San Francisco
County Transportation
Authority

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Memorandum

AGENDA ITEM 11

DATE: November 13, 2019

TO: Transportation Authority Board

FROM: Joe Castiglione – Deputy Director for Technology, Data & Analysis

SUBJECT: 12/10/19 Board Meeting: Approve the 2019 San Francisco Congestion Management Program

RECOMMENDATION ☐ **Information** ☐ **Action**	☐ Fund Allocation
Approve the 2019 San Francisco Congestion Management Program (CMP).	☐ Fund Programming
	☐ Policy/Legislation
SUMMARY	☒ Plan/Study
As the Congestion Management Agency (CMA) for San Francisco, the Transportation Authority is responsible for developing and adopting a CMP for San Francisco on a biennial basis. The CMP is the principal policy and technical document that guides the Transportation Authority's CMA activities and demonstrates conformity with state congestion management law. The 2019 CMP incorporates several substantive updates, including 2019 system performance monitoring results; the updated CMP Capital Improvement Program (CIP); updates on initiatives to manage demand through pricing, incentives, and other strategies; Transportation Authority and City efforts to integrate land use and transportation planning in key locations; and other significant policy and planning progress since 2019.	☐ Capital Project Oversight/Delivery
	☐ Budget/Finance
	☐ Contract/Agreement
	☐ Other: _____

DISCUSSION

BACKGROUND. (who, what and when)

The inaugural CMP was adopted in 1991, and the Transportation Authority Board has approved subsequent updates on a biennial basis. The CMP is the principal policy and technical document that guides the Transportation Authority's CMA activities. Through the CMP, the Transportation Authority also monitors the City's conformity with CMP

requirements, per state congestion management law. Conformance with the CMP is a requirement for the City to receive state fuel tax subventions and for the City's transportation projects to qualify for state and federal funding.

State congestion management statutes aim to tie transportation project funding decisions to measurable improvement in mobility and access, while considering the impacts of land use decisions on local and regional transportation systems. CMPs also help to implement, at the local level, transportation measures that improve regional air quality.

The original CMP laws were enacted in 1989; since then, multiple legislative actions have amended the CMP requirements. For instance, Senate Bill (SB) 1636 (Figueroa), passed in 2002, granted local jurisdictions the authority to designate Infill Opportunity Zones (IOZs) in areas meeting certain requirements. Within a designated IOZ, the CMA is not required to maintain traffic conditions to the adopted automobile level of service (LOS) standard. Most recently, SB 743 (Steiner) modified the criteria for local jurisdictions to designate IOZs and eliminated the previous December 2009 deadline to do so. The San Francisco IOZ, covering most of San Francisco based on transit frequency and land use criteria, was adopted by the Board of Supervisors in December 2009, but additional areas may now qualify for designation under the new legislation.

CMP Elements.

The CMP has several required elements, including:

- A designated congestion management network and biennial monitoring of automobile LOS on this network;
- Assessment of multimodal system performance, including transit measures;
- A land use impact analysis methodology for estimating the transportation impacts of land use changes; and
- A multimodal CIP.

The CMP also contains the Transportation Authority's technical and policy guidelines for implementing CMP requirements, including deficiency plans, travel demand forecasting, and transportation fund programming.

2019 CMP Update.

The 2019 CMP is a substantive update, reflecting new data collection, activities related to important policy developments at various levels, and significant planning progress since 2017. Key updates include the following:

- **Roadway Level-Of-Service (LOS) Results:** The Transportation Authority, through its consultant team the University of Kentucky, conducted roadway LOS monitoring on the CMP network during the spring of 2019. Combined average weekday speeds over all CMP segments in the morning and evening peak periods for 2017 and 2019 are shown in Figure 1. Average arterial travel speeds have decreased 5% from 14.0 miles per hour (mph) to 13.3 mph in the AM peak and also decreased 5% from 12.8 mph to 12.2 mph in the PM peak. In the AM peak, the average travel speed on freeways remained

essentially flat, decreasing by 1% from 31.8 mph to 31.5 mph in the AM peak. In the PM peak, the average travel speed for freeways remained decreased slightly by 3% from 24.4 mph to 23.6 mph. The overall declines in speeds between 2017 and 2019 indicate a continuing trend of modest degradation of roadway performance that was observed between 2015 and 2017.These declines were smaller in magnitude than the declines between 2013 and 2015, which are documented in the 2015 CMP report.

Figure 1. CMP Network Average Peak Period Automobile Travel Speed

Facility Type	Spring 2017	Spring 2019
Arterial AM	14.0 mph	13.3 mph
Arterial PM	12.8 mph	12.2 mph
Freeway AM	31.8 mph	31.5 mph
Freeway PM	24.4 mph	23.6 mph

- **Transit Performance:** Average Muni bus speeds on the CMP network increased between 2017 and 2019, reversing the trend of declines in transit speeds that was observed in between 2011 and 2017.As a result, transit continues to become more competitive with driving, as indicated by drop in the ratio of auto speed to transit speed in AM peak from an average of 1.67 in 2017 to 1.58 in 2019.
- The Transportation Authority performed an analysis of Muni bus speeds using data provided by the San Francisco Municipal Transportation Agency from on-vehicle Automatic Passenger Counters. Average bus speeds on the CMP network during the 2019 monitoring period were 8.44 mph in the AM peak period and 7.60 mph in the PM peak. Compared to the last monitoring cycle in 2017, speeds increased by approximately four percent in both the AM peak and the PM peak periods.
- Transit speed variability is measured in terms of what percent of the average transit speed is the standard deviation. An increase in this measure implies increased variability in transit speeds and hence decreased reliability. Over the current monitoring period, transit speed variability worsened over the past few years and in 2019, the variability in both the AM peak and PM peak periods was 21%, which represents increases from 16% and 18%, respectively, during these periods.
- **Transit to Automobile Travel Time Ratio:** In order to assess the competitiveness of transit with driving, the ratio of auto to transit speeds is calculated by comparing auto to transit speeds on the portions of the CMP network for which Muni data was available. In the current period, transit speeds continued the trend of improving relative to auto

speeds between 2017 and 2019, with the average auto/transit speed ratio improving from 1.67 to 1.58 in the AM peak, and from 1.66 to 1.60 in the PM peak.

- **Transportation Demand Management (TDM):** The TDM Element has been updated to include the city's efforts to implement TDM programs for new developments, through area plans, developer agreements, and planning code requirements. . The Planning Department refined TDM Ordinance program standards in June 2018 to clarify and strengthen the TDM program based on experience from the first year of implementation. In July 2019, the SFCTA completed the Lombard Crooked Street Reservation and Pricing System Study, The Transportation Authority also completed the 2018 District 10 Mobility Management Study to identify a set of non-infrastructure strategies to reduce vehicle miles of travel in the district . The Transportation Authority has also initiated the San Francisco Downtown Congestion Pricing Study, and continues to develop an Emerging Mobility Strategy and to develop new emerging mobility pilot programs.
- **Land Use Impacts Analysis Program:** This chapter documents updates to the Regional Growth Framework, including updated criteria for Priority Development Areas (PDAs) and Priority Conservation Areas (PCAs), and a new Priority Production Area (PPA) pilot program. San Francisco and other jurisdictions are working with MTC to identify new PDA and PCA designations as part of the ongoing update to Plan Bay Area, and to promote development within PDAs in the Bay Area. These efforts include discussions of neighborhood- and community-level transportation planning through the Prop K-funded Neighborhood Transportation Improvement Program and the Metropolitan Transportation Commission's (MTC's) Community Based Transportation Planning program. Finally, the chapter provides updates to Transportation Authority's coordination efforts with other City agencies to develop consistent measures for assessing land use impacts on transportation.
- **CIP:** The CMP must contain a seven-year CIP that identifies investments that maintain or improve transportation system performance. The CMP's CIP is amended concurrently with relevant Transportation Authority Board programming actions. Thus, the 2019 CMP reflects program updates since adoption of the 2017 CMP, most notably 2018 and 2019 Transportation Fund for Clean Air county programs, Cycle 5 of the Lifeline Transportation Program, OBAG Cycle 2, and the 2017 Prop AA Strategic Plan. Also, as required by state law, the CMP confirms San Francisco's project priorities for the Regional Transportation Improvement Program, which is adopted by MTC for submission to the state.
- Over the next two years, the Transportation Authority will continue to coordinate transportation investments and support all aspects of project delivery across multiple agencies and programs, from smaller neighborhood pedestrian, bicycle and traffic calming projects to major projects including the Presidio Parkway, the Transbay Transit Center and Caltrain Downtown Extension, Caltrain Electrification, the Central Subway, and proposed bus rapid transit improvements on Van Ness Avenue and Geary Boulevard.

