APPENDIX A – 4

2023 TIP Federal Performance Report

Federal Performance Report

Assessment of 2023 TIP Investments in Addressing

Federally Mandated Performance Measures

INTRODUCTION

Performance-Based Planning and Programming

The Moving Ahead for Progress in the 21st Century Act (2012), also known as MAP-21, established several performance management requirements for state departments of transportation (DOTs), metropolitan planning organizations (MPOs), and transit agencies. A performance-based approach to transportation planning and programming intends to ensure the most efficient investment of transportation funds, support improved investment decision-making, and increase accountability and transparency. MAP-21 and subsequent federal legislation require DOTs, MPOs, and transit agencies to establish performance targets for each of the following national goal areas:

- Safety
- System Reliability
- Infrastructure Condition
- Freight Movement and Economic Vitality
- Congestion Reduction
- Environmental Sustainability

MTC's Role

Under the federal performance management rules, MTC is responsible for setting short-range targets and incorporating the targets into its planning processes – most notably, the Transportation Improvement Program (TIP) and the Regional Transportation Plan (RTP).

TIP Requirements

There are two primary requirements for incorporating performance management into the TIP. For all federally-required targets, MTC must show that the TIP "makes progress towards achieving the performance targets" and that the TIP includes, "to the maximum extent practicable, a description of the anticipated effect of the TIP towards achieving the performance targets" (23 CFR § 450.326). MTC must show that the Bay Area is moving in the right direction based on the package of investments included in the TIP and must also describe how much of an effect the TIP investments are expected to have on the targets.

- *Federal Performance Report:* This report reflects all of the federally-required performance targets and seeks to quantify impacts to the greatest extent practicable, while at the same time focusing on consistency and accuracy across projects.
- *2023 TIP:* The Bay Area's 2023 TIP covers the four-year period of FY 2022-23 through FY 2025-26 and includes approximately 300 transportation projects with $11 billion in committed funding

during the four-year period. For the 2023 TIP, MTC collected self-reported data from project sponsors to complete the performance analysis.

RTP Requirements

Starting with *Plan Bay Area 2050*, MTC is required to report on the condition and performance of the transportation system in relation to its adopted performance targets (23 CFR § 450.324). MTC also complied with other federal requirements related to long-range planning.

Reporting

In addition to quantifying progress made towards performance targets in the context of its TIP and RTP, MTC is required to report regional targets to Caltrans. To meet this requirement, MTC has expanded its Vital Signs performance monitoring website (http://www.vitalsigns.mtc.ca.gov/targets) to incorporate federal performance targets, as well as additional performance indicators. Additionally, MTC publishes its regional targets as they are adopted on MTC's website (https://mtc.ca.gov/our-work/plans-projects/major-regional-projects/federal-performance-targets).

2023 TIP Federal Performance Report Structure

This report is organized by goal area and supporting performance measures.

Goal and Performance Measure Background

Each section includes an introduction to the national goal area, a description of each of the federally-required performance measures for that goal, information on the target-setting process, and a status update on the state and regional targeting-setting process. Where possible, recent trend data for the performance measures is also provided.

Regional Policies and Project Selection Procedures

Each section also includes a discussion of regional policies and procedures that direct investments to projects and programs that support achievement of performance goals. This includes an identification of which RTP strategies led to the TIP investments that support various goal areas. While the RTP includes many strategies to guide development in the Bay Area, the following strategies most closely align with federally required performance measures for transportation investments and are referenced in the discussions below related to 2023 TIP investments:

Table 1. *Plan Bay Area 2050* Strategies Supporting Achievement of Transportation Performance Targets

Reference	Strategy Title
T1	Restore, operate, and maintain the existing system
T3	Enable a seamless mobility experience
T5	Implement per-mile tolling on congested freeways and transit alternatives
T6	Improve interchanges and address highway bottlenecks
T7	Advance other regional programs and local priorities
T8	Build a Complete Streets network
T9	Advance a regional Vision Zero policy through street design and reduced speeds
T10	Enhance local transit frequency, capacity, and reliability
T11	Expand and modernize the regional rail network
T12	Build an integrated regional express lanes and express bus network
EN8	Expand clean vehicle initiatives
EN9	Expand transportation demand management initiatives

Further information about the individual strategies may be found in the Transportation and Environment Chapters of *Plan Bay Area 2050* (Chapters 4 and 5, respectively), available online at https://www.planbayarea.org/finalplan2050. The *Plan Bay Area 2050* Performance Report (2023 TIP Appendix A-8) also includes more information on the evaluation of projects included in the Plan.

2023 TIP Investments

Data collected from project sponsors for the 2023 TIP is presented for each goal area and performance measure. This includes the level of investment in projects that have identified the goal area as the project's primary purpose, as well as a summary of the performance benefits from all projects included in the 2023 TIP, regardless of project purpose. The report includes an overall assessment of the anticipated effect of the 2023 TIP on achieving performance targets and a discussion of ongoing and future efforts related to the goal area.

SAFETY

Federal performance management regulations identify two distinct areas of transportation safety – road safety from traffic collisions (including collisions involving bicyclists and pedestrians), and transit safety resulting from collisions, other safety events, or major mechanical failures. The overall goal of the transportation safety performance area is to make the nation's transportation systems safer for all users.

Road Safety

Goal: Significantly reduce traffic fatalities and serious injuries on all public roads.

Performance Measures

Five performance measures were established to identify trends and assess progress towards reducing traffic-related fatalities and serious injuries on public roads.

Goal Area	Road Safety
Performance Measures	- Number of fatalities - Rate of fatalities per 100 million vehicle miles traveled - Number of serious injuries - Rate of serious injuries per 100 million vehicle miles traveled - Number of non-motorized fatalities and non-motorized serious injuries *For all measures: 5-year rolling average; all public roads*

Performance Targets

State DOTs are required to set numerical targets each year for each safety measure to comply with the regulation. MPOs have the option of supporting State targets or setting their own region-specific numerical targets on a target-by-target basis.

Table 2. Statewide and Regional Roadway Safety Targets for 2022

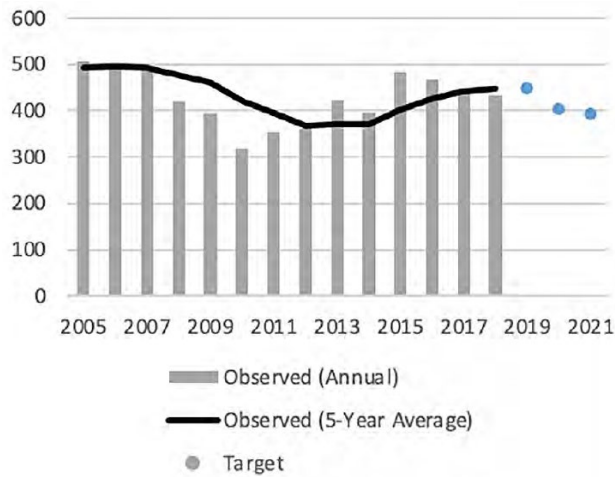| Roadway Safety Performance Measures	Caltrans Statewide Targets 2018-2022 average	Statewide Annual Reduction 2018-2022	Bay Area Regional Targets 2018-2022 average	Regional Annual Reduction 2018-2022
Fatalities – total	**3,491.8**	-3.61%	**421.2**	-9%
Fatalities – per 100 million VMT	**1.042**	-2.00%	**0.672**	-9%
Serious Injuries – total	**16,704.2**	1.66%	**2,305.2**	-9%
Serious Injuries – per 100 million VMT	**4.879**	1.66%	**3.613**	-9%
Non-motorized fatalities + serious injuries – total	**4,684.4**	-3.61% fatalities; -1.66% injuries	**810.3**	-9%

Note: Targets rely on projected data for 2020-2022. Projected annual fatalities and injuries are based on the annual reduction or increase rates noted. Projected VMT data is based on OHPI Traffic Volume Trends. Observed fatality and injury data is available for 2015-2019, Finalized annual VMT data is available for 2015-2022.

