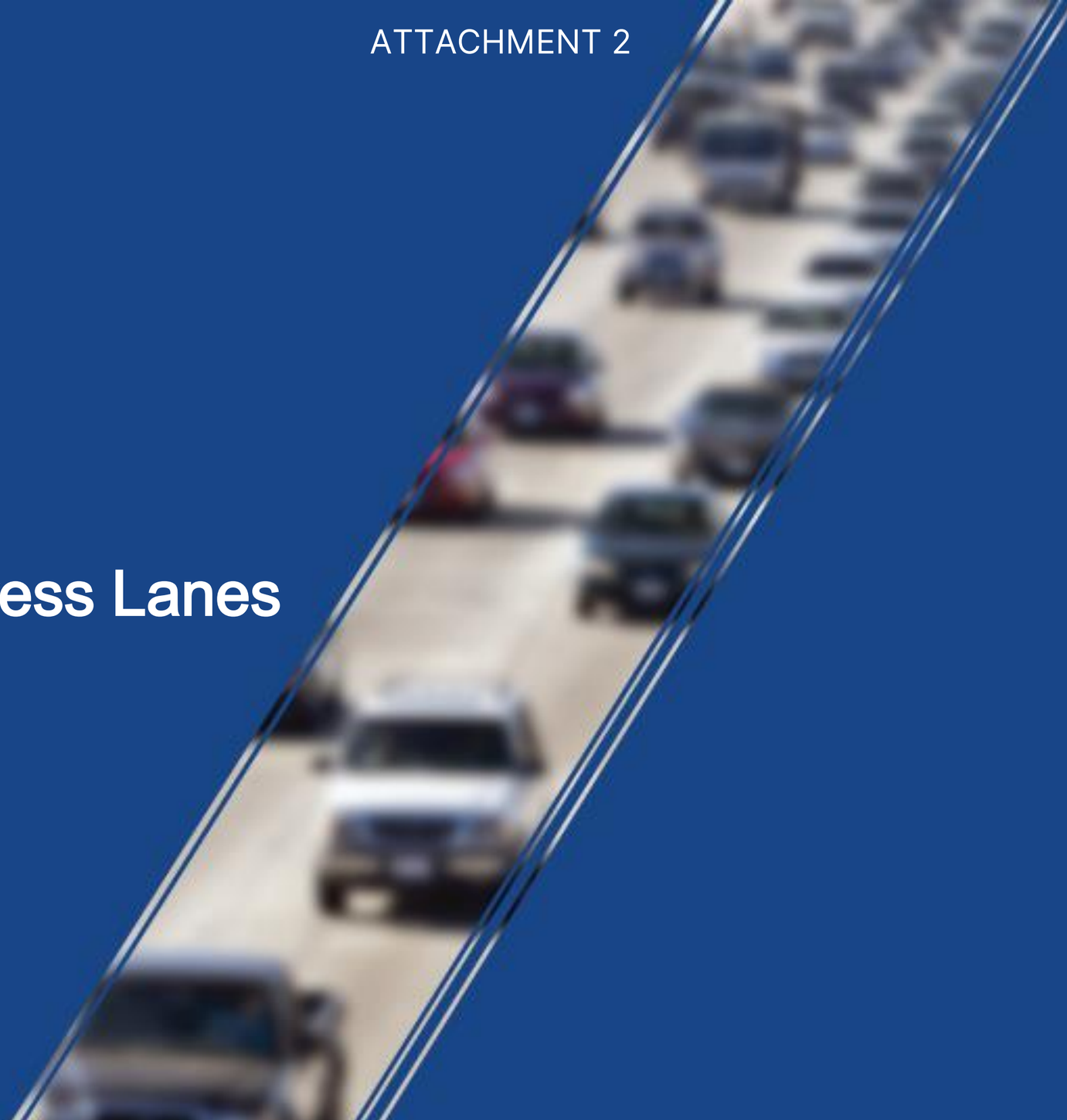
ATTACHMENT 2



San Mateo County 101 Express Lanes
Initial Performance Study

Board of Directors Presentation

March 6, 2026

Agenda

Background & Rules	03
Study Purpose	04
Data Sources	05
Analytical Limitations	06
Benefit Assessment	07
Key Takeaways	20
Next Steps	21