- **Modeling:** State law requires CMAs to develop, maintain, and utilize a computer model to analyze transportation system performance, assess land use impacts on transportation networks, and evaluate potential transportation investments and policies. The Transportation Authority's activity-based travel demand model, SF-CHAMP, has been updated since 2017, and model enhancements are discussed in the 2019 CMP, along with required documentation of consistency with MTC modeling practices.

FINANCIAL IMPACT

The recommended action would not have an impact on the adopted Fiscal Year 2019/20 budget.

CAC POSITION

The CAC will consider this item at its November 20, 2019 meeting.

SUPPLEMENTAL MATERIALS

- Attachment 1 – Draft CMP Executive Summary
- Enclosure A – Draft 2019 San Francisco Congestion Management Program
- Enclosure B – CMP Technical Appendices

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CONGESTION MANAGEMENT PROGRAM **2019**

Executive Summary

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Introduction

Every two years, the San Francisco County Transportation Authority (SFCTA) prepares the San Francisco Congestion Management Program (CMP). This program is conducted in accordance with state law to monitor congestion and adopt plans for mitigating traffic congestion that falls below certain thresholds. By statute, the CMP legislation originally focused its requirements on measuring traffic congestion, specifically through Level-of-Service (LOS), which grades roadway facilities by vehicle delay. The SFCTA has since evolved its CMP to include more multimodal and system performance monitoring, in recognition that automobile-focused metrics such as LOS result in a limited view of transportation issues, which can result in inefficient, modally biased, and often, unintentionally, counter-productive solutions.[1]

The CMP legislation aims to increase the productivity of existing transportation infrastructure and encourage more efficient use of scarce new dollars for transportation investments, in order to effectively manage congestion, improve air quality, and facilitate sustainable development. The purpose of the 2019 San Francisco Congestion Management Program is to:

- Define San Francisco's performance measures for congestion management;
- Report congestion monitoring data for San Francisco county to the public and the Metropolitan Transportation Commission (MTC);
- Describe San Francisco's congestion management strategies and efforts; and
- Outline the congestion management work program for fiscal years 2019/20 and 2020/21.

This year's congestion monitoring reveals that auto speeds have decreased since 2017 for all measured time periods and road types. This is a continuation of the trend of modest degradation of roadway performance observed between 2015 and 2017. In contrast, transit speeds on the CMP network increased between 2017 and 2019, reversing the trend of declines in transit speeds that was observed between 2011 and 2017. This means that transit is more competitive with auto than in past years, an outcome consistent with San Francisco's "transit-first" policies. However, transit reliability has worsened slightly during the current monitoring period. There were slight declines in pedestrian and bicycle volumes observed between 2017 and 2019. Unfortunately, bicycle and pedestrian injuries and fatalities appear to show an upward

1 In order to reduce vehicle delay and improve LOS, without considering strategies that encourage shifts to other modes, the increased roadway capacity is the implied solution, which, in turn, has been shown to lead to more driving (induced demand).

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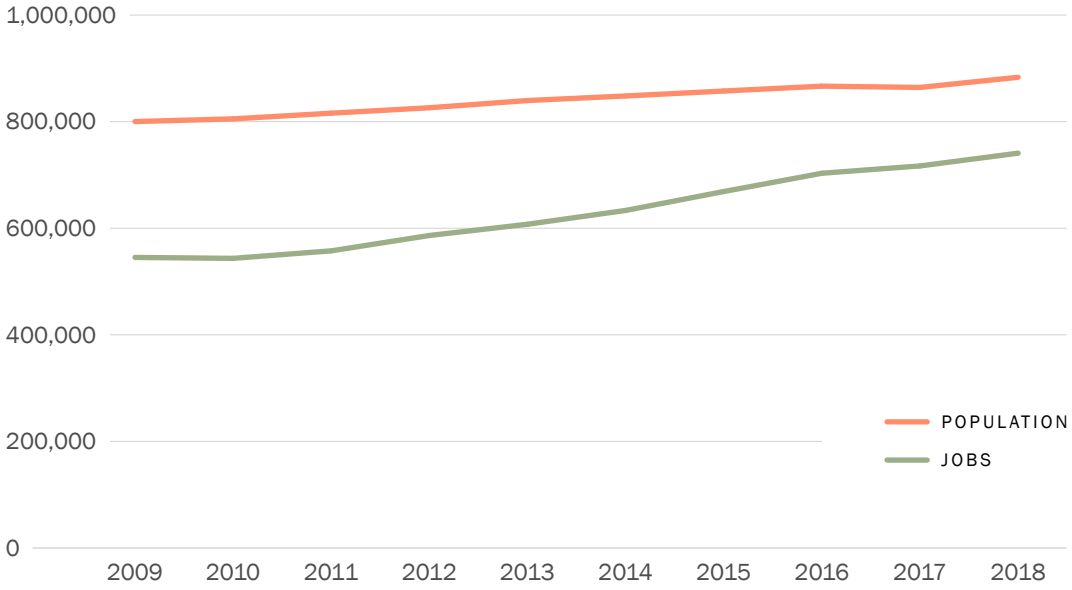
trend in recent years, counter to the City's Vision Zero goal of eliminating traffic fatalities. Total transit volumes were little changed from prior monitoring. While vehicle miles traveled (VMT) had remained relatively unchanged from 2012 through 2015, VMT increased in 2016 and 2017.

State of Transportation

San Francisco is an employment and population hub in a region that has continued to experience tremendous growth, outpacing all projections. Since 2009, San Francisco has added over 80,000 residents and close to 200k jobs (see Figure 0-1). Between 2016 and 2018 alone, San Francisco added 15,000 residents, bringing the total population to over 880,000, and the daytime population (which includes non-residents who work in the city) is well over one million. Employment growth during this same two-year period has also been significant. According to the Bureau of Labor Statistics, total employment in San Francisco during these two years increased by over 5%, from 703,000 to 741,000 jobs. This continues the trend of job growth exceeding population growth in the county by a factor of almost three to one. This means that people are coming to San Francisco for work but live elsewhere and commute into the city. Strategies to managing congestion are key to maintaining our accessibility as the city grows. These include: improving public transportation, bicycling and walking routes and facilities; coordinating new development to support walkable and transit-oriented neighborhoods; and managing vehicle use, parking, and traffic signals to ensure safety and efficiency.