Caltrans set statewide 2022 targets in August 2021, based on observed trends in fatalities and injuries from the latest years for which data was available. This resulted in a target that reflects an increase in injuries above the baseline. In contrast, MTC set 2022 regional targets for the Bay Area in February 2022, based on a linear decline from a baseline of fatalities and serious injuries in 2019 to zero fatalities and serious injuries by 2030, in line with a full adoption of Vision Zero (described in detail in the following section regarding "Regional Policies"). Due to an expansion of the definition of serious injuries in 2018, the 2022 five-year moving average (2018-2022) for this measure was projected to be above the baseline (2015-2019). In order to not set targets for an increasing number of serious injuries when compared to the baseline, MTC revised the target number of serious injuries to be equivalent to the baseline, representing a slightly larger reduction than needed to reach zero serious injuries by 2030. The 2022 targets and corresponding anticipated annual performance changes for each measure are detailed in the table above (Table 2).
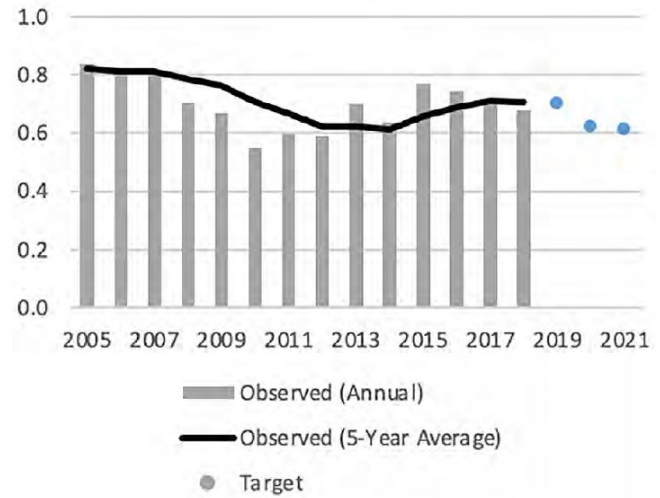
Regional trends for each roadway safety performance measure are provided in charts below. Trend lines are in black, with blue dots representing regional targets (2019, 2020, and 2021).
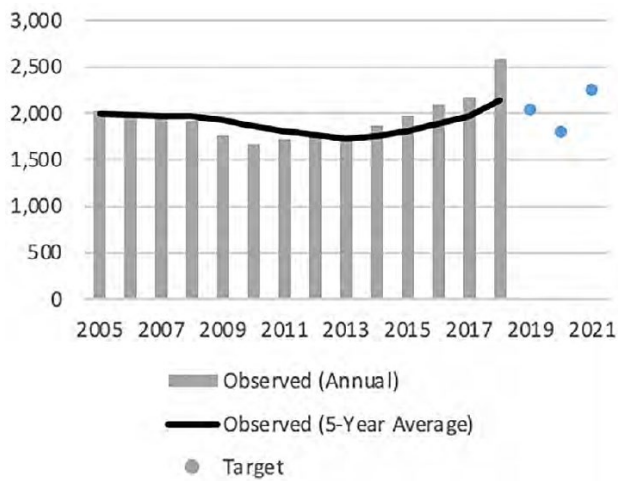
Bay Area Regional Road Safety Trends
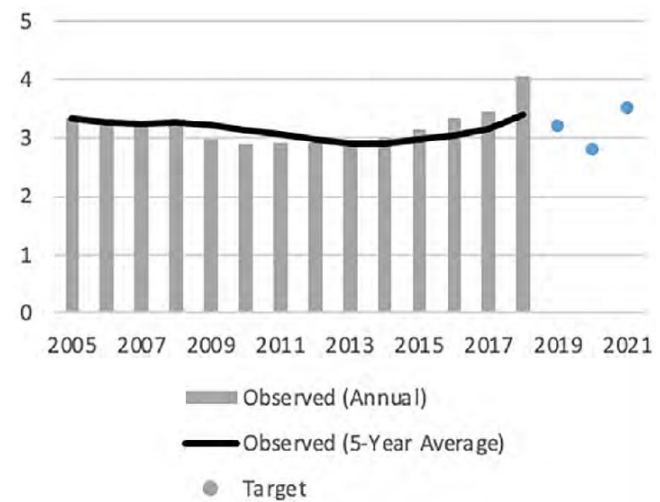
Number of Fatalities

Legend:
- Observed (Annual)
- Observed (5-Year Average)
- Target

Fatalities per 100 million VMT

Legend:
- Observed (Annual)
- Observed (5-Year Average)
- Target

Number of Serious Injuries

Legend:
- Observed (Annual)
- Observed (5-Year Average)
- Target

Serious Injuries per 100 million VMT

Legend:
- Observed (Annual)
- Observed (5-Year Average)
- Target

Number of Non-Motorized Fatalities and Serious Injuries

Legend:
- Observed (Annual)
- Observed (5-Year Average)
- Target

Source: http://www.vitalsigns.mtc.ca.gov/targets
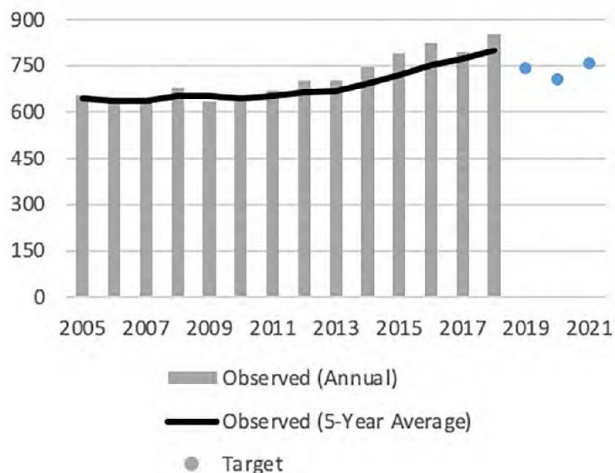
Regional Policies and Project Selection Procedures

Ensuring the safety of travelers on the Bay Area's roadways has been a longstanding priority for MTC. The Commission recommitted to this principle in 2020 by adopting a Regional Safety/Vision Zero Policy (MTC Resolution No. 4400, 2023 TIP Appendix A-14) to support achievement of safety targets, and earlier this year, the Commission adopted an update to the long-standing regional Complete Streets policy (MTC Resolution No. 4493, 2023 TIP Appendix A-15). These policies explicitly support the *Plan Bay Area 2050* strategies to "build a Complete Street network" and to "advance a regional Vision Zero policy through street design and reduced speeds" (Strategies T8 and T9 respectively).

This commitment to safety is also reflected in the programs that direct funding to projects in the 2023 TIP. Prior cycles of the One Bay Area Grant (OBAG) program, the Active Transportation Program (ATP), and the Regional Transportation Improvement Program (RTIP), which fund some of the projects in 2023 TIP, required project sponsors to adopt a local Complete Streets policy or general plan circulation element that incorporates Complete Street elements as a prerequisite for receiving funding. More recent cycles of the OBAG and ATP programs require project sponsors to adopt a Local Road Safety Plan (LRSP) or a similar plan to be eligible for discretionary grant funding. Cycle 6 of the regional ATP also includes extra weighting in the project selection criteria for projects that are consistent with the Vision Zero (VZ) policy. In addition to the LRSP requirement, OBAG 3 directs funding to implement the Regional Safety/VZ policy (including investments in safety data systems, and technical support for safety plans/projects), carries forward a $25 million investment target for SRTS programs, and sets a $200 million investment target for active transportation investments. The County & Local program also gives additional points to projects that advance federal performance measures for safety, and projects that are consistent with Regional Safety/VZ policy.

2023 TIP Investments

In the 2023 TIP, nearly $654 million in federal, state, regional and local funds are directed to projects that have a primary purpose of improving roadway safety for all users (Table 3). Funding for safety-focused projects account for 6% of the dollars in the 2023 TIP, and 26% of all projects in the financially constrained 2023 TIP have a primary purpose of improving road safety.

Table 3. 2023 TIP Projects with the Primary Purpose to Improve Road Safety

$0.7 billion

County	Safety Investments (in $ millions)	% of TIP Investments	Safety Projects	% of TIP Projects
Alameda	$154	15%	20	34%
Contra Costa	$48	28%	10	30%
Marin	$17	11%	4	21%
Napa	$0	1%	1	10%
San Francisco	$32	3%	4	18%
San Mateo	$44	12%	13	36%
Santa Clara	$100	2%	19	33%
Solano	$29	43%	5	31%
Sonoma	$21	48%	3	18%
Regional/ Multi-County	$207	6%	3	7%
	$654	6%	82	26%

Note: Project purpose data provided by project sponsors through the 2023 TIP. Project totals include one or more "grouped listings," which combine numerous projects into a single listing in the TIP.

This significant investment in road safety projects includes $195 million from two key state-funded safety programs: the State Highway Operation and Protection Program (SHOPP) – Collision Reduction Program and the State Highway Safety Improvement Program (HSIP). In addition to the state safety investments directed to projects throughout the region, other significant road safety investments in the 2023 TIP include:

- $31 million for Oakland's Reconnecting the Town Program
- $27 million for San Carlos's US-101/Holly St. Interchange Modifications
- $27 million for Alameda County's Complete Street Improvements Program
- $17 million for Caltrain Rengstorff Grade Separation in Mountain View

Transportation projects that are primarily focused on other non-safety objectives, such as congestion reduction or operational improvements, can often contribute to a safer roadway environment. Tables 4a through 4c detail the investments in the TIP, regardless of the project's primary purpose, that are expected to reduce fatalities or serious injuries for all modes, as well as projects that result in safer travel specifically for bicyclists and pedestrians. Many of these projects have a primary objective other than road safety.