101 EXPRESS LANES

Background & Operating Rules

Express Lane Objectives

- Maintain travel speeds of **45 mph or greater**
- Improve mobility, reliability, and efficiency
- Integrate with the regional express lanes network

Operating Rules

- Hours: 5:00 a.m. – 8:00 p.m., Monday–Friday
- FasTrak® required
- Toll-free: HOV 3+, buses, motorcycles using FasTrak® Flex
- Half-price tolls: HOV 2 using FasTrak® Flex
- Eligible clean-air vehicles (ended 9/30/25)

Timeline

2022
Phase 1
HOV to Express Lane Conversion
7 miles

2023
Phase 2
New Managed Lane Added
15 miles

101 EXPRESS LANES

Study Purpose

Evaluate 101 Express Lanes and the corridor performance by assessing impacts across the following benefits*:

1. Reduce congestion and delays throughout the corridor
2. Improve travel time and reliability for express lane users
3. Encourage carpooling and transit use
4. Increase person throughput, measured by the number of people moved
5. Use modern technology to actively manage traffic

**Benefits are drawn from the Environmental Impact Report, with initial safety data added.*

Data Sources

The study relies on a combination of publicly available data and internal operational data.

Traffic & Performance

Data

- Traffic Volume, speed, travel time (95th Percentile Travel Time, Planning Time Index (PTI))
- Pre-Project Data (2018) and Post-Project (2024)
- Annual Average Daily Traffic (2016 - 2023)

Reports

- Caltrans Performance Measurement System (PeMS)
  - Station Hour
- Caltrans Traffic Census
  - Annual Average Daily Traffic
- Publicly available

Toll Operations

Data

- Express Lane Performance, Express Lane Usage, Dynamic Pricing, Occupancy Declarations, Person Throughput
- Post-Project Data Only (2023-2025)

Reports

- Bay Area Infrastructure Financing Authority (BAIFA)
  - Trips
- Publicly available, aggregate only

Safety

Data

- Collision Locations, Safety Trends
- Pre-Project Data (2016-2018) and Post-Project Data (2023)

Reports

- Statewide Integrated Traffic Records System (SWITRS):
  - Corridor-Level Safety Analysis
- Publicly available, limited through UC Berkeley

101 EXPRESS LANES

Analytical Limitations

These factors were considered when interpreting study findings and results.

Phased Implementation of the Corridor	Applied consistent metrics and used the GP lane as a baseline
Occupancy Data is self-reported	Verification technology and targeted enforcement needed
Few Peer Corridors for comparison	Used closest regional matches; Peer partnerships to be expanded
Post-Pandemic Traffic is still lower than pre-2019	Interpreted results in context of regional recovery
Safety Data only covers eight to nine months	Results are preliminary and will be updated when more data is released

101 EXPRESS LANES

Overall Corridor Performance

Summary of results across the study's key performance goals

✓ Met 🔍 Partially Met; Monitor

BENEFIT	ASSESSMENT	KEY RESULT(S)	METRIC CHANGE
REDUCE CONGESTION	✓	Express Lane and General Purpose Lane Avg Speed ↑; Bottlenecks ↓	Express Lane Speeds +7–13 mph; General Purpose Lane Speeds: +1–7 mph
IMPROVE RELIABILITY	✓	Buffer Time Needed ↓; Total Hours Spend Traveling Corridor ↓	Planning Time Index: –70%; Travel Time on the Top 5% Worst Travel Days: –44%; Vehicle Hours Travelled: –16%; CO_2 Emissions: –22%
ENCOURAGE CARPOOLING	🔍	HOV-3+ ↑; Transit Data Limited	HOV-3+: +14% from 32% → 46% (Self-Reported)
INCREASE PERSON THROUGHPUT	✓	Passengers per Lane per Quarter ↑ from 2023 to 2025	Person Throughput: +4.8M from 3.1M → 7.9M (2.5×)
USE MODERN TECHNOLOGY	✓	Dynamic Pricing & Real-Time Data Enabled Improvements	Influenced All Other Metrics