Figure 0-1: San Francisco Population and Job Growth since 2009



Source: MTC Vital Signs / American Community Survey / Bureau of Labor Statistics

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ROADWAY LEVEL OF SERVICE

The CMP legislation defines roadway performance primarily by using the LOS traffic engineering concept to evaluate the operating conditions on a roadway. LOS describes operating conditions on a scale of A to F, with "A" describing free flow, and "F" describing bumper-to-bumper conditions. For the current monitoring period, average travel speeds on the CMP network have decreased since 2017 for all measured time periods and road types, as shown in Figure 0-2. Note that the 2017 speeds have been updated based on a change to the underlying dataset by the data provider. This has resulted in a slight disconnect between the 2017 speeds reported during last cycle and the updated 2017 speeds reported in this cycle. Average arterial travel speeds have decreased 5% from 14.0 mph to 13.3 mph in the AM peak and decreased 5% from 12.8 mph to 12.2 mph in the PM peak. The average travel speed on freeways decreased 1% from 31.8 mph to 31.5 mph in the AM peak and decreased 3% from 24.4 mph to 23.6 mph in the PM peak. While the overall declines in speeds between 2017 and 2019 indicate a continuing degradation of roadway performance, these declines were less significant than the declines between 2015 and 2017. Overall roadway performance has been declining since 2009.

Figure 0-2: CMP Network Average Travel Speed Change

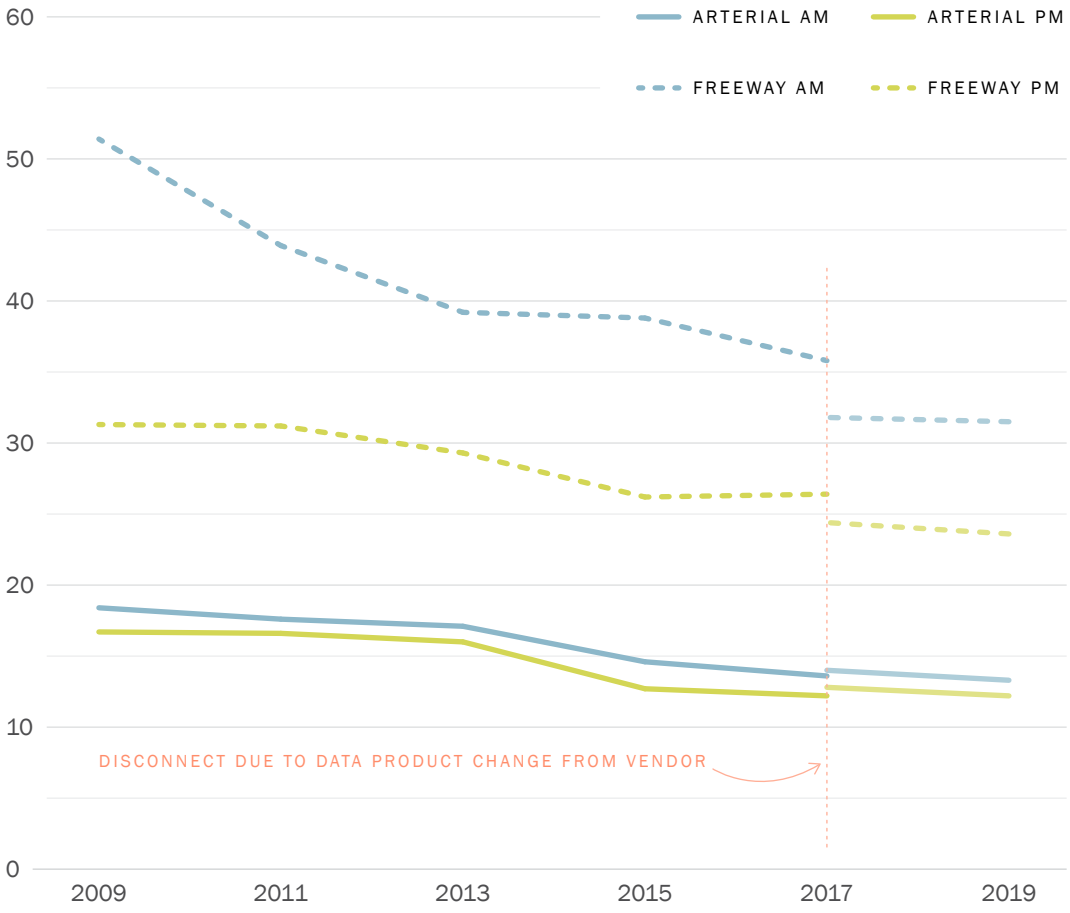

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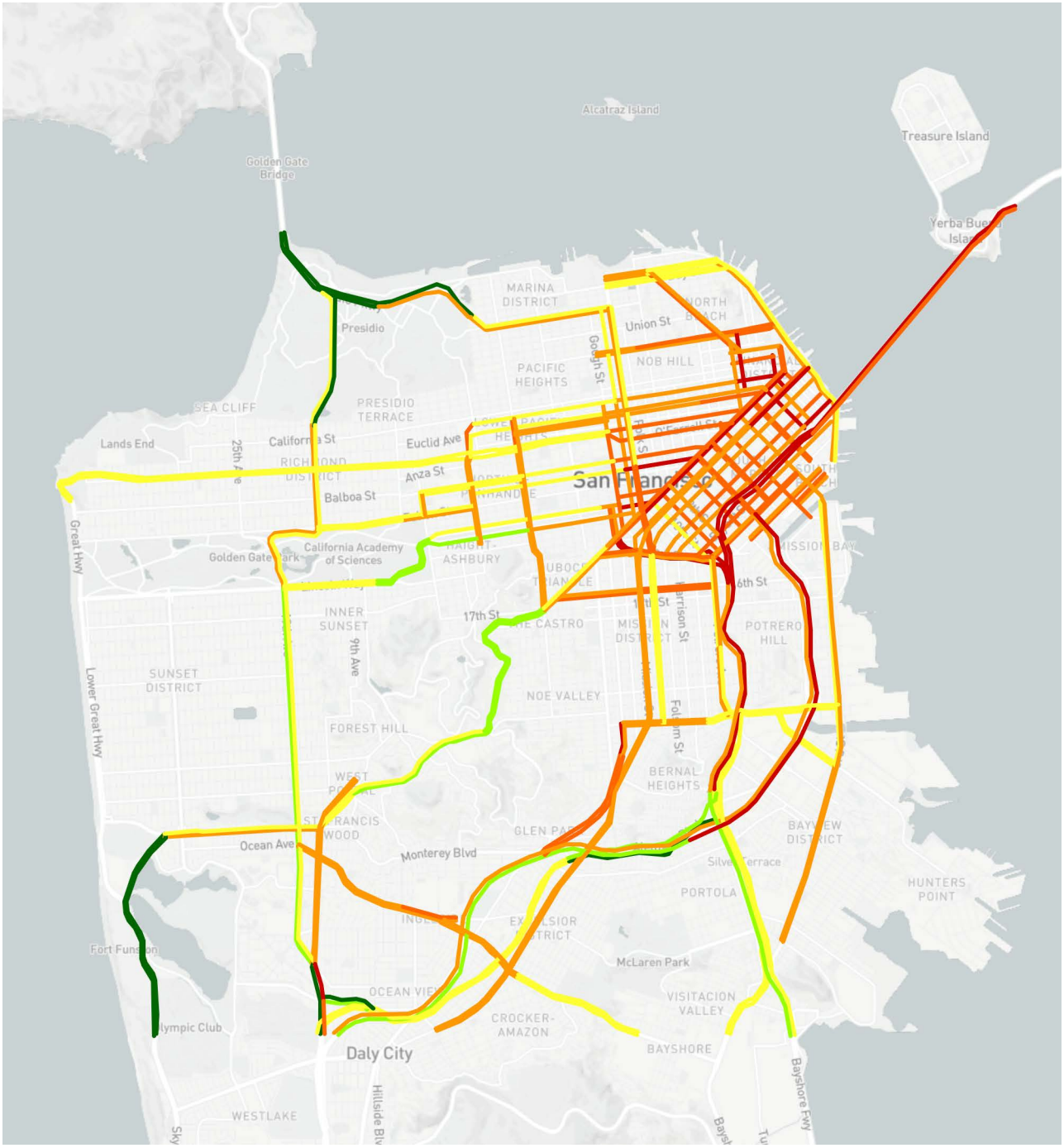
Figure 0-3 shows where the congestion is greatest in the county, primarily concentrated in the downtown and South of Market neighborhoods, and on the freeways and the arterials serving these freeways. An interactive version of this map that allows users to view historical trends can be found at http://congestions.sfcta.org.