Table 4a. 2023 TIP Projects Anticipated to Result in Road Safety Benefits:

Reduction in the Number and Rate of Fatalities

County	Safety Investments (in $ millions)	% of TIP Investments	Projects	% of TIP Projects
Alameda	$640	63%	37	64%
Contra Costa	$102	60%	12	36%
Marin	$14	9%	4	21%
Napa	$11	31%	4	40%
San Francisco	$56	5%	5	23%
San Mateo	$47	12%	16	44%
Santa Clara	$490	10%	27	47%
Solano	$45	65%	6	38%
Sonoma	$30	66%	9	53%
Multiple	$526	16%	6	15%
	$1,961	18%	126	41%

Table 4b. 2023 TIP Projects Anticipated to Result in Road Safety Benefits:

Reduction in the Number and Rate of Serious Injuries

County	Safety Investments (in $ millions)	% of TIP Investments	Projects	% of TIP Projects
Alameda	$641	63%	38	66%
Contra Costa	$105	62%	13	39%
Marin	$16	10%	5	26%
Napa	$15	44%	5	50%
San Francisco	$56	5%	5	23%
San Mateo	$51	13%	17	47%
Santa Clara	$493	10%	28	48%
Solano	$45	65%	6	38%
Sonoma	$30	66%	9	53%
Multiple	$526	16%	6	15%
	$1,977	18%	132	43%

Table 4c. 2023 TIP Projects Anticipated to Result in Road Safety Benefits:

Reduction in Non-Motorized Fatalities and Serious Injuries

County	Safety Investments (in $ millions)	% of TIP Investments	Projects	% of TIP Projects
Alameda	$638	63%	39	67%
Contra Costa	$72	42%	12	36%
Marin	$17	11%	6	32%
Napa	$15	45%	6	60%
San Francisco	$56	5%	5	23%
San Mateo	$52	14%	18	50%
Santa Clara	$468	10%	29	50%
Solano	$45	65%	6	38%
Sonoma	$32	73%	10	59%
Multiple	$242	7%	5	12%
	$1,637	15%	136	44%

Note: Tables 4a-4c indicate the anticipated effect of projects on road safety provided by project sponsors through the 2023 TIP. Project totals include one or more "grouped listings," which combine numerous projects into a single listing in the TIP.

Combined into a single measure, more than 140 projects programmed in the financially constrained 2023 TIP, accounting for more than $2 billion in investments, are anticipated to reduce traffic fatalities and/or serious injuries (Table 5). The data in Tables 4a through 4c is not additive for Table 5, as individual projects may benefit more than one road safety performance measure.

Table 5. 2023 TIP Projects Anticipated to Result in Road Safety Benefits: Reduction in Fatalities and Serious Injuries (Including Non-Motorized)

$2.0 billion

County	Safety Investments (in $ millions)	% of TIP Investments	Safety Projects	% of TIP Projects
Alameda	$645	64%	40	69%
Contra Costa	$121	71%	16	48%
Marin	$17	11%	6	32%
Napa	$15	45%	6	60%
San Francisco	$56	5%	5	23%
San Mateo	$52	14%	18	50%
Santa Clara	$501	11%	32	55%
Solano	$45	65%	6	38%
Sonoma	$32	73%	10	59%
Regional/ Multi-County	$526	16%	6	15%
	$2,010	18%	145	47%

Note: Project purpose data provided by project sponsors through the 2023 TIP. Project totals include one or more "grouped listings," which combine numerous projects into a single listing in the TIP.

TRANSIT SAFETY

Goal: Improve the safety of all public transportation systems, specifically in the areas of fatalities, injuries, safety events (for example: collisions, derailments), and system reliability.

Performance Measures

The National Public Transportation Safety Plan includes seven performance measures that transit operators and MPOs will be required to track and report. These measures will be used to identify trends and assess progress towards making reductions in transit fatalities, injuries, safety events, and mechanical failures. Each performance measure is tracked and reported by mode of public transportation (i.e. bus, heavy rail).

Goal Area	Transit Safety
Performance Measure(s)	• Number of fatalities, by mode • Rate of fatalities per vehicle revenue miles, by mode • Number of injuries, by mode • Rate of injuries per vehicle revenue miles, by mode • Number of transit safety events, by mode • Rate of transit safety events per vehicle revenue miles, by mode • Mean distance between major mechanical failures, by mode

Performance Targets

The final rule for these performance measures went into effect in July 2019, requiring transit operators to establish a Public Transportation Agency Plan, including safety performance targets, by July 2021. MTC adopted regional safety performance targets in January 2022. More information on the Transit Safety target setting process and targets for individual modes is available online at:

http://mtc.legistar.com/gateway.aspx?m=l&id=/matter.aspx?key=23769.

Table 6. Regional Transit Safety Targets

| Performance Measures	*MTC Regional Targets*
Fatalities – total, all modes	0.0
Fatalities – rate per vehicle revenue miles, all modes	0.0
Injuries – total, all modes	546.4
Injuries – rate per vehicle revenue miles, all modes	0.03
Transit safety events – total, all modes	776.6
Transit safety events – rate per vehicle revenue miles, all modes	0.04
Major mechanical failures – mean distance between, all modes	35,409.8

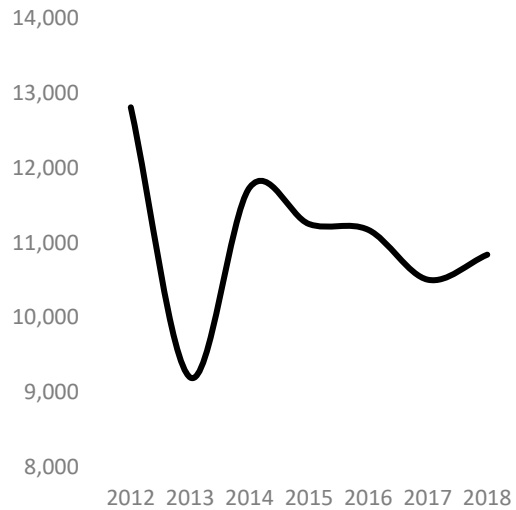## Bay Area Regional Transit Safety Trends

Number of Fatalities - All modes
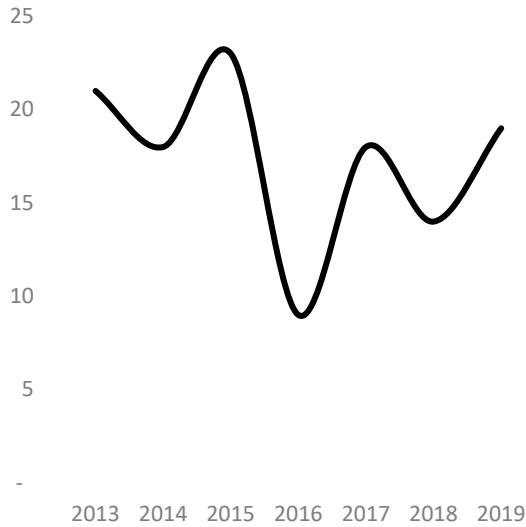
Number of Injuries – All modes
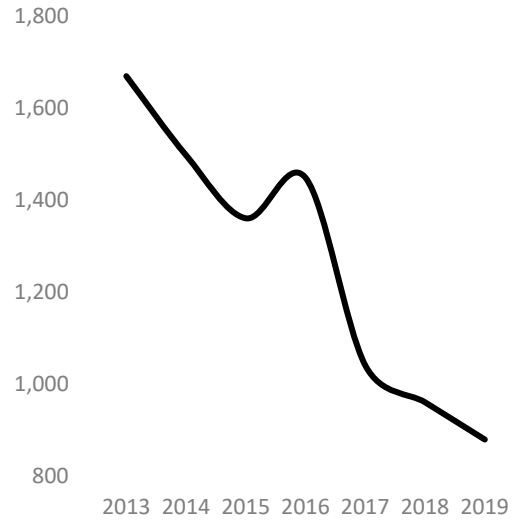
Number of Transit Safety Events - All modes
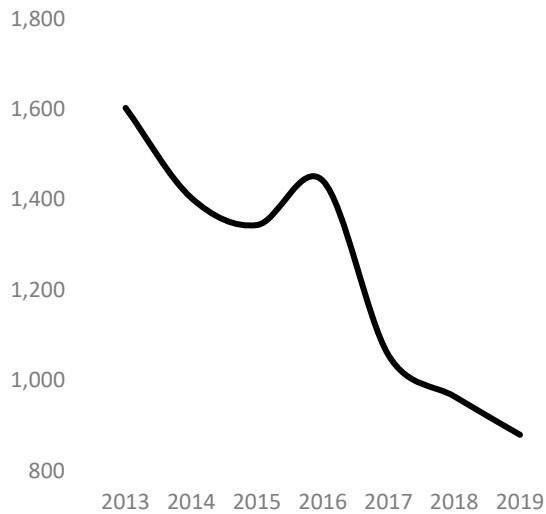
Number of Major Mechanical Failures - All modes

Source: National Transit Database

Regional Policies and Project Selection Procedures

While some projects included in the 2023 TIP address the safety of the transit system specifically, the primary means of supporting achievement of transit safety targets is ensuring that transit vehicles and facilities remain in a state of good repair. Well-maintained transit assets experience fewer major mechanical errors and major safety events contributing to a safer ride for passengers. Further discussion of

the regional policies and project selection procedures focused on maintaining the transit system is included in the Transit Asset Management section below.

2023 TIP Investments

In the 2023 TIP, $64 million is committed to projects that have a primary purpose of improving transit safety (Table 7).