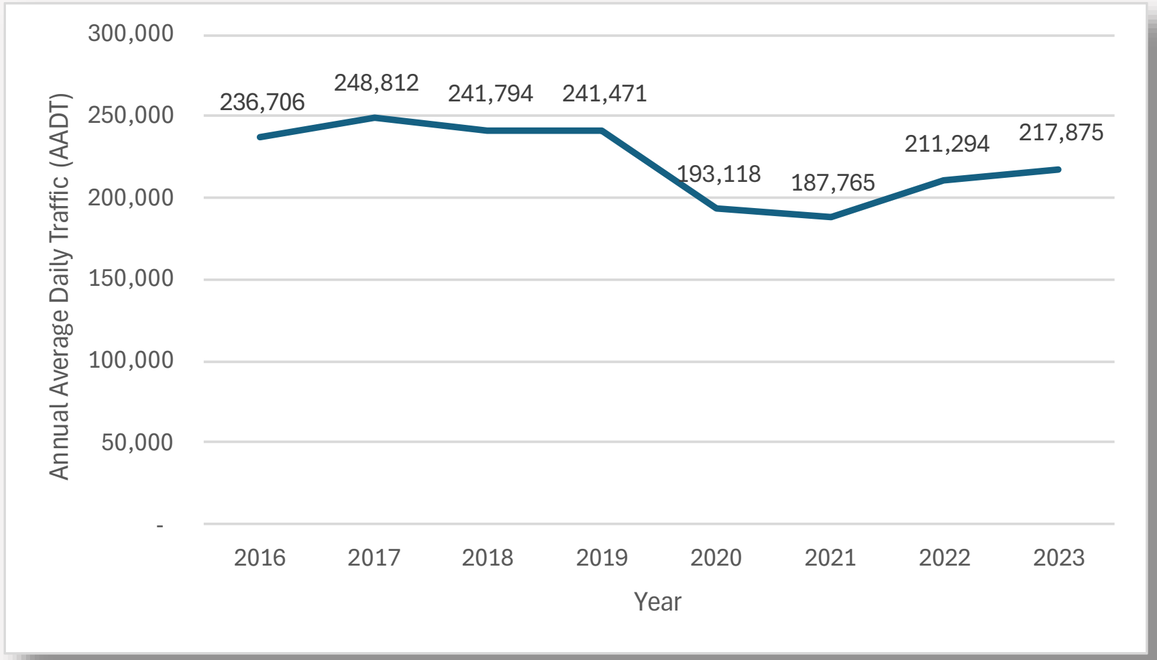
Performance gains vary by project phase, with the most significant improvements occurring in Phase 2 segments where new managed lane capacity was added. Findings should be interpreted in the context of post-pandemic travel pattern changes and increasing corridor demand.

