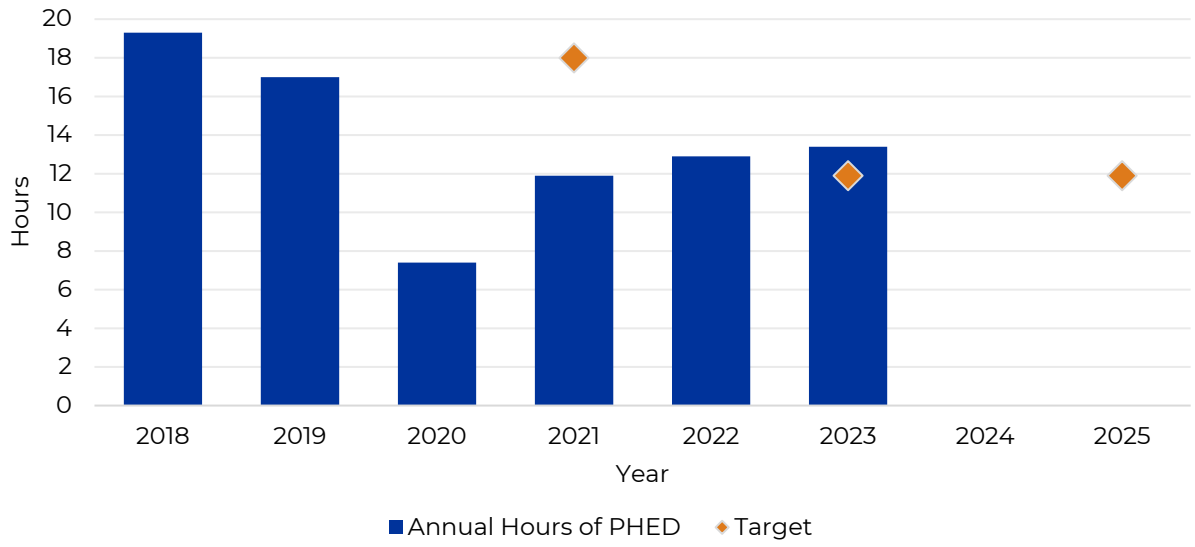
Figure P.14: Non-SOV Mode Share for Commute to Work Trips



Desired Trend: Increase

Source: US Census Bureau: American Community Survey, 2024

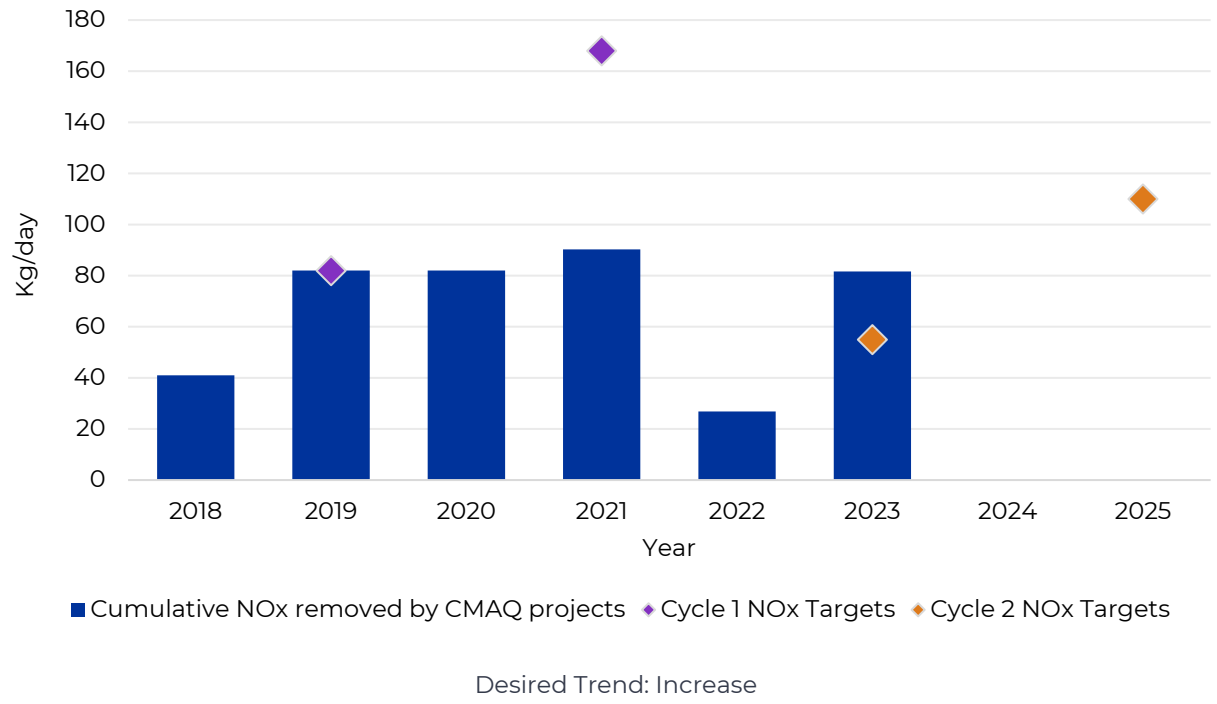
Figure P.15: Person-Hours of Excessive Delay



Desired Trend: Decrease

*Source: Source: National Performance Management Research Data Set **(NPMRDS) Analytics Tool**, 2024*