Figure 0-3: 2019 PM Peak Roadway Level-of-Service



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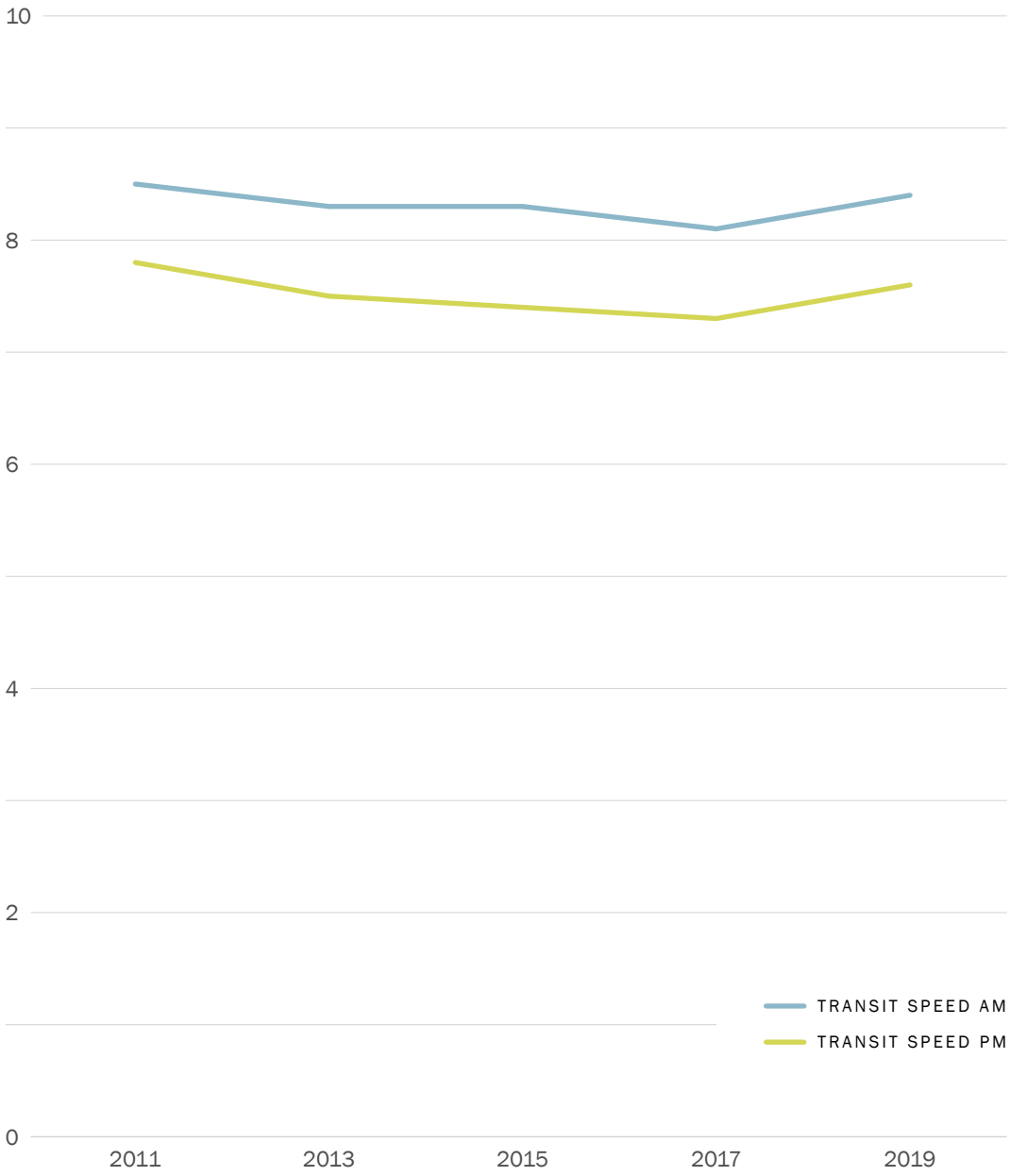
TRANSIT SPEEDS

In addition to monitoring roadway speeds, the Transportation Authority also tracks surface transit speeds. Transit speeds on the CMP network increased since 2017. Compared to 2017, the average transit speed (collected for buses only) in 2019 on the CMP network in the AM peak increased 4% from 8.13 to 8.44 mph. In the PM peak period transit speeds also increased 4% from 7.34 to 7.60 mph. This improvement in performance for transit as compared with vehicles may be attributable to the city's expanded efforts to provide on-street transit priority during this period.

Figure 0-4: Overall Average Transit Speeds Trend for CMP Network



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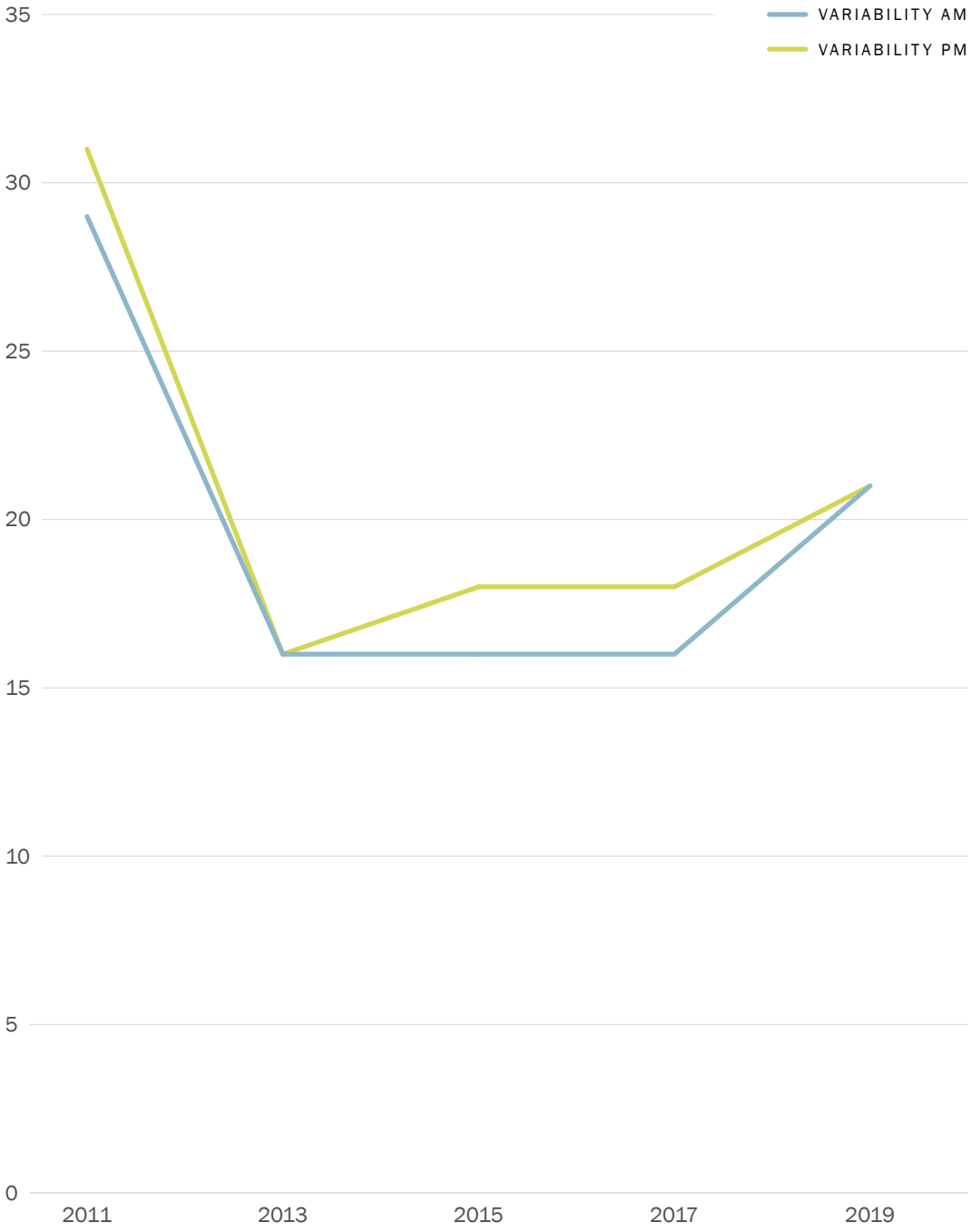
TRANSIT TRAVEL TIME RELIABILITY