101 EXPRESS LANES San Mateo County

Traffic Trends

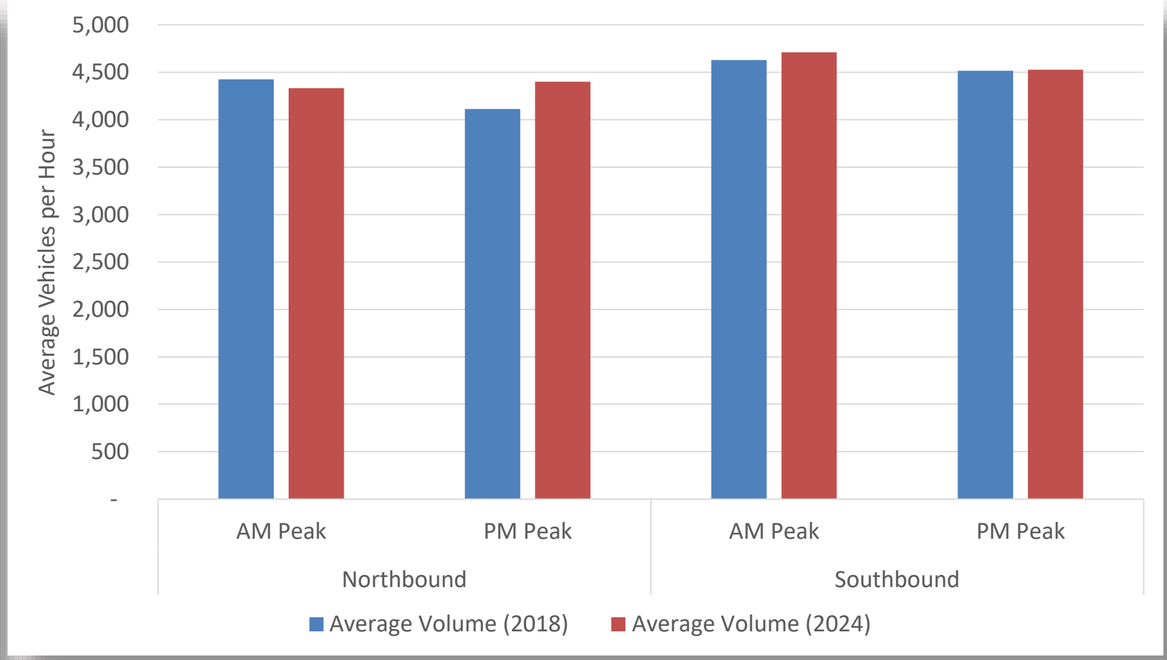
Corridor-level summary of annual changes in regional traffic demand

Average Annual Daily Traffic (AADT) shows downward pandemic trends are recovering, but traffic levels in 2023 remained about 10% lower than 2019.



Source: Caltrans Traffic Census (2016-2023)

AM/PM Peak Period General Purpose Lane Traffic Volumes (vehicles per hour) show commute peaks have fully recovered. Peak period changes are more attributable to the Project.



Peak Periods: 6 am – 10 am, 3 pm – 7 pm
Source: Caltrans Performance Measurement System (2018-2024)

Congestion & Delay

Corridor performance results

Met Goal

Key Findings

- Average speeds increased throughout the corridor in both directions
- Bottlenecks are shorter and less severe, both in duration and physical length
- General Purpose lanes are performing better under increasing peak period demand, indicating improved corridor throughput
- Remaining congestion reflects localized interchange and roadway constraints

Supporting Data

- Express Lanes: Average speeds **increased by 7–13 mph** from 2018 to 2024
- General Purpose Lanes: Average speeds **increased by 1–7 mph** from 2018 to 2024

Location-Specific Observations

- Severe bottlenecks are shorter and less intense:
  - Near I-380 SB (30→65 mph)
  - University Ave SB (30→45 mph)
  - Ralston Ave NB (< 30→45 mph)
- Persistent bottlenecks remain near SR-92 and SFO

Source: Caltrans Performance Measurement System (2018-2024)

101 EXPRESS LANES San Mateo County

Hot Spots (AM)

1. Southbound at Hillsdale Blvd is **fully resolved**

   Express Lane + General Purpose.