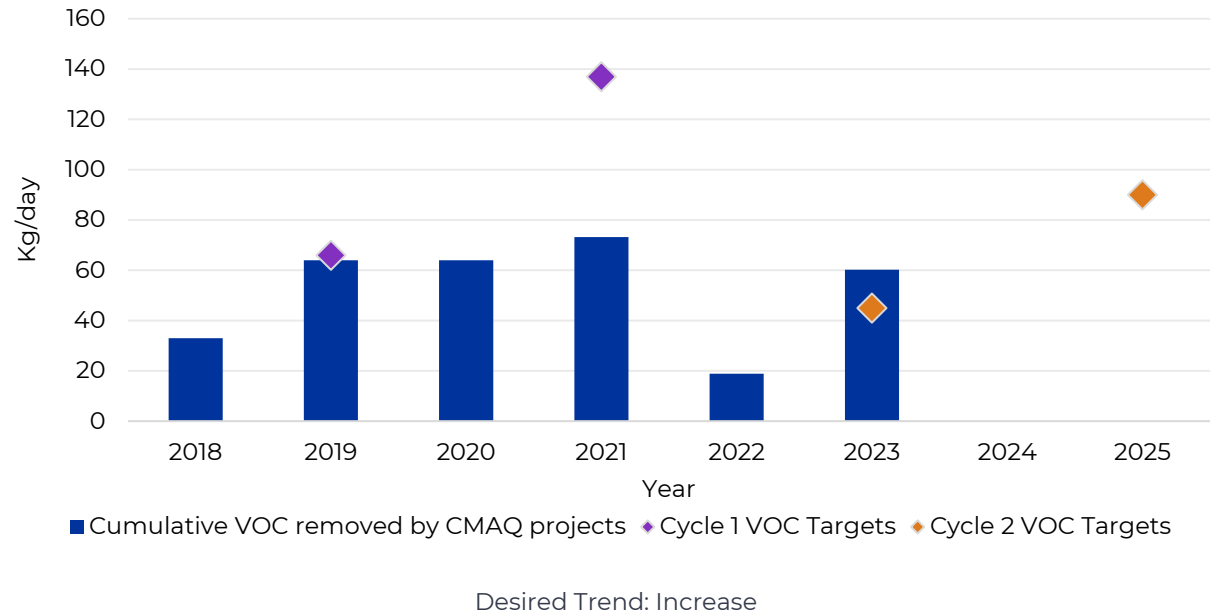
Figure P.16: CMAQ Emission Reductions –NOx



Desired Trend: Increase

Source: Caltrans, 2024

Figure P.17: CMAQ Emission Reductions –VOC



Desired Trend: Increase

Source: Caltrans, 2024

Regional Transit Asset Management

Target-Setting Process

In the San Diego region, SANDAG, MTS, and NCTD are subject to this target-setting requirement and establish targets independently for assets included in their four-year TAM plan. SANDAG is not a transit provider, but the agency develops a Group TAM plan for small-scale service providers in the region. MPOs, in coordination with transit providers, are responsible for developing regional TAM targets with each update of their regional plan. Regional TAM performance targets were established in 2018, and have been incorporated into subsequent regional plans.

The TAM final rule includes four asset categories: equipment, facilities, infrastructure, and rolling stock. There is one performance measure for each asset category. Each asset category may contain several asset types that are calculated separately. Regional TAM targets are required for each asset type. The performance measures are calculated such that a value of zero indicates that the asset type is in a state of good repair. Asset types that have historically remained in a state of good repair are not included in the tables as their targets remain at zero. The 2019, 2020, and 2029 regional TAM targets are shown in Table P.15.

Coordination of current targets occurred in 2024 and involved multiple meetings with each transit provider. These discussions resulted in a target horizon change. The target in the 2025 Regional Plan is a four-year target (2029) matching the Regional Plan update cycle. Prior targets were one-year targets. Regional target values are based on historical performance using a weighted average calculation[5], transit provider targets, anticipated investments and asset age. In October 2024 the Transportation Committee approved the 2029 regional TAM targets.

The asset types included in each asset category are established by FTA and detailed in the FTA Asset Inventory Module. The performance measures and calculation methodology are set by FTA.

Table P.15: Regional Transit Asset Management Performance Measures and Targets

Asset Category: Equipment
Non-revenue support-service and maintenance vehicles

Performance Measure: Percentage of nonrevenue vehicles met or exceeded Useful Life Benchmark (ULB)[6]

Asset Type	2019 Regional Targets	2020 Regional Targets	2029 Regional Targets
Automobiles	33.3%	61.7%	0%
Trucks and other Rubber Tire Vehicles	50.5%	50.0%	10%
Steel Wheel Vehicles	0.0%	0.0%	29%

[5] The calculation involved multiplying each provider's target by their inventory. The results were added together, divided by the sum of the inventories, and multiplied by 100.
[6] Useful Life Benchmark (ULB) is a value used with lifecycle cost to assess when an asset costs more to maintain than to replace. MTS and NCTD used the same ULB.

Asset Category: Facilities
Maintenance and administrative facilities; and passenger stations (buildings) and parking facilities

Performance Measure: Percentage of assets with condition rating below 3.0 on FTA Transit Economic Requirements Model (TERM) Scale[7]

Asset Type	2019 Regional Targets	2020 Regional Targets	2029 Regional Targets
Passenger Facilities	0.0%	0.0%	0.0%
Passenger Parking Facilities	0.0%	0.0%	0.0%
Maintenance Facilities	0.0%	0.0%	0.0%
Administrative Facilities	0.0%	0.0%	0.0%

Asset Category: Infrastructure
Only rail fixed-guideway, track, signals, and systems

Performance Measure: Percentage of track segments with performance restrictions[8]

Asset Type	2019 Regional Targets	2020 Regional Targets	2029 Regional Targets
Commuter Rail	2.0%	1.0%	0.17%
Hybrid Rail[9]		0.5%	0%
Light Rail	1.8%	2.0%	3.5%

Asset Category: Rolling Stock
Revenue vehicles by mode

Performance Measure: Percentage of revenue vehicles met or exceeded Useful Life Benchmark

Asset Type	2019 Regional Targets	2020 Regional Targets	2029 Regional Targets
Articulated bus	0.0%	0.0%	0.0%
Over-the-road bus	0.0%	0.0%	0.0%
Bus	13.8%	11.7%	5.0%
Cutaway Bus	7.2%	3.7%	10.0%
Light rail vehicle	0.0%	0.0%	1.0%
Minivan	100.0%	100.0%	4.0%
Commuter rail locomotive	71.0%	71.4%	0%
Commuter rail passenger coach	57.0%	57.1%	71.0%
Vintage trolley/streetcar[10]	0.0%	100.0%	100.0%

Source: SANDAG, 2024

[7] TERM is a five-point scale (1–5) with one signifying poor condition and five excellent.
[8] A performance restriction exists when the permissible speed is less than the guideway's full-service speed. For more details on infrastructure performance, refer to the FTA **Performance Restriction (Slow Zone) Calculation**.
[9] The NCTD SPRINTER rail was reclassified as hybrid rail for 2020. Previously it was classified as light rail.
[10] Vintage rolling stock are older vehicles that are not anticipated to improve in their ULB but are used in limited purposes.

Measures and Methodology

The performance measures and their calculations are specified in the TAM Final Rule. Additionally, the asset types included in each asset category are established by FTA and detailed in the FTA Asset Inventory Module. The infrastructure asset category assesses performance restrictions on rail segments.