Transit speed information is also used to calculate the variability of speed as a measure of transit travel time reliability. Figure 0-5 shows that transit travel time reliability has worsened (variability has increased) since 2017 despite improvements in average transit speed.

Figure 0-5: Transit Travel Time Reliability



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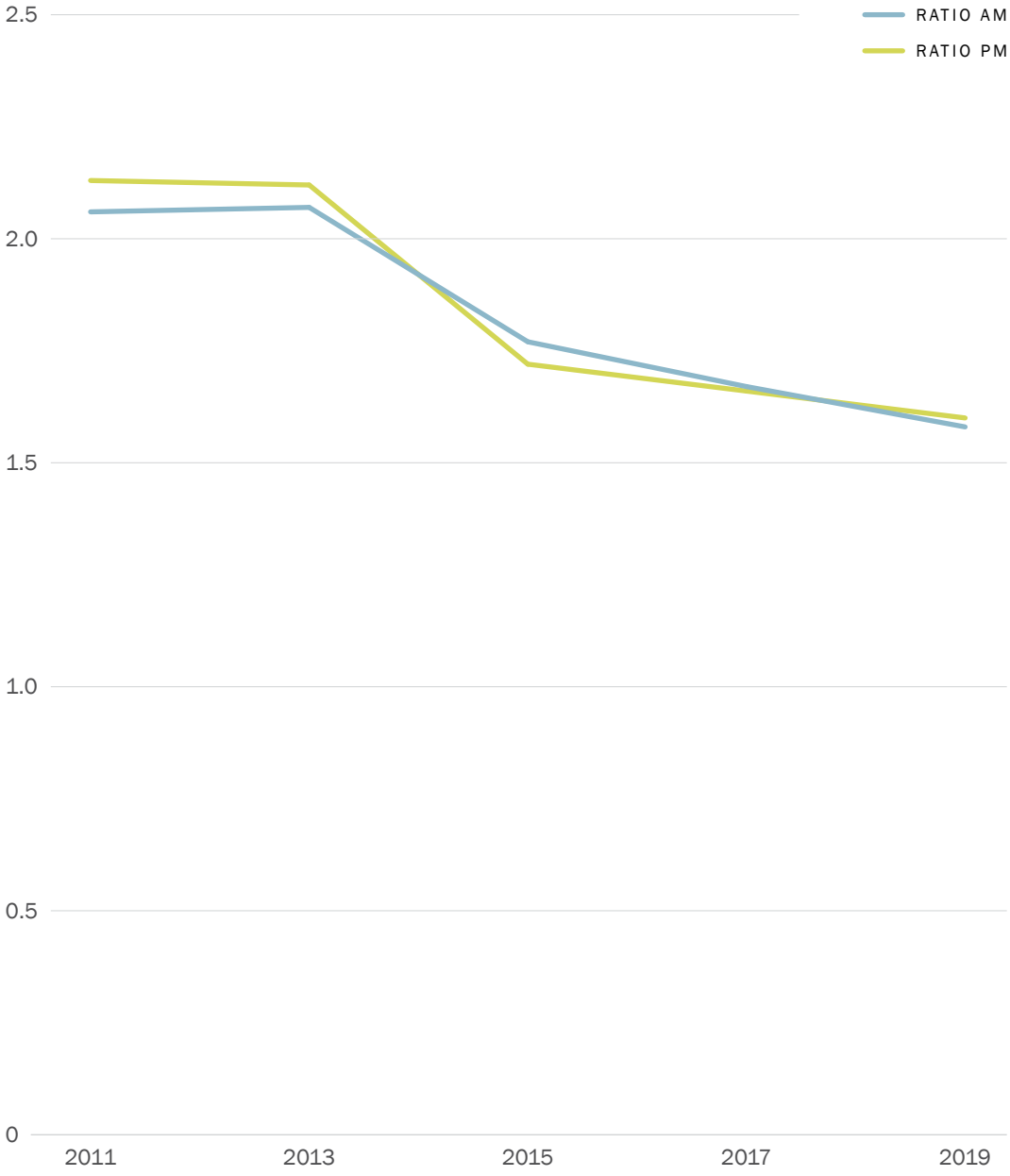
AUTO-TRANSIT TRAVEL TIME RATIO

In order to assess the competitiveness of transit with driving, the ratio of auto to transit speeds is calculated by comparing auto to transit speeds on the portions of the CMP network for which Muni data is available. A ratio of 2 would indicate that, for a particular segment, on-board transit travel time is twice that of auto travel time. As shown in Figure 0-6, transit speeds continued the trend of improving, relative to auto speeds between 2017 and 2019. Overall, between 2017 and 2019 the average auto-to-transit speed ratio improved from 1.67 to 1.58 in the AM peak and 1.66 to 1.60 in the PM peak.