2. Southbound at University Blvd is **fully resolved**

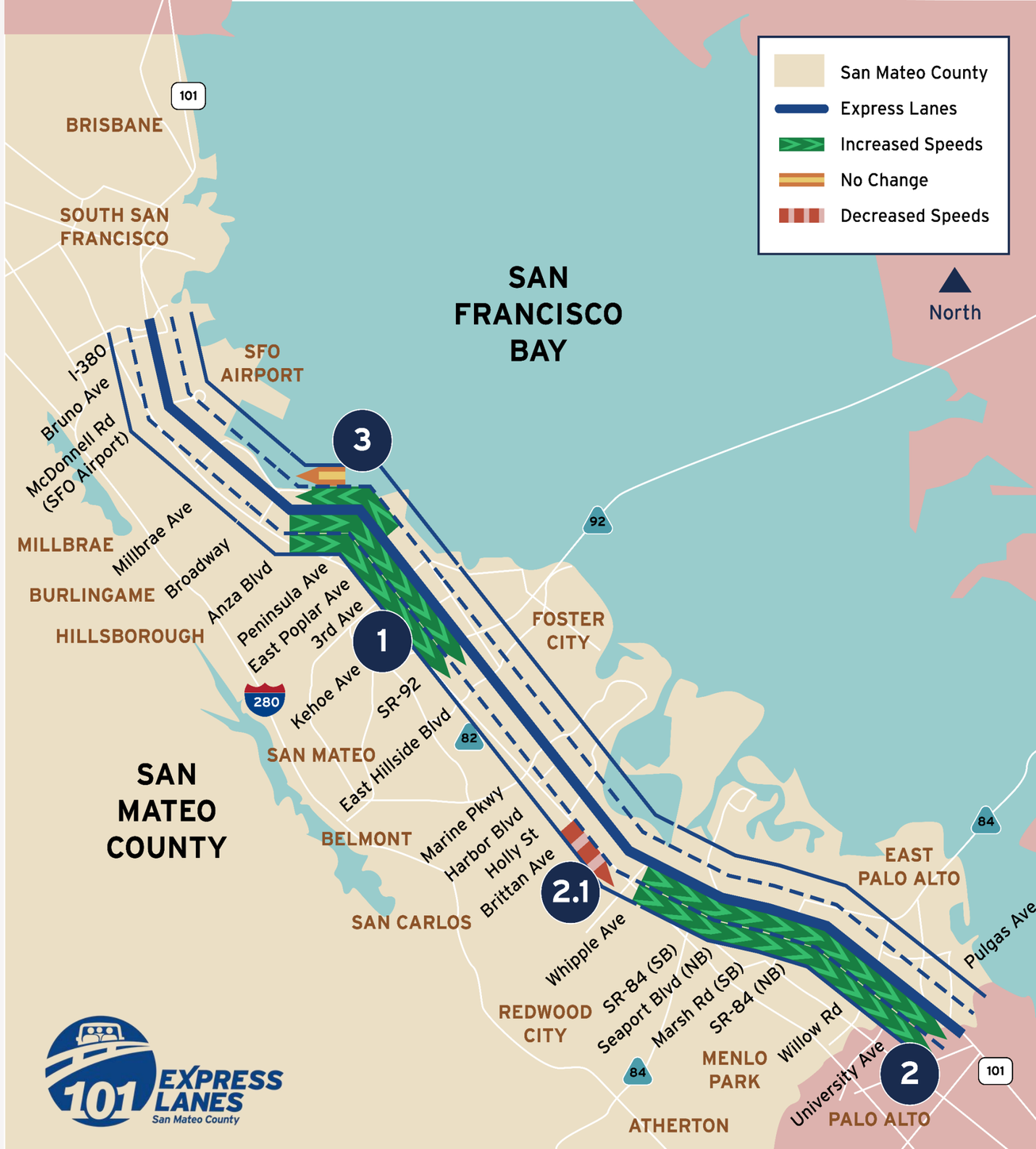
   Express Lanes + General Purpose.