Table 7. 2023 TIP Projects with the Primary Purpose to Improve Transit Safety

Bay Area	Safety Investments (in $ millions)	% of TIP Investments	Safety Projects	% of TIP Projects
Regional total	$64	<1%	6	2%

However, more than $2.0 billion of 2023 TIP investments are anticipated to improve performance on one or more transit safety performance measures, regardless of overall project purpose (Table 8). This accounts for 18% of the investments included in the 2023 TIP. The bulk of these investments are state of good repair and transit expansion projects that are also expected to improve the performance of one or more of the transit safety performance measures.

Table 8. 2023 TIP Projects Anticipated to Result in Transit Safety Benefits

$2.0 billion

Bay Area	Safety Investments (in $ millions)	% of TIP Investments	Safety Projects	% of TIP Projects
Regional total	$2,023	18%	75	24%

A few projects in the 2023 TIP with anticipated transit safety benefits include:

- $745 million for the Caltrain Downtown San Francisco Extension
- $219 million for BART's Railcar Procurement Program
- $101 million for Fremont's Irvington BART Station project
- $43 million for SFMTA's Core Capacity Program
- $34 million for SMART's Rail and Pathway Phase 2

INFRASTRUCTURE CONDITION

The maintenance and preservation of our existing transportation infrastructure are critical for supporting a safe and efficient transportation system. The overall goal of the infrastructure condition performance area is to improve the condition of existing pavements, bridges, and transit assets.

Pavement Condition

Goal: Maintain the condition of highway infrastructure assets in a state of good repair

Performance Measures

Four performance measures were established to identify trends and assess progress towards maintaining a state of good repair on the Interstate and Non-Interstate National Highway System (NHS).

Goal Area	Pavement Condition
Performance Measures	• Percentage of pavements on the Interstate in good condition *(lane miles)* • Percentage of pavements on the Interstate in poor condition *(lane miles)* • Percentage of pavements on the non-Interstate NHS in good condition *(lane miles)* • Percentage of pavements on the non-Interstate NHS in poor condition *(lane miles)*

Performance Targets

State DOTs are required to develop a Transportation Asset Management Plan that includes long-range investment strategies for assets on the National Highway System, including pavement condition. The plan establishes 10-year performance goals and interim two- and four-year performance targets to monitor progress. MPOs are only required to set four-year targets and may choose to adopt the statewide target or adopt quantifiable performance targets for the region.

Caltrans adopted its statewide two- and four-year targets for pavement condition in May 2018. In November 2018, MTC chose to support state targets for the four-year performance period. The state set new targets in May 2022 and MTC is expected to support state targets or adopt regional targets in November 2022.

Table 9. Regional Pavement Asset Management Targets

Performance Measure *Percentage of system total*	Baseline Condition 2016	Statewide 2-Year Targets 2019	2-year Change	Statewide 4-Year Targets 2021	4-year Change	Regional 4-Year Targets 2021
Interstate in good condition	**44.9%**	**45.1%**	+0.2%	**44.5%**	-0.5%	Support State Targets
Interstate in poor condition	**3.1%**	**3.5%**	+0.4%	**3.8%**	+0.7%	Support State Targets
Non-Interstate NHS in good condition	**25.5%**	**28.2%**	+2.7%	**29.9%**	+4.4%	Support State Targets
Non-Interstate NHS in poor condition	**7.1%**	**7.3%**	+0.2%	**7.2%**	+0.1%	Support State Targets

Regional Policies and Project Selection Procedures

MTC has maintained a Fix-it-First philosophy for many years and has recommitted to this effort through multiple plans, programs, and policies. One key to fulfilling this pledge for the region's pavement assets is the development and maintenance of the StreetSaver application that helps jurisdictions throughout the Bay Area target their pavement preservation investments in a more cost-effective manner. MTC also works with local jurisdictions to review their Pavement Management Programs (PMP) and certify that they meet regional requirements as a prerequisite to receiving regional discretionary funding.

When developing *Plan Bay Area 2050*, like other RTPs before it, MTC committed to Fix-it-First by conducting an asset management needs analysis and setting aside roughly two thirds of all transportation investments to "restore, operate, and maintain the existing system" (Strategy T1), including pavement preservation. While much of the implementation of this strategy, in particular the preservation of pavement assets on the National and Interstate Highway Systems, is implemented through the state-managed State Highway Operation and Protection Program (SHOPP), regional programs also contribute to the achievement of federal performance targets in this area. As mentioned above, to qualify for funding through the regional One Bay Area Grant (OBAG) discretionary program, project sponsors must have a certified PMP. Also, any pavement preservation project submitted for OBAG funding must be based on the local needs analysis from the PMP.

2023 TIP Investments

In the 2023 TIP, $879 million is directed to projects with a primary purpose of improving pavement condition on the NHS (Table 10). Of this total amount, $873 million is programmed to various projects in the SHOPP-Roadway Preservation program.
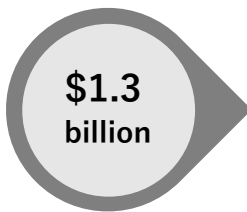
Table 10. 2023 TIP Projects with Primary Purpose to Improve Pavement Condition on the NHS

Bay Area	Pavement Investments (in $ millions)	% of TIP Investments	Pavement Projects	% of TIP Projects
Regional total	$879	8%	4	1%

Note: Project purpose data provided by project sponsors through the 2023 TIP. Project totals include the SHOPP Roadway Preservation "grouped listings," which combines numerous projects into a single listing.

A total of $1.3 billion is programmed to projects in the 2023 TIP that will improve pavement condition on the Interstate or non-Interstate NHS, regardless of the primary purpose of the projects. These investments are anticipated to bring 291.2 lane-miles of the Interstate and 670.9 lane-miles of the non-Interstate NHS from fair or poor condition into good condition (Table 11). However, the precise impact of these investments on reaching regional performance targets will be affected both by ongoing deterioration of pavement conditions throughout the TIP period as well as additional locally funded pavement preservation and rehabilitation projects that are not reflected in the TIP.

Table 11. 2023 TIP Improvements in Pavement Condition on the NHS in Lane Miles

$1.3 billion

Bay Area	From Fair to Good	% of Regional Total	From Poor to Good	% of Regional Total	Total Improved to Good	% of Regional Total
Interstate System	247.8	11.1%	43.4	1.9%	291.2	13.0
NHS	581.7	9.9%	89.2	1.5%	670.9	11.4%

Note: Pavement condition improvements data provided by project sponsors through the 2023 TIP.

Bridge Condition

Goal: Maintain the condition of bridge assets in a state of good repair

Performance Measures

Two performance measures were established to identify trends and assess progress towards maintaining a state of good repair of bridges on the National Highway System (NHS).

Goal Area	Bridge Condition
Performance Measures	• Percentage of NHS bridges classified in good condition *(deck area square meters)* • Percentage of NHS bridges classified in poor condition *(deck area square meters)*

Performance Targets

State DOTs are required to develop a Transportation Asset Management Plan that includes long-range investment strategies for assets on the National Highway System, including bridge condition. The plan establishes 10-year performance targets as well as targets for years 2 and 4 to monitor progress. MPOs are required to set four-year targets and may choose to adopt the statewide target or adopt quantifiable performance targets for the region.

Caltrans finalized the statewide bridge condition targets in May 2018. In November 2018, MTC chose to support state targets for the four-year performance period. The state also set new targets in May 2022 and MTC is expected to support state targets or adopt regional targets in November 2022.

Table 12. Regional Pavement Asset Management Targets

Performance Measure *Percentage of system total*	Baseline Condition 2017	Statewide 2-Year Targets 2019	2-year Change	Statewide 4-Year Targets 2021	4-year Change	Regional 4-Year Targets 2021
NHS bridges in good condition	**66.5%**	**69.1%**	+2.6%	**70.5%**	+4.0%	Support State Targets
NHS bridges in poor condition	**4.8%**	**4.6%**	-0.2%	**4.4%**	-0.4%	Support State Targets

Regional Policies and Project Selection Procedures

Like the discussion of pavement asset management policies above, MTC's commitment to Fix-it-First informs regional policies, plans, and programs related to bridge asset management. Furthermore, MTC, in its role as the Bay Area Toll Authority, is required to direct a significant portion of tolls collected on the

seven state-owned bridges to the upkeep of those bridges. The Golden Gate Bridge Highway and Transportation District is similarly required to direct toll revenue to the maintenance of the Golden Gate Bridge. These commitments, along with commitments to maintain other bridges throughout the region, are reflected in the "restore, operate, and maintain the existing system" strategy in *Plan Bay Area 2050* (Strategy T1).

In addition to toll revenue generated from bridges in the Bay Area, a considerable investment of state-controlled funding is directed toward the achievement of federally-required bridge condition improvement targets. The two most significant sources of these funds are the Local Highway Bridge Program (HBP) and the SHOPP.

2023 TIP Investments

The 2023 TIP includes project investments totaling $936 million on projects with a primary purpose of improving bridge conditions on the NHS (Table 13). Of this amount, $512 million is programmed to various projects through the SHOPP-Bridge Rehabilitation and Reconstruction program.

Table 13. 2023 TIP Projects with Primary Purpose to Improve Bridge Condition on the NHS

Bay Area	Bridge Investments (in $ millions)	% of TIP Investments	Bridge Projects	% of TIP Projects
Regional total	$936	9%	6	2%

Note: Project purpose data provided by project sponsors through the 2023 TIP. Project totals include the SHOPP Bridge Preservation and HBP "grouped listings," which combines numerous projects into a single listing.