Figure 0-6: Auto-Transit Speed Ratio



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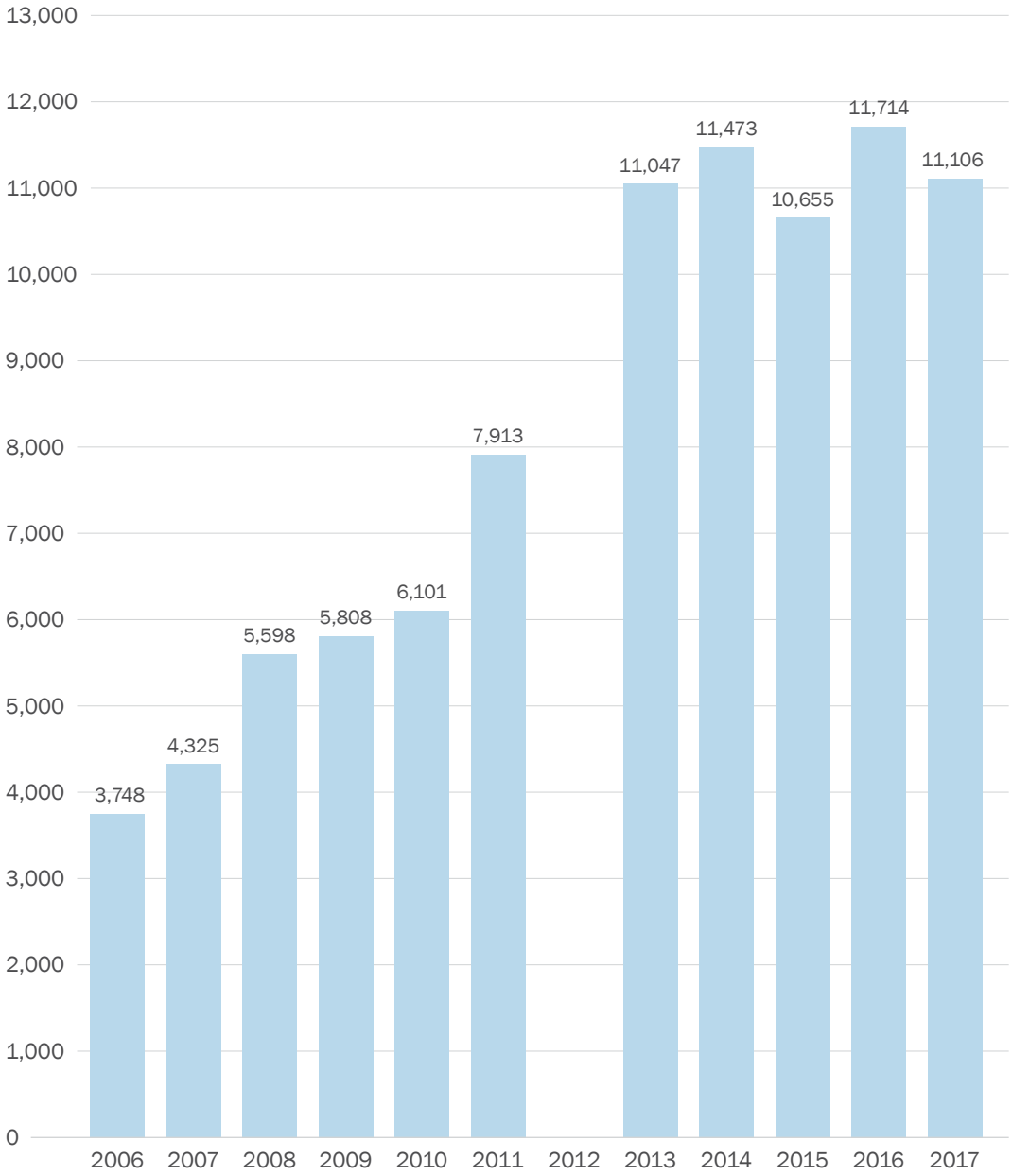
MULTIMODAL VOLUMES

The City and County of San Francisco has placed a high priority on shifting travelers' modes to increase the number of trips made by walking and bicycling. Figure 0-7 shows bicycle counts collected by SFMTA from 2006 through 2017. It must be noted that, while count locations have been increasing, the figure reflects counts from a subset of the same 19 counters for all years. The most recent data suggests that bicycle ridership has remained steady over the past five years.

Figure 0-7: Bicycle Volumes



Note: SFMTA did not collect bicycle volumes in 2012

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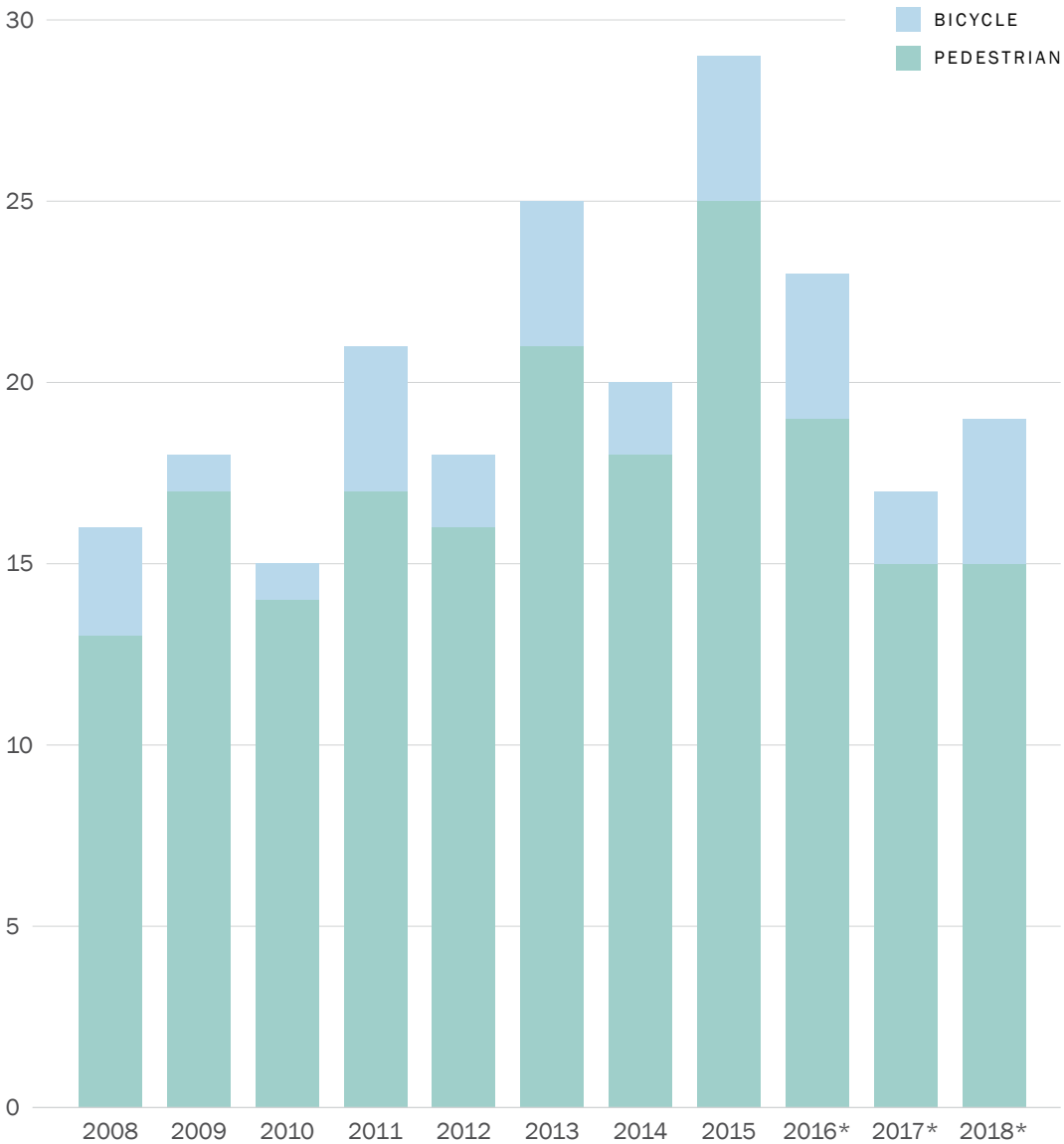
PEDESTRIAN AND BICYCLE SAFETY

Safety for pedestrians and cyclists are key measures of non-motorized transportation performance, and a critical policy priority for the city of San Francisco. The City and County of San Francisco adopted Vision Zero as a policy in 2014, committing to build better and safer streets, educate the public on traffic safety, enforce traffic laws, and adopt policy changes that save lives. Figure 0-8 illustrates the number of pedestrian and bicycle fatalities in San Francisco since 2013. It shows that while non-motorized fatalities were lower in two most recent years (2017 and 2018) than the preceding four years (2013 – 2016), they still remain high.