2025 Regional Plan and 2025 RTIP Investments

The Regional Plan includes nearly $126 billion in transportation investments; 26% of that is for operations and 57% for capital. Many of the capital investments are for transit-supporting Complete Corridors, or transit specific investments. Transit capital investments include construction of transit facilities and procurement of transit fleet vehicles. Transit operations and maintenance include costs associated with running the transit system, repairs, and preventative maintenance. The 2025 RTIP was reviewed for projects sponsored by SANDAG, MTS, and NCTD that include elements that corresponded to a TAM asset category as shown in Table P.16. The 2025 RTIP includes 38 projects totaling approximately $1.14 billion in support of TAM targets.

Table P.16: 2025 RTIP TAM Program Summary by Category (FY 2025-2029)

Project Asset Category[11]	MTS ($000)	NCTD ($000)	SANDAG ($000)	Total TAM Programming ($000)
Equipment	$—	$—	$—	$—
Facilities	$14,000	$235,000	$51,000	$300,000
Infrastructure	$263,000	$69,000	$136,000	$468,000
Rolling Stock	$298,000	$50,000	$22,000	$370,000
Total	**$575,000**	**$354,000**	**$209,000**	**$1,138,000**

Source: ProjectTrak, September 2024

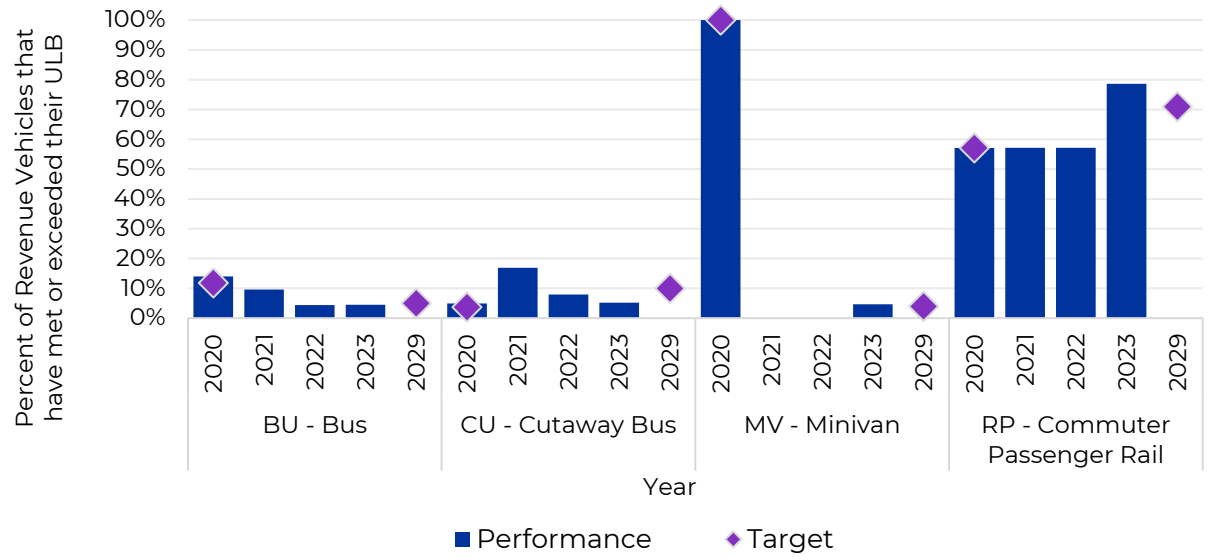
Target Achievement and Future Target Setting

The Board approved the 2019 regional TAM targets at its September 28, 2018, meeting and the 2020 regional TAM targets at its February 28, 2020, meeting. The Transportation Committee approved the 2029 regional TAM targets at its November 15, 2024, meeting. As data are shared by MTS and NCTD in alignment with their annual updates, SANDAG will continue to work with the providers and FTA to monitor progress on achievement of regional TAM targets.

Figures P.18 through P.20 show the regional TAM targets and the observed regional TAM performance data.

[11] Many projects address multiple TAM priority areas, such as rolling stock replacement and infrastructure upgrades. For Table H-14, each qualifying project was assigned one project asset category that best aligned with the project description.

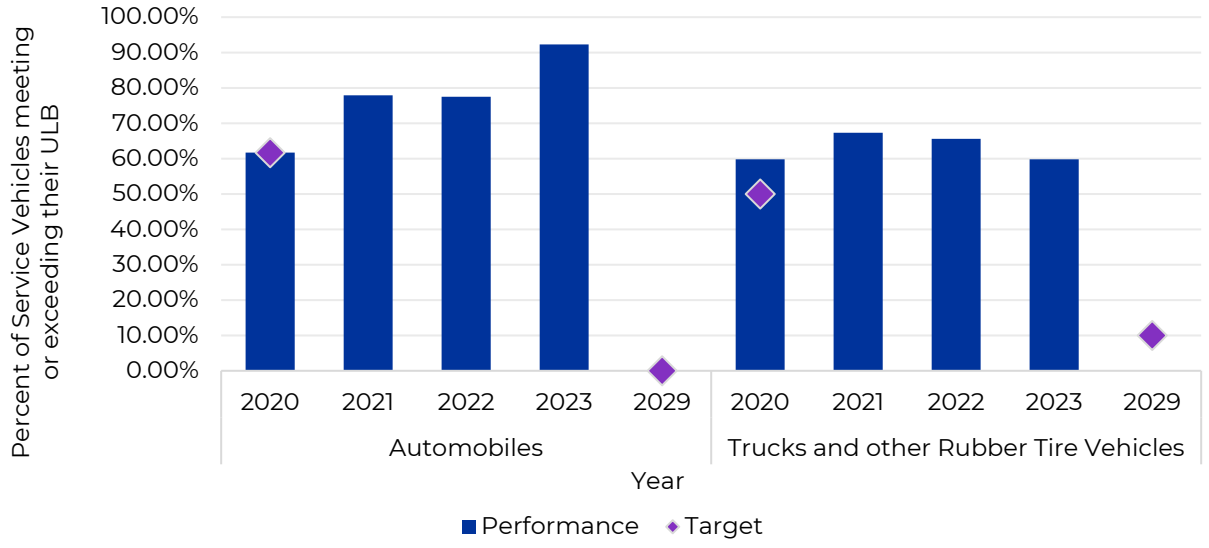
Figure P.18: Regional Revenue Vehicles Targets and Observed Performance