More than $1.1 billion is directed to all projects, regardless of project purpose, that will improve bridge deck conditions on the NHS (Table 14). These investments are anticipated to bring 590,037 square meters of bridge deck area, or 1.0% of the regional total, from fair or poor condition into good condition. However, the precise impact of these investments on performance will be affected by ongoing deterioration of bridge conditions throughout the TIP period as well as other locally funded bridge projects not captured in the TIP.

Table 14. 2023 TIP Improvements in Bridge Condition on the NHS by Bridge Deck Area

Bay Area	From Fair to Good	% of Regional Total	From Poor to Good	% of Regional Total	Total Improved to Good	% of Regional Total
Bridge Deck Area (in square meters)	382,054	0.6%	207,983	0.3%	590,037	1.0%

$1.1 billion

Note: Pavement condition improvements data provided by project sponsors through the 2023 TIP.

Transit Asset Management

Goal: Maintain the condition of public transit assets in a state of good repair

Performance Measures

Four performance measures were established to identify trends and assess progress towards maintaining a state of good repair (SGR) for public transit assets, including rolling stock, equipment, infrastructure, and facilities.

Goal Area	Transit Asset Condition
Performance Measures	• Percentage of revenue vehicles that have met or exceeded their useful life benchmark *(by asset class)* • Percentage of facilities with a condition rating below fair *(by asset class)* • Percentage of rail fixed-guideway with speed restrictions *(directional route-miles)* • Percentage of non-revenue vehicles that have met or exceeded their useful life benchmark

Performance Targets

Transit operators and MPOs are required to set annual targets for each transit asset performance measure.

In the case of rolling stock and facilities, the major asset categories are further broken down into distinct asset classes. To develop regional targets, MTC consolidates the targets set by individual operators for each asset class. Targets established by operators reflect realistic forecasts for the coming fiscal year for funding that will be available for the repair or replacement of transit assets.

MTC established its latest regional transit asset performance targets in April 2022 based on an aggregation of individual targets set by operators. The regional targets anticipate modest improvements in the percentage of assets in a state of good repair for both revenue and non-revenue vehicles. However, state of

good repair for the region's guideway assets is expected to remain constant over the coming year, while the condition of facilities is expected to worsen slightly based on current asset condition and funding levels. The targets for each measure are detailed in the table below, followed by Bay Area regional trend charts for each performance measure.

Table 15. Regional Transit Asset Management Targets

| Performance Measures	Baseline Condition 2021	MTC Target 2022
Revenue Vehicles – percent exceeding useful life benchmark (ULB)	23%	22%
Articulated bus	*4%*	*0%*
Automated guideway vehicle	*0%*	*0%*
Automobile	*5%*	*5%*
Bus	*19%*	*20%*
Cable car	*70%*	*70%*
Commuter rail – locomotive	*56%*	*56%*
Commuter rail – passenger car	*41%*	*41%*
Commuter rail – self-propelled passenger coach	*0%*	*0%*
Cutaway bus	*21%*	*20%*
Double decker bus	*0%*	*0%*
Ferryboat	*15%*	*16%*
Heavy rail	*68%*	*62%*
Light rail	*10%*	*1%*
Minivan	*32%*	*28%*
Over-the-road bus	*31%*	*22%*
Trolley bus	*0%*	*0%*
Van	*2%*	*3%*
Vintage trolley	*100%*	*100%*
Facilities – percent with condition rating below fair	10%	11%
Administrative and maintenance facilities	*8%*	*10%*
Passenger facilities	*11%*	*12%*
Rail fixed-guideway – percent with speed restrictions	2%	2%
Non-Revenue Vehicles – percent exceeding ULB	49%	47%

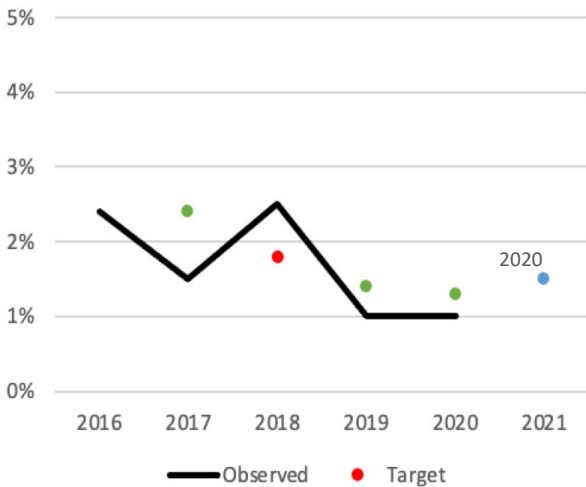**Bay Area Transit Asset Management Trends**

Revenue Vehicles That Have Met or Exceeded Their Useful Life Benchmark (all vehicle classes)
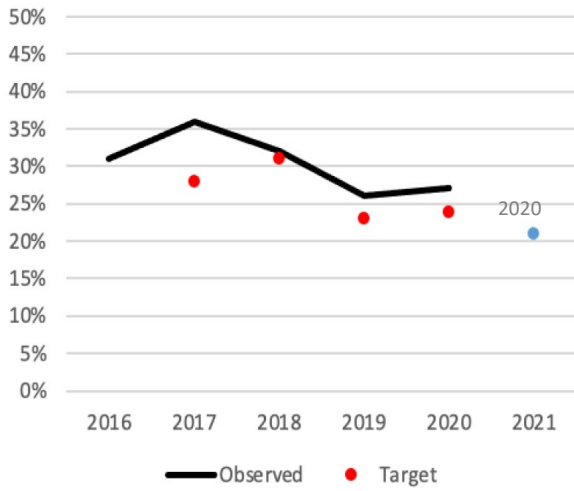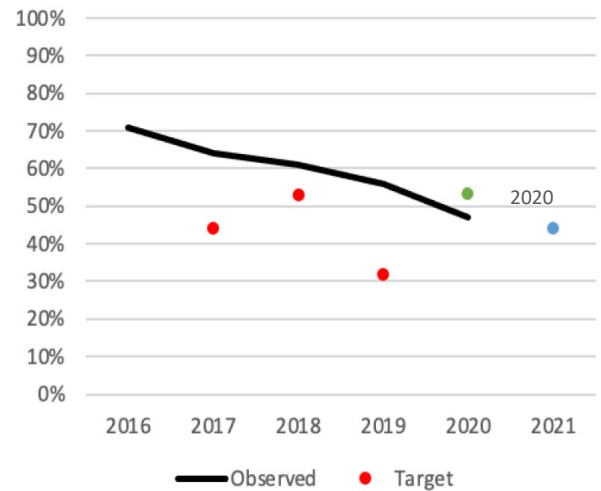

Facilities with a Condition Rating Below Fair
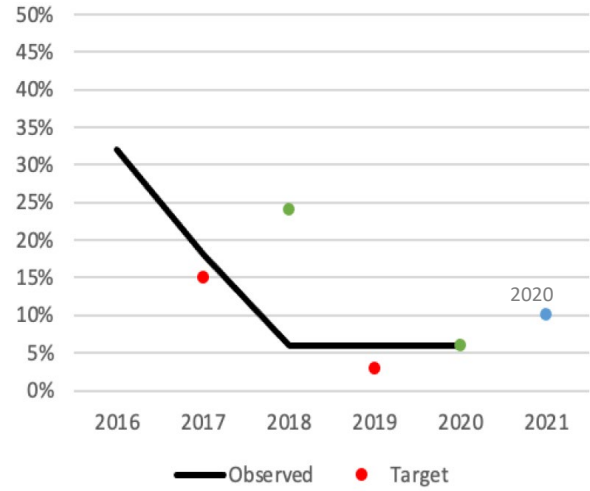
Guideway Route-Miles with Performance Restrictions

Non-Revenue Vehicles That Have Met or Exceeded Their Useful Life Benchmark

Note: In the charts above, green dots indicate met targets, red dots indicate missed targets and blue dots indicate future targets at the time that data was collected.

Regional Policies and Project Selection Procedures

Like other goal areas in the Infrastructure Condition category of federally-required performance measures, MTC's Fix-it-First philosophy is the primary driver of Transit Asset Management investments in the Bay Area. As such, Transit Asset Management priorities are captured in the "restore, operate, and maintain the existing system" strategy in *Plan Bay Area 2050* (Strategy T1), along with pavement, bridge, and other infrastructure preservation investments.

Furthermore, as transit is a key mobility option required to achieve many regional transportation and development goals, the Commission prioritized maintaining a state of good repair for transit assets in the urban core through the Transit Core Capacity Challenge Grant Program (CCCGP) (MTC Resolution No. 4123, 2023 TIP Appendix A-36).

Due to the importance of maintaining a state of good repair, projects that replace, rehabilitate, or otherwise preserve transit assets are given the highest priority for funding (after debt service payment) through the Transit Capital Priorities (TCP) Program (MTC Resolution Nos. 4444, 4510, 4513, and 4169; 2023 TIP Appendices A-22 through A-25), which guides the spending of FTA Section 5307 Urbanized Area Formula, FTA Section 5337 State of Good Repair, FTA Section 5339 Bus and Bus Facilities formula funds, STP and CMAQ funding for transit, and regional revenues directed to transit through the CCCGP.