   2.1. Small bottleneck appeared at Whipple.

3. Northbound south of Millbrae Ave **eases** for

   Express Lanes and General Purpose is **static.**

Source: Caltrans Performance Measurement System (2018-2024)



Hot Spots (PM)

1. Southbound between I-380 and Millbrae Ave is **fully resolved** Express Lanes + General Purpose
2. Southbound between 3rd Ave and Millbrae Ave **eases** for Express Lanes, but the hotspot appears for General Purposes
3. Southbound at University Ave eases Express Lanes + General Purpose
    3.1. Secondary Southbound bottleneck at SR-84 eases for General Purpose
4. Northbound at I-380 is **fully resolved** Express Lanes + General Purpose
5. Northbound between Millbrae Ave and 3rd Ave **eases** for Express Lanes, but the hotspot appears for General Purpose
6. Northbound bottleneck at between 3rd Ave and Ralston Ave **eases** for Express Lanes
    6.1. Northbound bottleneck at SR-92 eases for General Purpose

Source: Caltrans Performance Measurement System (2018-2024)

Travel Time & Reliability

Corridor performance results

Met Goal

Key Findings

Performance gains are occurring despite increasing post-pandemic demand and extended peak periods across the corridor. Express Lanes deliver meaningful benefits to both direct users and the broader transportation network.

Faster & More Reliable Trips

Express Lane users experience significant travel time savings with dramatically reduced worst-day delays throughout the corridor.

Corridor-Wide Benefits

General Purpose lane reliability also improved, demonstrating system-wide gains beyond Express Lanes alone.

Improved Efficiency

Total Vehicle Hours Traveled declined corridor-wide, reflecting reduced congestion and more predictable travel patterns.

Data Source: Caltrans Performance Measurement System (2018-2024 comparison)

101 EXPRESS LANES San Mateo County

Travel Time & Reliability

Express Lanes performance results

Met Goal

Key Findings

Analysis reveals improvements across all performance metrics, with Express Lanes delivering measurable benefits during peak travel periods while enhancing overall corridor efficiency.

22%

Southbound

Travel Time Savings

Average reduction with peaks up to 30% by hour

13%

Northbound

Travel Time Savings

Average reduction with peaks up to 20% by hour

58% SB | **42%** NB

Reduced Vehicle Hours Traveled

Vehicle Hour Traveled (VHT) decline

Data Source: Caltrans Performance Measurement System (2018-2024 comparison)

101 EXPRESS LANES San Mateo County

Travel Time & Reliability

Corridor performance results

Met Goal

Key Findings

Reliability improved on **worst traffic days**. Users need to budget less time to arrive on time, with reduced congestion and lower emissions.

Express Lane Performance

- 95th percentile travel time reduced by 28–44%
- Users budget only ~30% extra time vs. free-flow
- Southbound corridor: down from 45 to 25 minutes

General Purpose Lanes Performance

- 95th percentile travel time **reduced by 3–14%**
- Users budget only **~60–90% extra time** vs. free-flow
- Pre-project: travelers needed 2.3× free-flow time

Corridor-wide VHT Reduction

- **16% reduction** in Vehicle Hours Traveled

Corridor-wide Environmental Impact

- **22% reduction** in peak-period CO_2 emissions across the corridor

Data Source: Caltrans Performance Measurement System (2018-2024 comparison)

101 EXPRESS LANES San Mateo County

Carpooling & Transit Use

Express Lanes performance results

Partially Met: Monitor

Key Findings

- Carpooling in the express lanes has increased since opening
- Growth is primarily driven by the opening of Phase 2
- Transit routes like EPX and FCX benefit from increased travel speeds and reliability