Desired Trend: Decrease

Source: SANDAG, 2024

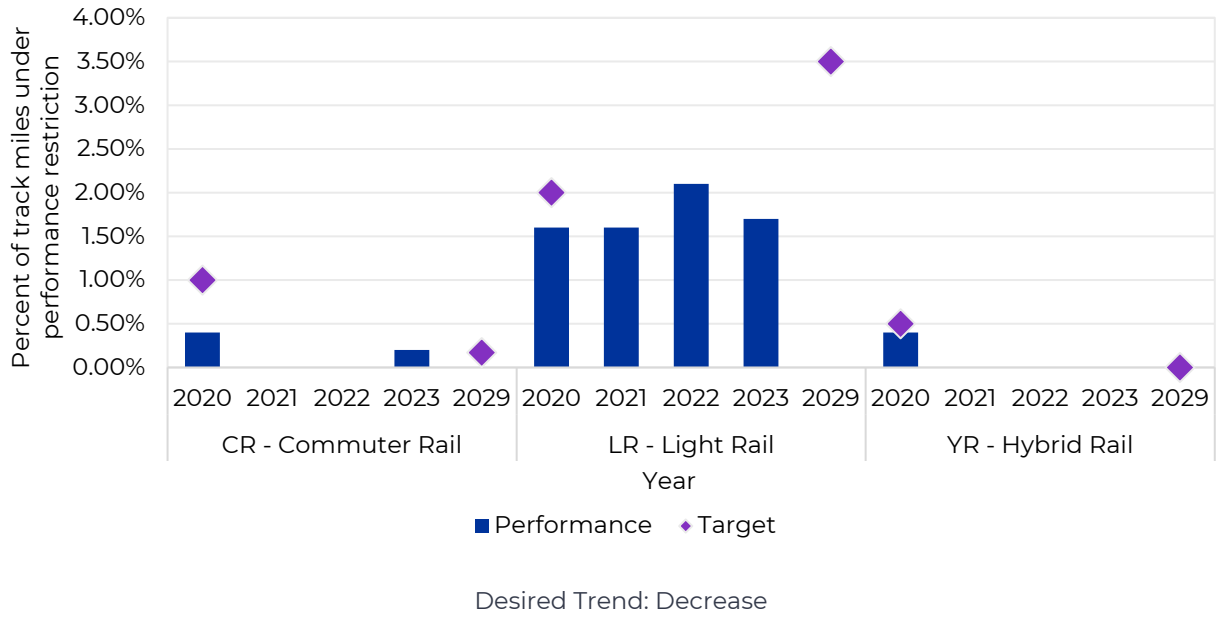
Figure P.19: Regional Service Vehicles Targets and Observed Performance



Desired Trend: Decrease

Source: SANDAG, 2024

Figure P.20: Regional Rail Performance Restriction Targets and Observed Performance



Source: SANDAG, 2024

Regional Public Transportation Agency Safety Plan

Target-Setting Process

Starting July 20, 2020, the FTA requires providers of public transportation, receiving specific FTA funds to develop a Public Transportation Agency Safety Plan (PTASP). These plans include policies and procedures to implement Safety Management Systems that include performance measures and annual performance targets. MTS and NCTD are the two public transportation providers in the San Diego region that are required to develop PTASPs. The provider targets are updated annually. MPOs, in coordination with providers, are responsible for developing regional public transportation safety targets. MPOs are required to set regional public transportation safety targets with each update of their regional plan.

Staff from MTS, NCTD, and SANDAG reviewed transit safety data from 2015 to 2019 to develop the regional targets included in Table P.17. Historical trends, along with the most current observed data, informed target development. The 2020 regional public transportation safety targets in Table P.17 were approved by the Board at its December 18, 2020, meeting.

Table P.17: 2029 Regional Public Transportation Safety Targets

Performance Measure	2020 Regional PTASP Targets			2029 Regional PTASP Targets		
	Fixed-Route Bus	Non-Fixed-Route Bus	Rail Transit	Fixed-Route Bus	Non-Fixed-Route Bus	Rail Transit
Number of fatalities	0	0	0	1	0	4
Fatality rate by 100,000 vehicle revenue miles (VRM)	0	0	0	0.004	0.00	0.02
Number of injuries	150	6	120	105	5	99
Injury rate by 100,000 VRM	0.5	0.1	1.2	0.44	0.13	0.75
Number of safety events	140	7	130	119	7	86
Safety event rate by 100,000 VRM	0.7	0.1	2.3	0.50	0.18	0.65
System reliability	6,000	20,000	15,000	8,000	38,000	39,000

Source: SANDAG, 2024

Measures and Methodology

FTA's National Public Transportation Safety Plan identifies the required performance measures. Data from the National Transit Database (NTD) was reviewed with performance measure calculation processes from FTA's PTASP Technical Assistance Center. Table P.18 summarizes the four performance measures.

Table P.18: Regional Public Transportation Safety Performance Measures

No.	Safety Performance Measure[12]	Description	Desired Trend
1.	Fatalities	Total fatalities reported to NTD and rate per total VRM by mode.	Decrease
2.	Injuries	Total injuries reported to NTD and rate per total VRM by mode.	Decrease
3.	Major Events	Total safety and security major events reported to NTD and rate per total VRM by mode.	Decrease
4.	System Reliability	Mean distance between major mechanical failures by mode.	Increase

Source: FTA – National Public Transportation Safety Plan, April 2024

[12] In April 2024, FTA included seven new performance measures in compliance with Safety Risk Reduction Program requirements set by the Bipartisan Infrastructure Law. The new measures are: Collision Rate, Pedestrian Collision Rate, Vehicular Collision Rate, Transit Worker Fatality Rate, Transit Worker Injury Rate, Assaults on Transit Workers, and Rate of Assaults on Transit Workers. The seven new performance measures will be included in the subsequent Regional Plan. The measure previously known as "Safety Events" was renamed to "Major Events" in the 2024 National Public Transportation Safety Plan (NPTSP).

2025 Regional Plan and 2025 RTIP Investments

The Regional Plan's investments support the regional public transportation safety targets by upgrading transit facilities and creating additional transit priority facilities. These types of investments are anticipated to reduce the number of conflict points, which would reduce the likelihood of a crash.

The 2025 RTIP was developed prior to the approval of the first round of regional public transportation safety targets. MTS and NCTD Capital Improvement Programs, as well as SANDAG and multiagency-sponsored projects that address transit facilities and corridors that carry transit services, are incorporated into the RTIP.