Figure 0-8: Pedestrian and Bicycle Fatalities



* provisional data

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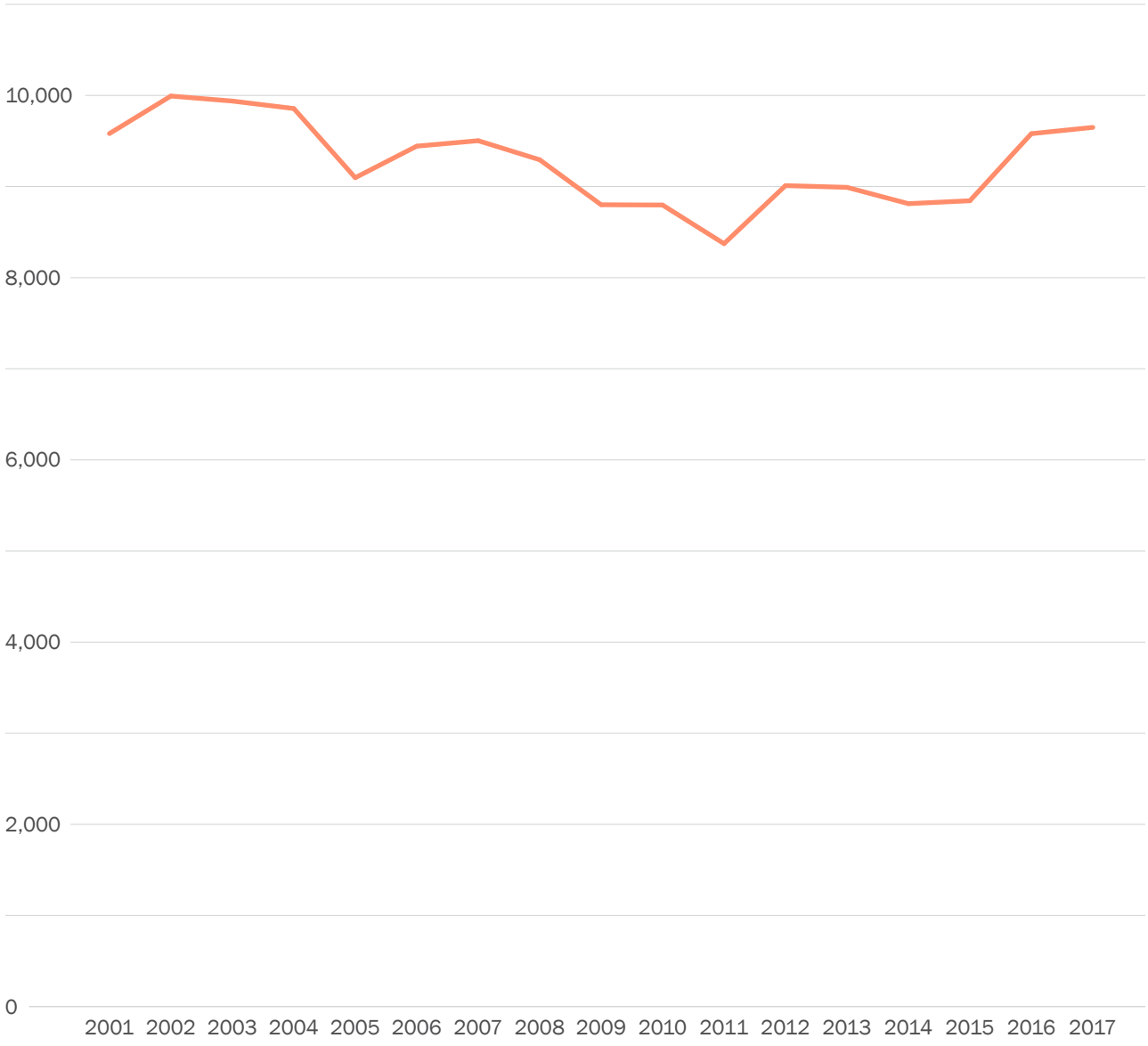
OTHER MEASURES

Vehicle Miles Traveled (VMT)

In 2016, the San Francisco Planning Commission adopted new guidelines for evaluating the transportation impacts of new projects. Critically, additional automobile delay as measured by level-of-service (LOS) is no longer considered an environmental impact, and environmental impact determinations now use vehicle miles travelled. Figure 0-9 illustrates the trend in estimated VMT on San Francisco roadways. It shows that while VMT remained relatively unchanged from 2012 through 2015, it increased in 2016 and 2017, and is about 3.5% lower than the peak VMT observed in 2002.

Figure 0-9: Vehicle Miles Traveled



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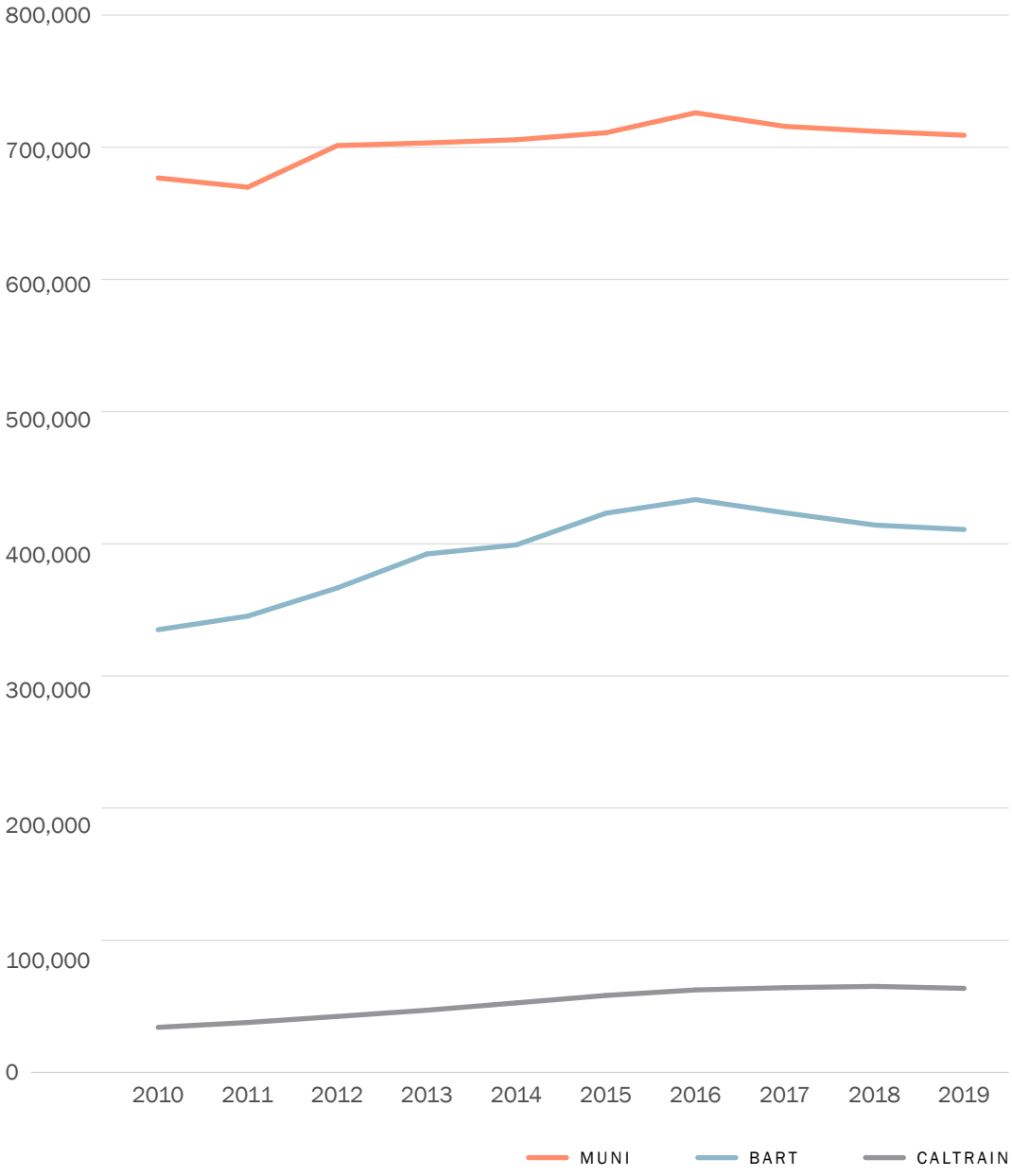
Transit Volumes