2023 TIP Investments

Roughly $961 million is invested in the 2023 TIP on projects with a primary purpose of transit asset management (Table 16 on the next page).

A total of $6.3 billion is invested in transit maintenance, rehabilitation, or expansion projects regardless of the primary project purpose (Table 17 on the next page). Transit rehabilitation or replacement projects directly affect regional transit asset conditions by increasing the share of assets in a state of good repair. Adding new assets as part of a transit service expansion also has an impact on the share of transit assets in a state of good repair by increasing the total number of assets in a particular class.

Table 16. 2023 TIP Projects with Primary Purpose of Transit Asset Management

Transit Operator	Investments (in $ millions)	% of TIP Investments	Projects	% of TIP Projects
AC Transit	$13	100%	1	100%
BART	$537	81%	7	54%
Caltrain	$34	45%	3	75%
GGBHTD	$7	5%	1	25%
MCTD	$11	100%	7	100%
NVTA	$11	72%	1	50%
SamTrans	$122	100%	2	100%
Santa Rosa CityBus	$2	100%	1	100%
SFMTA	$39	14%	6	32%
SMART	$11	24%	1	50%
SolTrans	$9	100%	2	100%
Sonoma County Transit	$5	38%	3	50%
STA	$3	13%	1	20%
TriDelta Transit	$3	100%	2	100%
VTA	$123	3%	7	27%
WETA	$31	100%	3	100%
Total	$961	9%	50	16%

Note: Project purpose data provided by provided by project sponsors through the 2023 TIP

Table 17. 2023 TIP Projects Anticipated to Result in Transit Asset Management Benefits:

$6.3 billion

Bay Area	Investments (in $ millions)	% of TIP Investments	Projects	% of TIP Projects
Regional total	$6,286	57%	72	23%

Some of the largest investments in transit assets, including expansion projects, in the 2023 TIP include:

- $3.9 billion – BART Berryessa to San Jose Extension
- $248 million – VTA Eastridge to BART Regional Connector
- $219 million – BART Railcar Procurement Program
- $174 million – BART Transbay Core Capacity Improvements
- $119 million – SamTrans Bus Replacement

Rail transit accounts for the majority of the transit asset investment in the 2023 TIP, with the BART extension from Berryessa to San Jose, alone, programmed to receive 62% of the funds programmed to transit asset projects in the 2023 TIP.

The specific impact of these transit investments on annual performance will be heavily influenced by the rate of continued wear and tear on existing transit assets during the TIP period as well as additional investments made by transit operators that are not captured in the 2023 TIP.

CONGESTION REDUCTION

Goal: Achieve a significant reduction in congestion on the National Highway System

Performance Measures

Two performance measures were established to identify trends and assess progress towards reducing traffic congestion on the National Highway System in urban areas.

Goal Area	Congestion Reduction
Performance Measure	• Annual hours of peak-hour excessive delay per capita by urbanized area • Percent of non-single occupancy vehicle (non-Single-Occupant Vehicle (SOV)) travel by urbanized area

Performance Targets

State DOTs and MPOs are required to set two- and four-year targets every four years for both congestion measures. Both targets are federally-required to be fully consistent between the state DOT and the MPO for each urbanized area.

For the first performance period, targets must be set by urbanized areas (UZAs) with populations over one million that are also in nonattainment or maintenance areas for ozone, carbon monoxide or particulate

matter. In the Bay Area, the San Francisco-Oakland and San Jose urbanized areas meet these thresholds. In the second performance period, beginning in 2022, three more urbanized areas in the San Francisco Bay Area will be required to set targets.

For the first round of target-setting, Caltrans and MTC are responsible for setting four-year targets (2022) for the excessive delay measure and two and four-year targets (2020 and 2022) for the mode share measure. Caltrans adopted statewide targets in May 2018. The state's targets for the delay measure in the Bay Area's urbanized areas aim to reduce peak-hour excessive delay per capita by 4% over 2017 conditions. The non-SOV share targets set by Caltrans for the Bay Area urbanized areas align with the mode shift targets adopted by MTC, at the time, through *Plan Bay Area 2040*. MTC adopted targets for urbanized areas within its region in November 2018; however, given the requirement for full consistency between the MPO and the state DOT targets for each urbanized area, the state targets below effectively serve as the regional targets.

While Caltrans is expected to set new targets in 2022, these targets were not available at the time of writing.

Table 18. Annual Peak Hour Excessive Delay per Capita Targets

Urbanized Area	Baseline Condition 2017	2-Year Targets 2019	2-year Change	4-Year Targets 2021	4-year Change
San Francisco-Oakland UZA	31.3 hours	N/A	N/A	30.0 hours	-4.0%
San Jose UZA	27.5 hours	N/A	N/A	26.4 hours	-4.0%
Concord UZA*	N/A	N/A	N/A	N/A	N/A
Santa Rosa UZA*	N/A	N/A	N/A	N/A	N/A
Antioch UZA*	N/A	N/A	N/A	N/A	N/A

* UZAs with populations under 1 million are not required to set targets this round.

Table 19. Percent Non-SOV Travel Targets

Urbanized Area	Baseline Condition 2017	2-Year Targets 2019	2-year Change	4-Year Targets 2021	4-year Change
San Francisco-Oakland UZA	44.3%	45.3%	+1.0%	46.3%	+2.0%
San Jose UZA	24.5%	25.5%	+1.0%	26.5%	+2.0%
Concord UZA*	N/A	N/A	N/A	N/A	N/A
Santa Rosa UZA*	N/A	N/A	N/A	N/A	N/A
Antioch UZA*	N/A	N/A	N/A	N/A	N/A

* UZAs with populations under 1 million are not required to set targets this round.

Regional Policies and Project Selection Procedures

MTC strives to take a holistic approach to congestion reduction. While targeted expansions of the roadway system may be necessary to reduce congestion in the near-term, they may also lead to greater vehicle miles traveled (VMT), resulting in similar levels of congestion, over time. MTC has adopted multiple policies and programs aimed not only at smoothing the travel of automobiles on the roads, but also at encouraging non-SOV travel. As mentioned in the roadway safety section above, MTC has adopted a Regional Safety/Vision Zero policy and a Complete Streets policy to make walking and biking safer and more attractive to travelers on the road. The Transit Core Capacity Challenge Grant Program referenced in the Transit Asset Management section above and MTC's Transit Sustainability Project (MTC Resolution No. 4060, 2023 TIP Appendix A-11) both aim to ensure that transit remains a viable and desirable options. MTC also adopted the Regional Transit Expansion Program (MTC Resolution No. 3434, 2023 TIP Appendix A-10) to guide transit investments for future riders. As many of the projects in this program have either been completed or are nearing completion, MTC is also set to adopt a Major Project Advancement Policy (MAP) which will focus investments for large highway as well as transit projects.

Reducing VMT is one of the overarching themes of *Plan Bay Area 2050* as this will result in fewer greenhouse gas (GHG) emissions from the transportation system. Since strategies that reduce VMT in many instances will also reduce future roadway congestion, a significant number of strategies identified in the Plan contribute to the achievement of targets set for this goal area as well. These include:

Table 20. *Plan Bay Area 2050* **Strategies Supporting Achievement of Congestion Reduction Targets**

Reference	Strategy Title
T3	Enable a seamless mobility experience
T5	Implement per-mile tolling on congested freeways and transit alternatives
T6	Improve interchanges and address highway bottlenecks
T7	Advance other regional programs and local priorities
T8	Build a Complete Streets network
T9	Advance a regional Vision Zero policy through street design and reduced speeds
T10	Enhance local transit frequency, capacity, and reliability
T11	Expand and modernize the regional rail network
T12	Build an integrated regional express lanes and express bus network
EN9	Expand transportation demand management initiatives

Multiple funding programs in the region support the achievement of non-SOV travel targets. The regional OBAG program includes program categories that direct money to projects that better integrate multiple modes of travel, such as the Safe and Seamless Mobility Quick Strike and the Mobility Hubs Pilot programs, and sets aside funding for projects and programs that promote the benefits of alternative modes of travel (Climate Initiatives Program). As discussed in the Transit Asset Management section above, the TCP directs funding to ensuring that transit is a viable alternative to automobile travel. The latest round of the Active Transportation Program (ATP) requires that applicants for this funding coordinate with transit operators to minimize negative impacts on the transit system in addition to requiring them to adopt Local Road Safety Plans that ensure streets remain safe for pedestrians and cyclists.

Other programs in the region seek to reduce roadway congestion directly by smoothing the flow of traffic along the system. The OBAG program directs funds to implement roadway operational improvements identified through the Bay Area Forward initiative. The Regional Transportation Improvement Program (RTIP) also includes an MTC requirement that major new freeway projects must include traffic operations system (TOS) elements to help alleviate congestion.

State-managed programs also help the region meet targets in this goal area. The SHOPP Mobility Program in particular funds projects that reduce congestion.