Table P.19: 2025 RTIP Public Transportation Safety Funding ($000)

MTS	NCTD	SANDAG	Total Programming
$277,000,000	$342,000,000	$172,000,000	**$791,000,000**

Source: ProjectTrak, September 2024

Target Achievement and Future Target-Setting

Regional public transportation safety is the newest area of the Federal System Performance Report and has not yet gone through multiple regional plan development cycles. As data are shared by MTS and NCTD in alignment with their annual updates, SANDAG will continue to work with the providers and FTA to monitor progress on achievement of regional public transportation safety targets. These results will be reported in the subsequent Federal System Performance Report.

Attachments

- Attachment P1: CMAQ Mid Performance Period Progress Report – September 2024

Attachment P1:
CMAQ Mid Performance Period Progress Report – September 2024

Introduction

On January 18, 2017, the Federal Highway Administration (FHWA) published the Performance Management 3 (PM 3) rule, which established performance measures that state Departments of Transportation (DOTs) and Metropolitan Planning Organizations (MPOs) will use to report on the performance of the National Highway System (NHS) to carry out the National Highway Performance Program (NHPP); freight movement on the Interstate system to carry out the National Highway Freight Program (NHFP); and traffic congestion and on-road mobile source emissions to carry out the Congestion Mitigation and Air Quality (CMAQ) Improvement Program. The rule addressed requirements established by the Moving Ahead for Progress in the 21st Century Act (MAP-21) and included three national performance measures related to the CMAQ program: total emissions reductions by applicable pollutants under the CMAQ program, annual hours of peak-hour excessive delay per capita (PHED), and the percent of non-single occupancy vehicle (non-SOV) travel.

CMAQ Improvement Program Performance Measures and Plan applicability requirements include any MPO serving a Transportation Management Area with a population over 200,000, that overlaps with a criteria pollutant nonattainment or maintenance area. SANDAG is a non-attainment area for federal ozone standards. Emissions reduction targets are needed for volatile organic compounds (VOC) and nitrogen oxide (NOx), as precursors of ozone.

Caltrans is required to submit to FHWA biennial performance reports for the baseline, mid-period, and full period of each four-year performance period. This is the second CMAQ performance period, which covers the years 2022 to 2025. Following these requirements, SANDAG submitted the CMAQ Baseline Performance Plan to Caltrans on September 30, 2022, for inclusion in the state CMAQ Performance Plan. This CMAQ Mid-Performance Plan serves as the mid-period performance report for the CMAQ second performance period, which covers 2022-2025, for the total emissions reductions performance measure and the two traffic congestion measures: annual hours of PHED per capita and percent of non-SOV travel.

Background

SANDAG, Caltrans, and other California MPOs have coordinated on the development of performance targets in support of the PM 3 final rule, which includes performance measures for the percent of reliable person-miles traveled on the interstate and on the non-interstate NHS, percentage of Interstate system mileage providing reliable truck travel time, and the three CMAQ program performance measures outlined above.

On September 16, 2022, the SANDAG Transportation Committee recommended the adoption of the PM 3 targets for annual hours of PHED per capita, percent of non-SOV travel, and the total emissions reductions by applicable pollutants under the CMAQ program. On September 23, 2022, the SANDAG Board of Directors adopted the CMAQ performance targets.

Subsequent to SANDAG's CMAQ Baseline Performance Plan submission to Caltrans, it was communicated that the FHWA had provided a submission deadline extension, and recommended 2021 as the baseline year. SANDAG and Caltrans staff worked together to update the baseline year data and adjust the SANDAG targets as needed.

Baseline Condition/Performance

Baseline Condition/Performance for Traffic Congestion Measures

Baseline condition for the traffic congestion measures was established in coordination with Caltrans using available federal data sources, as specified by the PM 3 rule.

Table P1.1: Baseline Condition for Traffic Congestion Measures

Percent of Non-SOV Travel[13]	Annual Hours of Peak-Hour Excessive Delay Per Capita[14]
36.2%	11.9 hours

Baseline Condition/Performance for On-Road Mobile Source Emissions Measures

Information on projects reported in the CMAQ Public Access System with initial obligation years between federal fiscal year 2018-2021 was used to calculate the baseline condition for the On-Road Mobile Source Emissions Reductions Measure.

Table P1.2: Baseline Condition for Emission Reductions Measure[15]

NOx Benefit	VOC Benefit
90.3 kg/day	73.2 kg/day

Two-year and Four-year Targets

Targets for Traffic Congestion Measures

The targets for the two traffic congestion measures included in Table P1.3 are consistent with the Caltrans targets for the San Diego urbanized area. The targets listed in Table P1.3 differ from SANDAG's original September 30, 2022, submission to Caltrans to account for baseline condition data updates and alignment with Caltrans direction.

Table P1.3: Targets for Traffic Congestion Measures[16]

Congestion Measures	2-year target 2023	4-year target 2025
Percent of non-SOV travel	36.2%	36.2%
Annual Hours of Peak-Hour Excessive Delay Per Capita	11.9 hours	11.9 hours

Targets for On-Road Mobile Source Emissions Measures

The targets for the On-Road Mobile Source Emission Reductions Measure are based on projects programmed and anticipated to be obligated prior to the applicable target date.

[13] Source: Performance Management 3, Target Setting Whitepaper 2022-2026, Second Performance Period – Year 1, Caltrans.
[14] Source: 2021 Annual Hours of Peak Hour Excessive Delay Per Capita from 3-7 p.m. for San Diego (CA), NPMRDS Analytics Tool.
[15] Source: Projects reported in the CMAQ Public Access System between years 2018 to 2021 https://fhwaapps.fhwa.dot.gov/cmaq_pub/
[16] The targets are for the expected conditions at the end of 2023 and 2025.

Table P1.4: Targets for On-Road Mobile Source Emission Reductions[17]

Emission Reduction Measure[18]	2-year target 2023	4-year target 2025
NOx Benefit	82 kg/day	168 kg/day
VOC Benefit	45 kg/day	137 kg/day

Description of Projects

Projects included in the target setting process for the On-Road Mobile Source Emission Reductions Measure are limited to those that use CMAQ funds and have not passed their initial obligation year. CMAQ projects that are anticipated to be funded in years 2022-2025 support the region's rideshare programs through carpooling and vanpooling and are part of the travel demand management strategies used by SANDAG to manage congestion. These projects are anticipated to advance the on-road mobile source emission reductions targets and support the person hours of excessive delay and percent of non-SOV targets. The anticipated benefits are listed in Table P1.5.

[17] The targets are for the expected conditions at the end of federal fiscal years 2023 and 2025.
[18] Cumulative emissions reductions (over 2 or 4-year period).