Supporting Data

- Self-reported HOV 3+ declarations increased from **32% (2023) to 46% (2025)**

Data Concerns

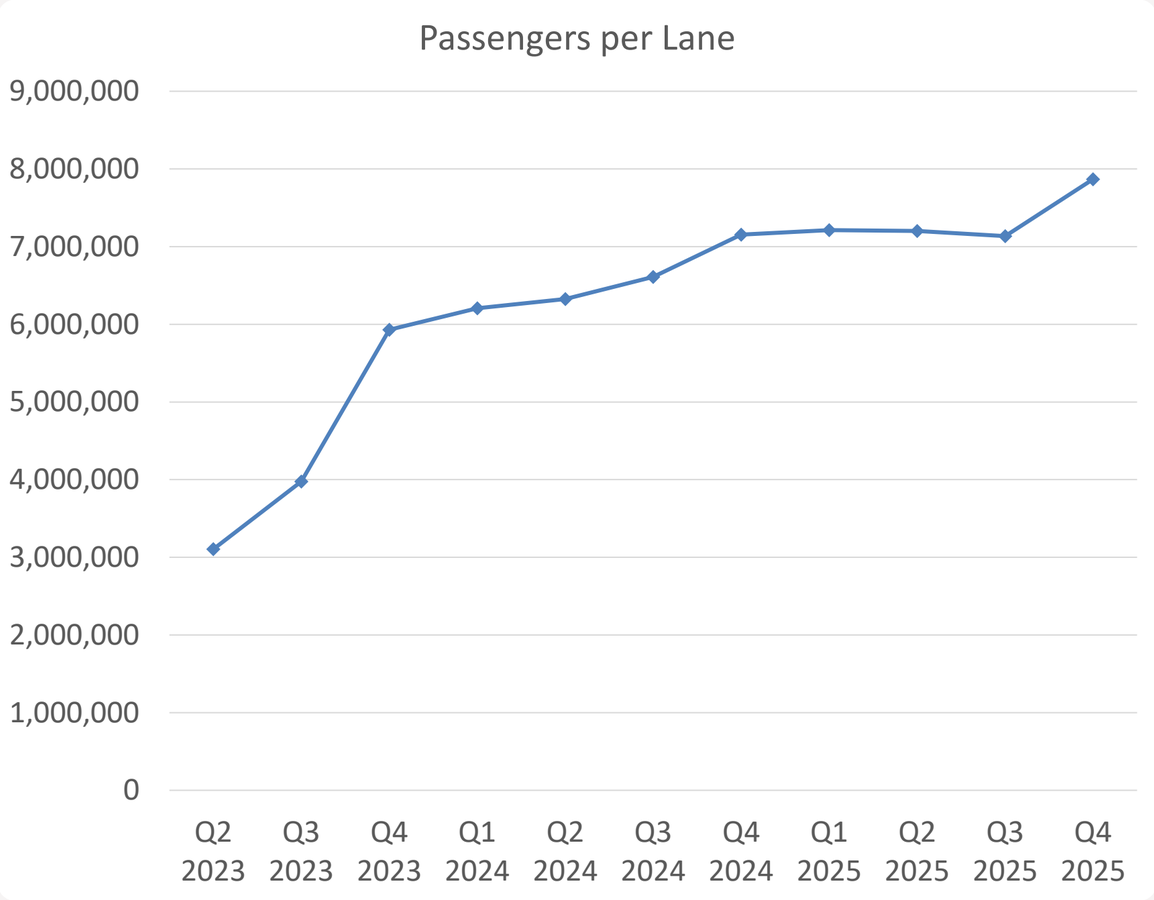
- Performance measures rely on **self-reported** vehicle occupancy data, which has known limitations. Future strategies to improve occupancy verification would help protect the integrity and reliability of the system
- While there were no readily available and complete data sources for transit use, the study recommends expanding collaboration with local transit agencies and evaluate occupancy verification technology in future study

Source: Bay Area Infrastructure Financing Authority (2023-2025)

101 EXPRESS LANES San Mateo County

Person Throughput

Express Lanes performance results



Met Goal

Key Findings

- Person throughput **increased** by more than 2.5× following the Phase 2 opening
- Growth reflects increased Express Lane usage and a higher share of HOV 3+ vehicles, based on self-reported occupancy declarations

Supporting Data

- Number of users, calculated from occupancy declarations, increased from approximately **3.1 million to 7.9 million passengers** per lane per quarter

Source: Bay Area Infrastructure Financing Authority (2023-2025)

101 EXPRESS LANES San Mateo County

Technology & Lane Management

Corridor performance results

Met Goal

The observed performance improvements are enabled by active lane management technology, including real-time traffic monitoring and dynamic pricing, which allows the system to respond quickly to changing demand and maintain reliable travel speeds.