2023 TIP Investments

Over $6.2 billion in the 2023 TIP is invested in projects that are intended to improve congestion throughout the region (Table 21). Approximately 85% of that total amount is directed to projects located within the San Francisco-Oakland or San Jose urban areas. An additional 11% of the total is programmed on projects that aim to improve congestion in more than one urban area (Table 22).

Table 21. 2023 TIP Congestion Reduction Projects

$6.2 billion	Bay Area	Investments (in $ millions)	% of TIP Investments	Projects	% of TIP Projects
	Significant improvement	$4,998	46%	39	13%
	Moderate Improvement	$1,173	11%	84	27%
		$6,171	56%	123	40%

Note: Anticipated effect of projects on congestion provided by project sponsors through the 2023 TIP. Project totals include one or more "grouped listings," which combine numerous projects into a single listing in the TIP.

Table 22. 2023 TIP Congestion Reduction Projects by Urbanized Area

Urbanized Area	Investments (in $ millions)	% of TIP Investments	Projects	% of TIP Projects
San Francisco-Oakland UZA	$925	8%	79	25%
San Jose UZA	$4,302	39%	30	10%
Concord UZA	$87	1%	14	5%
Santa Rosa UZA	$9	0%	9	3%
Antioch UZA	$0	0%	1	0%
Other Areas	$143	1%	26	8%
Multiple areas or regional	$685	6%	31	10%
	$6,171	56%	190	61%

Note: Location of congestion reduction projects provided by project sponsors through the 2023 TIP. Project totals include one or more "grouped listings," which combine numerous projects into a single listing in the TIP.

Projects intended to reduce congestion in the 2023 TIP include:

- $3.9 billion – BART Berryessa to San Jose Extension
- $284 million – for various projects in the SHOPP Mobility Improvements program
- $270 million – Alameda CTC's 7th St Grade Separation East
- $248 million – VTA's Eastridge to BART Regional Connector

- $163 million – for various projects in the SHOPP Collision Reduction
- $112 million – Union City's Decoto and Quarry Lakes Parkway East-West Connector

In terms of shifting travel away from single-occupancy vehicle modes, nearly $6.9 billion is invested through the 2023 TIP in projects primarily supporting non-auto modes (Table 23).

Table 23. 2023 TIP Projects with Primary Mode other than Auto

County	Investments (in $ millions)	% of TIP Investments	Projects	% of TIP Projects
Alameda	$374	37%	25	43%
Contra Costa	$40	24%	13	39%
Marin	$89	55%	13	68%
Napa	$16	48%	4	40%
San Francisco	$917	89%	18	82%
San Mateo	$223	58%	19	53%
Santa Clara	$4,353	93%	33	57%
Solano	$24	35%	8	50%
Sonoma	$31	69%	11	65%
Multiple Counties	$787	23%	19	46%
	$6,854	63%	163	53%

$6.9 billion

Note: Primary mode information provided by project sponsors through the 2023 TIP.

When considering all investments in the TIP, regardless of project's primary focus, a total of $7.1 billion is invested in bicycle, pedestrian, or transit travel (Table 24). An example of a project that supports multiple modes is a pavement preservation rehabilitation project that adds sidewalks, bicycle facilities or transit stop improvements. While the pavement rehabilitation is the primary focus of the scope and cost of the project, additional investments are directed to elements that support non-auto modes.

Table 24. 2023 TIP Investments in Non-Auto Modes

County	Investments (in $ millions)	% of TIP Investments
Alameda	$487	48%
Contra Costa	$71	42%
Marin	$90	56%
Napa	$19	55%
San Francisco	$925	89%
San Mateo	$252	66%
Santa Clara	$4,403	94%
Solano	$31	45%
Sonoma	$34	77%
Multiple Counties	$790	24%
	$7,102	65%

Note: Investments by mode provided by project sponsors through the 2023 TIP.

SYSTEM RELIABILITY

Goal: Improve the efficiency of the surface transportation system

Performance Measures

Two performance measures were established to identify trends and assess progress towards improving reliability of the Interstate system and non-Interstate National Highway System (NHS).

Goal Area	System Reliability
Performance Measures	• Percentage of person-miles traveled on the Interstate highway system that are reliable • Percentage of person-miles traveled on the non-Interstate NHS that are reliable

Performance Targets

State DOTs and MPOs are required to set two- and four-year targets every four years for each reliability measure. MPOs have the option of supporting State targets or setting their own region-specific numerical targets on a target-by-target basis.

Caltrans set their targets in May 2018, which aim for small improvements in reliability for passenger transportation on both the Interstate and non-Interstate NHS. In November 2018, MTC elected to support

the state four-year targets for both measures of reliability. While Caltrans is expected to set new targets in 2022, these targets were not available at the time of writing.

Table 25. Regional System Reliability Targets

Performance Measure *Percentage of system total*	Statewide Baseline 2017	Statewide 2-Year Targets 2019	2-year Change	Statewide 4-Year Targets 2021	4-year Change	Regional Baseline 2017	Regional 4-Year Targets 2021
Reliable person-miles traveled on Interstate system	**64.6%**	**65.1%**	+0.5%	**65.6%**	+1.0%	63.3%	Support State Targets
Reliable person-miles traveled on non-Interstate NHS	**73.0%**	**N/A**	N/A	**74.0%**	+1.0%	64.7%	Support State Targets

Regional Policies and Project Selection Procedures

MTC undertakes a number of efforts to improve the reliability of the Interstate System. Many of the efforts involve TOS elements to smooth the flow of traffic in response to congestion or traffic incidents. Given the importance of a coordinated TOS network to achieving the region's goals, MTC lead the development of the Bay Area Regional Broadband Communications Strategic Investment Plan (2023 TIP Appendix A-16).

Plan Bay Area 2050 includes improvements aimed at achieving the targets of this goal area in multiple strategies, such as:

- Restore, operate, and maintain the existing system (T1)
- Improve interchanges and address highway bottlenecks (T6)
- Advance other regional programs and local priorities (T7)
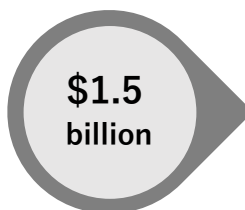- Build an integrated regional express lanes and express bus network (T12)

Similarly, there are multiple programs that implement the plans outlined above by directing funding to projects that improve Interstate System reliability. The OBAG2 program includes the Regional Active Operational Management program category and the OBAG3 program includes the Multimodal Systems Operations and Performance program category that both prioritize funding for projects like 511 traveler information services, Incident Management, and various freeway Intelligent Transportation System (ITS) improvements. Also, as mentioned in the Congestion Reduction section above, major new freeway projects selected for funding through the RTIP, must include TOS elements. At the state level, projects included in

the SHOPP Collision Reduction program help avoid unexpected congestion due to traffic incidents and those in the SHOPP Mobility program streamline highway travel through TOS and other operational improvements.

2023 TIP Investments

In the 2023 TIP, nearly $1.5 billion is invested in projects that are expected to improve system reliability on the Interstate system (Table 26). On the non-Interstate NHS, a slightly higher level of investment, $1.8 billion, is directed to system reliability improvements (Table 27).
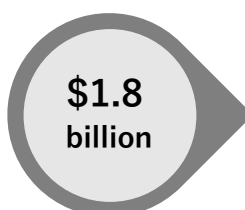
Table 26. 2023 TIP Projects Anticipated to Improve Interstate System Reliability

Bay Area	Investments (in $ millions)	% of TIP Investments	Projects	% of TIP Projects
Significant improvement	$503	5%	13	4%
Moderate improvement	$979	9%	26	8%
	$1,482	14%	39	13%

Note: Anticipated effect of projects on reliability provided by project sponsors through the 2023 TIP. Project totals include one or more "grouped listings," which combine numerous projects into a single listing in the TIP.

$1.5 billion

Table 27. 2023 TIP Projects Anticipated to Improve Non-Interstate NHS Reliability

Bay Area	Investments (in $ millions)	% of TIP Investments	Projects	% of TIP Projects
Significant improvement	$649	6%	25	8%
Moderate improvement	$1,125	10%	49	16%
	$1,774	16%	74	24%

Note: Anticipated effect of projects on reliability provided by project sponsors through the 2023 TIP. Project totals include one or more "grouped listings," which combine numerous projects into a single listing in the TIP.

$1.8 billion

Reliability projects in the 2023 TIP that support improvements in Interstate and the non-Interstate NHS system include:

- $512 million for various projects in the SHOPP Bridge Rehabilitation Program
- $284 million for various projects in the SHOPP Mobility Program
- $163 million for various projects in the SHOPP Collision Reduction Program
- $79 million – VTA's US-101/SR-25 Interchange Improvements Phase 1 Project

FREIGHT MOVEMENT AND ECONOMIC VITALITY

Goal: Improve the national freight network, strengthen the ability of rural communities to access national and international trade markets, and support regional economic development

Performance Measures

One performance measure was created to identify trends and assess progress towards improving reliability of the Interstate system specifically for freight trucks.

Goal Area	Freight Movement and Economic Vitality
Performance Measure	• Percentage of Interstate highway system mileage providing reliable truck travel times (Truck Travel Time Reliability Index)

Performance Targets

State DOTs and MPOs are required to set 2- and 4-year numerical targets for the freight movement target. MPOs have the option of supporting State targets or setting their own region-specific numerical targets on a target-by-target basis.