Table P1.5: Anticipated CMAQ Funded Projects and Benefits

Project Type	Project Description	Year Anticipated for CMAQ Obligation	VOC Benefit (kg/day)	NOx Benefit (kg/day)	PHED benefit	Non-SOV benefit
Travel Demand Management	TDM/Rideshare Program (matched with toll credits)	2022	9	8	Yes	Yes
Transit Improvements	Transit Pass Pilot Program	2022	7	6	Yes	Yes
Traffic Flow	I-5 NC: 2HOV Lanes (CMAQ AC Conversion)	2022	13	21	Yes	Yes
Travel Demand Management	TDM/Rideshare Program (matched with toll credits)	2023	9	8	Yes	Yes
Transit Improvements	Transit Pass Pilot Program	2023	7	6	Yes	Yes
Traffic Flow	I-5 NC: 2HOV Lanes (CMAQ AC Conversion)	2023	N/A[19]	N/A	Yes	Yes
Travel Demand Management	TDM/Rideshare Program (matched with toll credits)	2024	9	8	Yes	Yes
Traffic Flow	I-5 NC: 2HOV Lanes (CMAQ AC Conversion)	2024	N/A	N/A	Yes	Yes
Travel Demand Management	TDM/Rideshare Program (matched with toll credits)	2025	9	8	Yes	Yes
Traffic Flow	I-5 NC: 2HOV Lanes (CMAQ AC Conversion)	2025	N/A	N/A	Yes	Yes

[19] Capital project emission reduction benefits are only applied to the first-year funds are obligated.

Assessment of Progress Towards Achieving the Two-Year Targets

SANDAG uses performance in four areas to assess progress towards CMAQ target achievement. These are the two traffic congestion measures, annual hours of PHED per capita and the percent of non-SOV mode share; and two emission reductions measures, one for each Ozone precursor, NOx, and VOC. For this reporting period (2022-2025), only the non-SOV mode share measure is on track to meet the two-year target. Annual hours of PHED per capita must decrease to demonstrate improvements and reach the two-year target, and cumulative NOx and VOC for the 2022-2025 performance period must increase to demonstrate improvements and reach the two-year target. More information on each of these is included below.

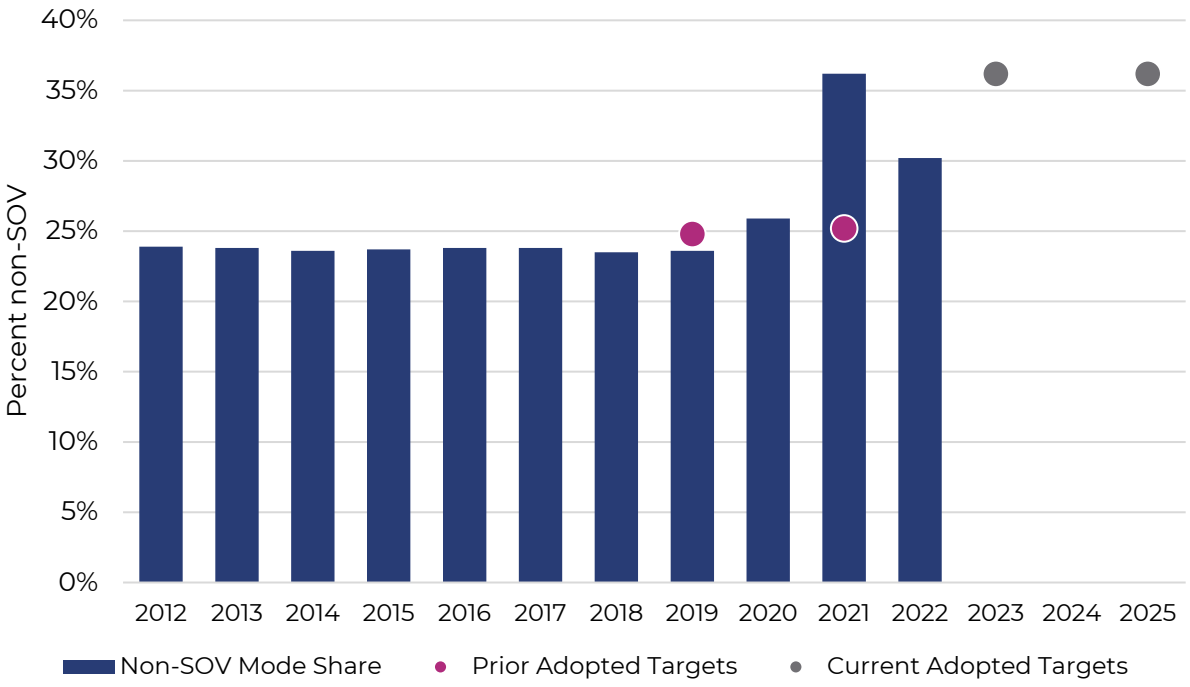
Traffic Congestion Measures

From the data available at the time of this report, the trend for non-SOV mode share was relatively flat from the years 2012 to 2019. However, the rate increased by almost 13% since 2019. During this same period, the working age population continued to grow substantially until it began to slowly decline in 2020.[20] The number of non-SOV commute to work trips continues to increase; however, this increase is outpaced by the growth in the working age population.

Figure P1.1 shows that the change in non-SOV mode share was relatively flat from the years 2012 to 2019. However, the rate increased by 2.4% in 2020 and then by 10.2% in 2021 – an almost 13% difference from 2019. The increased rates in 2020 and 2021 are attributed to travel pattern changes caused by the COVID-19 pandemic. The rate of the working age population working from home increased from 6.9% in 2019 to 9.6% in 2020 and then 12.5% in 2021 – an almost 6% difference from 2019.[21] This measure is based on the working age population in the urbanized area. For the San Diego County Urbanized area, the working age population has been growing by over 25,000 annually, on average, until it began to slowly decline in 2020. The number of non-SOV trips has also grown but at a slower rate; on average just over 5,500 per year, until it increased by an average of over 30,000 annually in the years 2020 and 2021. The strong positive growth and then small decline in working age population is illustrated in Figure P1.2. For this performance measure, positive growth demonstrates improvements. Due to non-SOV commute to work trips staying at an average annual rate of 23.7% from 2012 to 2019, the prior two- and four-year targets in 2019 and 2021 were 24.8% and 25.2%, respectively. However, with the increase in non-SOV trips in 2020 and 2021, the current two- and four-year targets in 2023 and 2025 also increased to 36.2%. Therefore, non-SOV Mode Share for Commute to Work Trips must continue to increase to demonstrate improvements.