TECHNOLOGY

- Dynamic Pricing
- Real-time Telemetry (speed, volume, occupancy, travel time)

ACTIVE MANAGEMENT

- Pricing adjusts to demand
- Lane conditions monitored continuously
- Operations respond quickly to changing conditions

OUTCOMES

- Reliable Express Lane speeds
- Reduced congestion and oversaturation
- Improved travel time reliability

101 EXPRESS LANES San Mateo County

Safety

Commitment to Future Investigation and Reporting

Data Insufficient

- Analyzing and sharing the impacts of the 101 express lanes on highway safety is a **top priority.**
- Incident data has a longer lead time than traffic data, **only 9 months of data available (March – December 2023).**
- As a result, current dataset is not statistically valid.
    - Analysis will result in premature/incomplete assumptions.
    - Additional data needed to draw reliable conclusions.
- SMCEL-JPA commits to **revisiting safety analysis by early 2027** when more data is available.

101 EXPRESS LANES San Mateo County

Overall Corridor Performance

Summary of results across the study's key performance goals

✓ Met 🔍 Partially Met; Monitor

BENEFIT	ASSESSMENT	KEY RESULT(S)	METRIC CHANGE
REDUCE CONGESTION	✓	Express Lane and General Purpose Lane Avg Speed ↑; Bottlenecks ↓	Express Lane Speeds +7–13 mph; General Purpose Lane Speeds: +1–7 mph
IMPROVE RELIABILITY	✓	Buffer Time Needed ↓; Total Hours Spend Traveling Corridor ↓	Planning Time Index: –70%; Travel Time on the Top 5% Worst Travel Days: –44%; Vehicle Hours Travelled: –16%; CO_2 Emissions: –22%
ENCOURAGE CARPOOLING	🔍	HOV-3+ ↑; Transit Data Limited	HOV-3+: +14% from 32% → 46% (Self-Reported)
INCREASE PERSON THROUGHPUT	✓	Passengers per Lane per Quarter ↑ from 2023 to 2025	Person Throughput: +4.8M from 3.1M → 7.9M (2.5×)
USE MODERN TECHNOLOGY	✓	Dynamic Pricing & Real-Time Data Enabled Improvements	Influenced All Other Metrics

Performance gains vary by project phase, with the most significant improvements occurring in Phase 2 segments where new managed lane capacity was added. Findings should be interpreted in the context of post-pandemic travel pattern changes and increasing corridor demand.

101 EXPRESS LANES San Mateo County

Key Takeaways

- Express Lanes are **functioning as intended**, delivering measurable improvements in corridor performance.
- Despite known limitations, the study provides meaningful, actionable insights.
- Regular monitoring is recommended.
- Opportunities for Improvement:
  - Advanced occupancy-verification technologies to reduce reliance on self-reported transponder declarations.
  - Expand transit data integration to quantify express lane transit benefits.
  - Target persistent congestion hotspots with focused operational and enforcement strategies.

101 EXPRESS LANES

Next Steps

Monitoring & Policy

- Continue performance monitoring and update analyses as new data becomes available.
- Use findings to inform future corridor operations and policy decisions.

Operations

- Refine operations at key hot spots through dynamic pricing.
- Research occupancy verification.
- Explore improvements to adaptive ramp metering.

Public Education

- Increase outreach on operating rules and safe merge practices.

Transit

- Partner with local transit operators to analyze Express Lane transit performance.

Safety

- Coordinate with CHP on targeted enforcement and data sharing.
- Review safety trends as additional post-project data becomes available and update report.

101 EXPRESS LANES
San Mateo County

Discussion