Caltrans set statewide targets in May 2018. These targets reflect a slight degradation of truck travel time reliability, with the percent of reliable Interstate miles decreasing by one tenth of a percentage point in both 2020 and 2022. In November 2018, MTC elected to support the state four-year target. While Caltrans is expected to set new targets in 2022, these targets were not available at the time of writing.

Table 28. Regional System Reliability Targets

Performance Measure *Truck Travel Reliability Index*	Statewide Baseline 2017	Statewide 2-Year Targets 2019	2-year Change	Statewide 4-Year Targets 2021	4-year Change	Regional Baseline 2017	Regional 4-Year Targets 2021
Reliable Interstate miles of truck travel	**1.69**	**1.68**	-0.6%	**1.67**	-1.2%	2.30	Support State Targets

Regional Policies and Project Selection Procedures

The polices, plans, and programs that guide investments intended to improve Interstate System truck reliability largely overlap with those intended to improve Interstate System reliability as a whole, as discussed in the section above. However, due to the importance of goods movement to local, regional, state and national economies, MTC periodically develops regional goods movement plans to focus efforts on improving freight efficiencies. The latest San Francisco Bay Area Goods Movement Plan was finalized in 2016 (https://mtc.ca.gov/sites/default/files/RGM_Full_Plan.pdf). MTC then developed the regional Goods Movement Investment Strategy (MTC Resolution 4244, 2023 TIP Appendix A-37), which identifies high priority goods movement projects based on this Plan and fund sources that may be used to pay for these projects.

2023 TIP Investments

Reliability improvement projects for Interstate truck travel account for $1.4 billion of investments in the 2023 TIP (Table 29). Many of the investments that improve reliability on the Interstate for all travelers also improve reliability specifically for truck travel.

Table 29. 2023 TIP Projects Anticipated to Improve Interstate System Truck Reliability

Bay Area	Investments (in $ millions)	% of TIP Investments	Projects	% of TIP Projects
Significant improvement	$525	5%	15	5%
Moderate improvement	$857	8%	14	4%
	$1,383	13%	29	9%

Note: Anticipated effect of projects on reliability provided by project sponsors through the 2023 TIP. Project totals include one or more "grouped listings," which combine numerous projects into a single listing in the TIP.

A few reliability projects in the 2023 TIP that target freight travel specifically include:

- $512 million for various projects in the SHOPP Bridge Rehabilitation Program
- $284 million for various projects in the SHOPP Mobility Program
- $163 million for various projects in the SHOPP Collision Reduction Program
- $64 million – Alameda CTC's Oakland/Alameda Access Project

ENVIRONMENTAL SUSTAINABILITY

Goal: Enhance the performance of the transportation system while protecting and enhancing the natural environment

Performance Measures

One performance measure was created to identify trends and assess progress towards improving emissions reductions under the Congestion Mitigation and Air Quality Improvement (CMAQ) Program,

Goal Area	Environmental Sustainability
Performance Measure	• Total emissions reductions from CMAQ-funded projects, by pollutant

Performance Targets

State DOTs and MPOs are required to set 2- and 4-year numerical targets for the emissions reduction measure for each applicable pollutant. MPOs have the option of supporting State targets or setting their own region-specific numerical targets on a target-by-target basis. Caltrans set statewide targets for emissions reductions in May 2018. These targets reflect a steady increase in the daily kilograms reduced for each pollutant for projects funded through the CMAQ program. MTC adopted regional targets in November 2018, based on the results of MTC's emissions reductions model, which accounts for projects within the CMAQ pipeline and vehicle fleet characteristics, among other factors.

While Caltrans is expected to set new targets in 2022, these targets were not available at the time of writing.

Table 30a. Total Statewide Emissions Reduction from CMAQ-Funded Projects Targets

Pollutant	Statewide Baseline 2014-17	Statewide 2-Year Targets 2018-19	2-year Change	Statewide 4-Year Targets 2018-21	4-year Change
Fine particulate matter – PM2.5 (kg/day)	904.25	**913.29**	+1%	**922.34**	+2%
Particulate matter – PM10 (kg/day)	2,431.21	**2,455.52**	+1%	**2,479.83**	+2%
Carbon monoxide – CO* (kg/day)	6,683.26	**6,931.90**	+1%	**7,000.54**	+2%
Volatile organic compounds – VOCs (kg/day)	951.83	**961.35**	+1%	**970.87**	+2%
Nitrogen oxide – NOx (kg/day)	1,753.36	**1,770.89**	+1%	**1,788.43**	+2%

Two-year target is the expected emissions reduction per day for federal fiscal years 2018 and 2019; 2021 target is expected emissions reduction per day for federal fiscal years 2018 through 2021.

Table 30b. Total Regional Emissions Reduction from CMAQ-Funded Projects Targets

Pollutant	Statewide Baseline 2014-17	Statewide 2-Year Targets 2018-19	Statewide 4-Year Targets 2018-21
Fine particulate matter – PM2.5 (kg/day)	24.5	**8.66**	**16.53**
Particulate matter – PM10 (kg/day)	31.29	**10.99**	**21.00**
Carbon monoxide – CO* (kg/day)	31,046,04	**8,373.38**	**14,963.60**
Volatile organic compounds – VOCs (kg/day)	2,248.93	**528.31**	**897.70**
Nitrogen oxide – NOx (kg/day)	2,179.66	**557.61**	**962.58**

Two-year target is the expected emissions reduction per day for federal fiscal years 2018 and 2019; 2021 target is expected emissions reduction per day for federal fiscal years 2018 through 2021.

Regional Policies and Project Selection Procedures

The OBAG 2 and OBAG 3 programs govern the programming of CMAQ funds in the 2023 TIP. OBAG 3 includes programmatic priorities to guide the investment of CMAQ funds to projects, including projects that reduce emissions through vehicle miles traveled (VMT) reduction, alternative fuel infrastructure and vehicles, traffic flow improvements, and incident management. Further information regarding the project selection processes for these funds can be found in MTC Resolutions 4202 (2023 TIP Appendix A-17) and 4505 (2023 TIP Appendix A-18).

2023 TIP Investments

Pollutant reduction calculations are performed for each CMAQ-funded project prior to project selection and programming in the TIP. For emissions benefits targets, only those projects that will obligate CMAQ funds for the first time during the current performance period can be credited towards performance achievements during the period. Projects that have obligated CMAQ funds in prior years can still be credited for performance achievements of the traffic congestion targets (peak-hour excessive delay per capita and percent of non-SOV travel).

There are 29 projects programmed to obligate $39 million in CMAQ funds for the first time during the 2023 TIP (Table 31).

Table 31. 2023 TIP Total Emissions Reductions from CMAQ Funded Projects

	KG/Day
Pollutant	**Reduction**
Fine particulate matter – PM2.5	11.36
Particulate matter – PM10	23.00
Carbon monoxide – CO	1368.70
Volatile organic compounds – VOCs	130.87
Nitrogen oxide – NOx	200.07

$39 million

Note: Based on latest available emissions reduction calculations for new CMAQ projects; calculated by MTC. Does not include emissions from projects already credited in prior years.

The CMAQ-funded projects in the 2023 TIP with the largest emissions reductions for one or more pollutant include:

- $8.3 million – Alameda County Complete Streets Improvements Program
- $4.8 million - San Ramon's Iron Horse Trail Bicycle and Pedestrian Overcrossing
- $3.7 million – Santa Clara's Saratoga Creek Trail Phase 1

In the Bay Area, CMAQ funds are programmed to projects through the One Bay Area Grant (OBAG) grant program. The CMAQ projects currently programmed in the 2023 TIP include the last of the projects awarded funding through the OBAG 2 funding cycle, as well as three regional projects that received funding through preliminary programming efforts under OBAG 3. As of September 2022, the call for OBAG 3 projects is ongoing. Many of the projects selected for CMAQ funding through OBAG 3 will be added to the 2023 TIP in early calendar year 2023.

LIMITATIONS

- *Limitations of self-reported data:* MTC relies on self-reported data from project sponsors to compile program level effects of investments on regional targets. This approach provides a great deal of new project-level data on a range of topics and in a relatively short period of time. However, self-reported data may introduce into the analysis inaccurate data or inconsistent interpretations of the anticipated performance benefits resulting from similar project types. Staff is continuing efforts to improve the analytical approach to evaluating performance for quantification of benefits and improved consistency across projects.

- *External forces at play:* Performance in each goal area is influenced by a variety of factors that are not captured in the assessment of the effect of 2023 TIP investments on regional performance. For road safety and traffic congestion, growth or decline in economic activity is directly related to the total number of traffic fatalities and serious injuries as well as levels of congestion. The COVID-19 pandemic has also had significant effects on travel behavior in the Bay Area. These changes in roadway and transit safety trends, congestion and reliability, and mode shift are anticipated to continue into the 2023 TIP period as travel conditions continue to return to a "new normal." In the case of asset management, ongoing deterioration rates, and unanticipated events (earthquakes, wildfires, or flooding) can also affect the resulting state of good repair for regional assets.