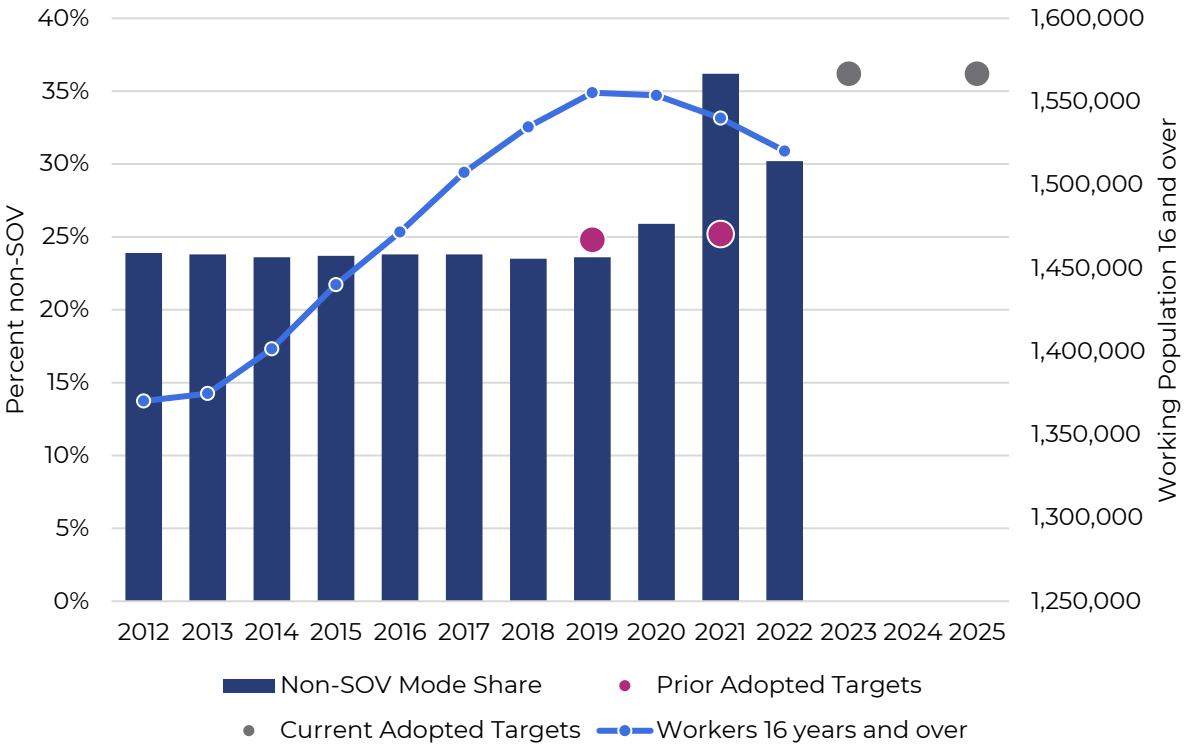
[20] Source: 2019-2021 American Community Survey 5-Year Estimates, U.S. Census Bureau.
[21] Ibid.

Figure P1.1: Percent Non-Single Occupancy Vehicle (SOV) Travel



Source: US Census Bureau: American Community Survey, 2024

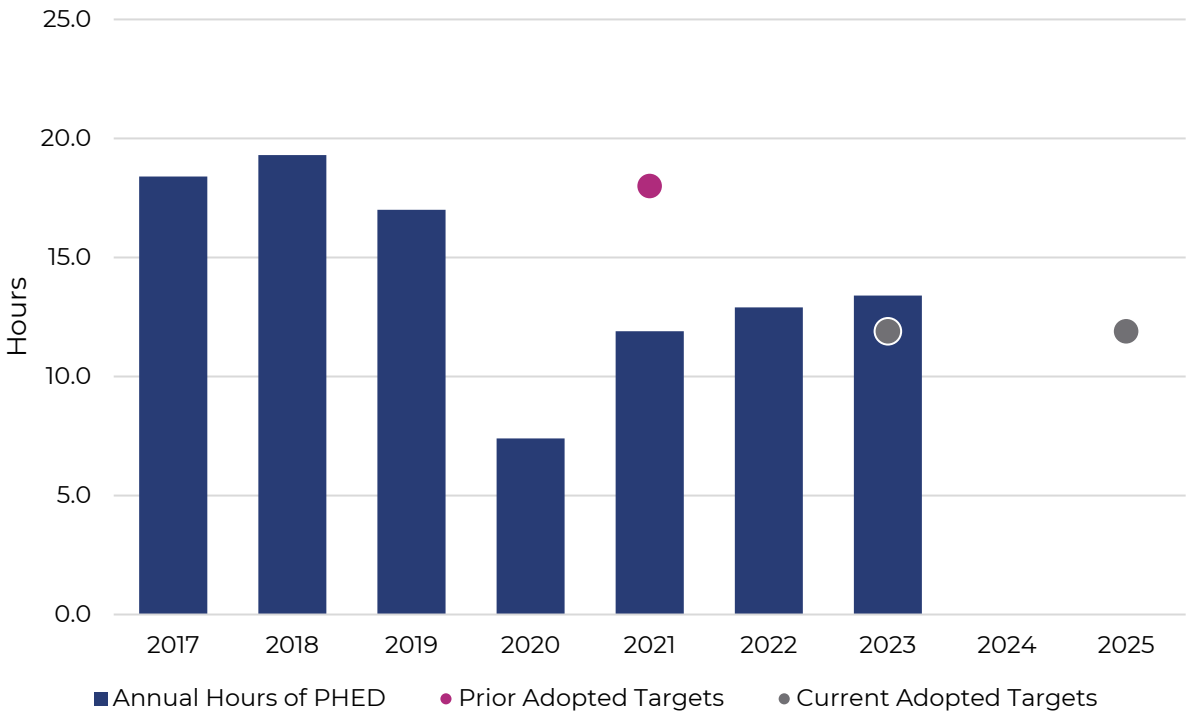
Figure P1.2: Percent Non-SOV Travel and Growth in Working Age Population



Source: US Census Bureau: American Community Survey, 2024

For this mid-performance reporting period (2022-2025) the annual hours of PHED per capita measures include a two- and four-year target. This is illustrated in Figure P1.3. There was a significant drop from 2019 to 2020, which could be due to the COVID-19 pandemic impacting the number of people traveling. However, as the COVID-19 pandemic subsided and public health travel restrictions were lifted, the annual hours of PHED per capita increased by 4.5 hours in 2021 and then by 1 hour in 2022. In the prior performance period, there was only a four-year target in 2021 of 18 hours. Due to the decline in annual hours of PHED per capita in 2019 and 2020, the current two- and four-year targets in 2023 and 2025 are set at 11.9 hours. The annual hours of PHED per capita in 2022 went over the current targets by 1 hour. Therefore, the annual hours of PHED per capita will need to decrease to meet established targets.

Figure P1.3: Annual Hours of PHED Per Capita

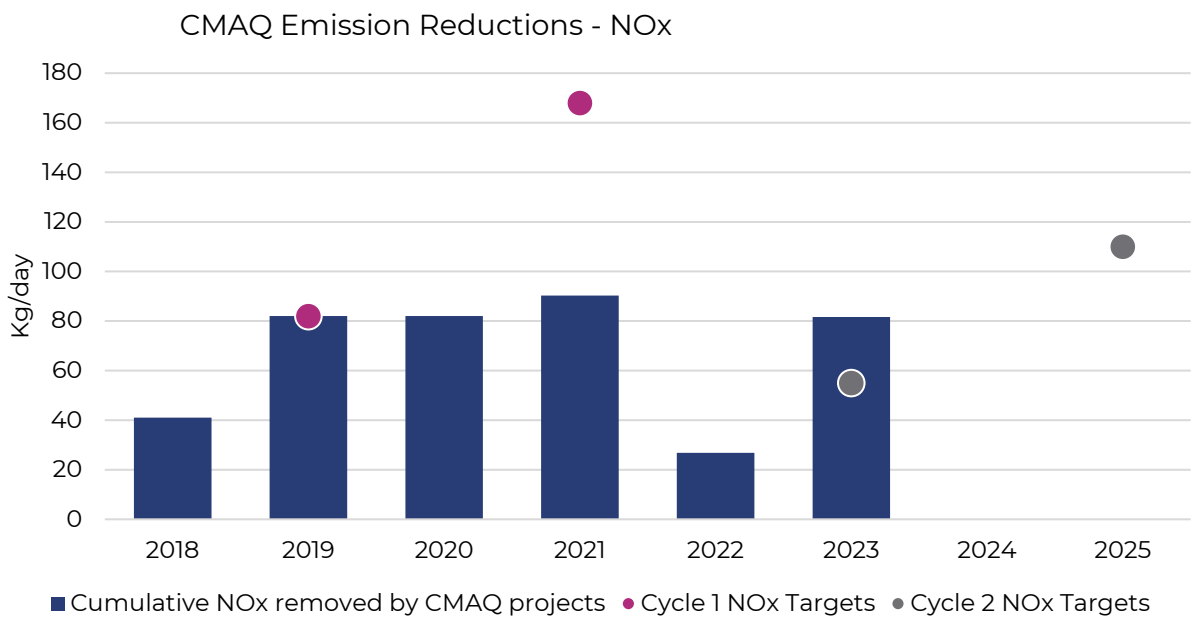


*Source: National Performance Management Research Data Set **(NPMRDS) Analytics Tool**, 2024*

On-Road Mobile Source Emissions Performance Measures

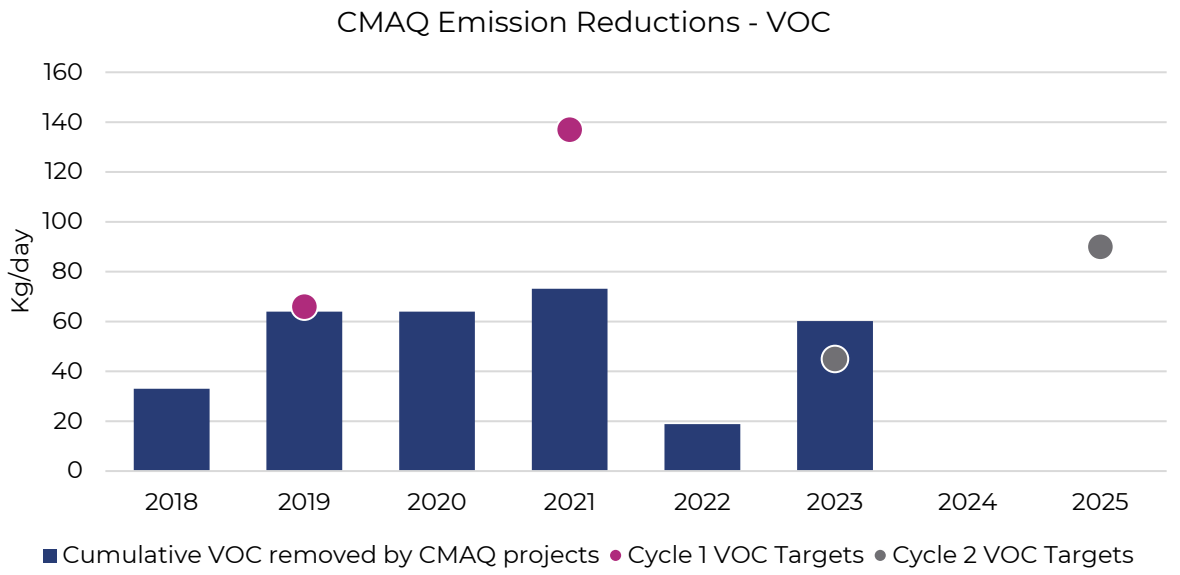
The SANDAG region is a non-attainment area for the 2008 and 2015 federal Ozone standards. Ozone is assessed on two ozone precursors, NOx, and VOC. This performance measure is calculated based on the cumulative reductions anticipated by CMAQ funded projects within the four-year performance period. Cumulative emission reductions are calculated from programmed projects using CMAQ funding. For this performance measure, positive growth demonstrates improvement. The CMAQ Public Access System is the required source for indicating achieved emission reductions. For the 2018-2021 performance period, both precursors were on track to meet the four-year target at the midpoint. However, no reductions were reported for 2020. This affected the region's progress which fell short of the 2021 targets. For the 2022-2025 performance period, both precursors are slightly below expected values as illustrated in Figures P1.4 and P1.5.

Figure P1.4: NOx On-Road Mobile Source Emission Reductions



Source: Caltrans, 2024

Figure P1.5: VOCs On-Road Mobile Source Emission Reductions



Source: Caltrans, 2024