San Francisco's strong backbone of local and regional transit has been key to our ability to manage congestion. Muni, BART, Caltrain, and commuter bus lines help move people into and around the city efficiently. Privately sponsored and operated services are also adding needed capacity. But as demand grows, our major transit systems are becoming crowded. Between 2010 and 2019, ridership on the three largest transit providers in San Francisco has been growing, however all of them saw slight decreases in ridership in 2019, as shown in Figure 0-10.

Figure 0-10: Average Daily Passengers by Transit Operator



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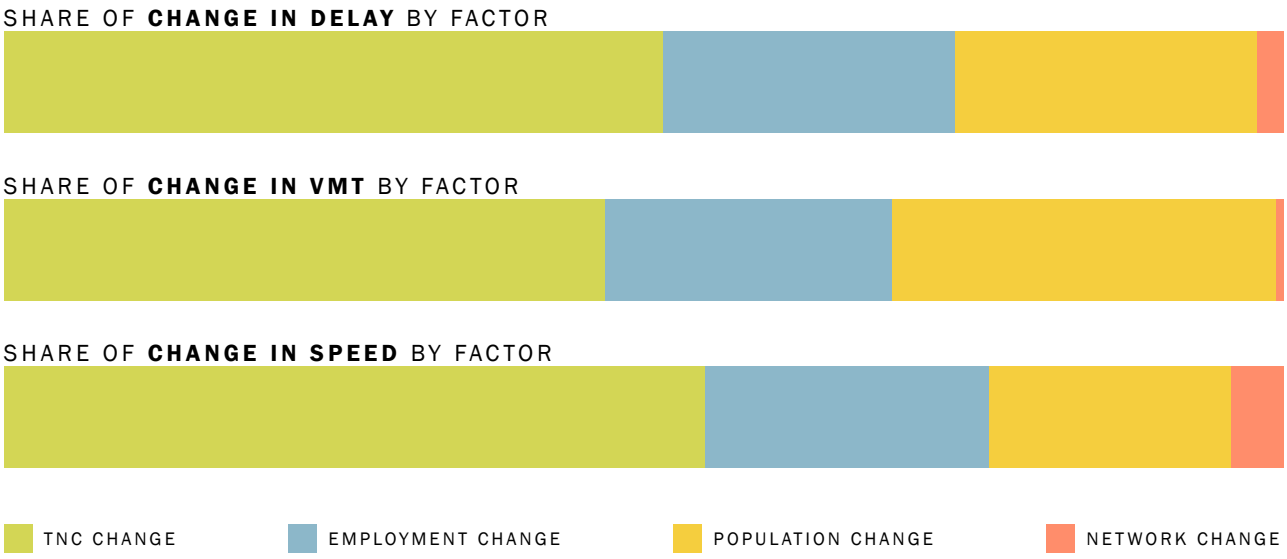
Transport Network Companies (TNCs) and Congestion

In 2018, the SFCTA released a follow up report to TNCs Today, TNCs & Congestion, that identified the extent to which TNCs contributed to increased roadway congestion in San Francisco between 2010 and 2016, relative to other potential contributing factors including employment growth, population growth, and changes to the transportation system. The findings indicated that, when compared to employment and population growth and network capacity shifts (such as for a bus or bicycle lane), TNCs accounted for approximately 50% of the change in congestion in San Francisco between 2010 and 2016, as indicated by three congestion measures: vehicle hours of delay, vehicle miles travelled, and average speeds (Figure 0-11). Employment and population growth—encompassing citywide non-TNC driving activity by residents, local and regional workers, and visitors—are primarily responsible for the remainder of the change in congestion.

Figure 0-11: TNCs & Congestion



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What are we doing to manage congestion?

MANAGING DEMAND FOR TRAVEL

San Francisco has a robust set of travel demand management (TDM) programs, policies, and requirements designed to enable and encourage people to make trips by transit, walking, and biking and to smooth vehicle circulation. These include a focus on new development as well as on managing congestion in existing neighborhoods and built up areas:

- Coordinating transportation aspects of area plans, development agreements, and other requirements on new development, including:
  - Central SoMa Land Use Plan
  - Central Waterfront development projects
  - Treasure Island, Hunter's Point /Shipyard, Schlage Lock, Parkmerced
  - Transportation Sustainability Program
- Policies and programs to manage trips in existing neighborhoods and built-up areas, including:
  - Commuter Benefits Ordinance and Emergency Ride Home Program
  - SFMTA Commuter Shuttle Policy
  - SFMTA Carsharing Policy
  - Parking Management and SFpark
  - SF Moves Neighborhood TDM Outreach Pilot Project
  - Travel Demand Management Ordinance
  - Bayview Moves Pilot Project
  - Downtown Congestion Pricing Study
  - Traffic Congestion Mitigation Tax

Furthermore, San Francisco is encouraging efficient land use planning by supporting development at higher densities in areas that are mixed-use (closer to jobs and retail) and are well served by transit. Plan Bay Area, the region's Sustainable Communities Strategy, identifies Priority Development Areas (PDAs) where densities and transit levels can more readily support transit-oriented development. The Transportation Authority prepared a Transportation Investment and Growth Strategy, which describes how San Francisco will support PDAs through transportation investment. The city's use of Metropolitan Transportation Commission PDA planning funds is supporting the following planning efforts and studies in line with the Transportation Investment and Growth Strategy:

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- PDA Planning Projects
  - Rail Storage Alternatives Analysis and I-280 Boulevard Feasibility Study
  - Embarcadero Multimodal Design
  - Bayshore Multimodal Facility Location Study
  - M-Oceanview Realignment
  - Ocean Avenue Streetscape Plan
  - Market/Noe Streetscape Design
  - Balboa Reservoir TDM

PLANNING PROJECTS

Connect SF, a long-range effort to define the desired and achievable transportation future for San Francisco, was launched in 2016 as a partnership between the Transportation Authority, the SFMTA, and San Francisco Planning. The effort will produce a roadmap to arrive at that future, and will include a major update to the San Francisco Transportation Plan (SFTP), which was passed in 2013, with a minor update in 2017. The ConnectSF process is currently developing future transportation infrastructure investment concepts for transit (Transit Corridor Study) and streets and freeways (Streets and Freeways Study), including active transportation. The Transportation Authority is also coordinating with numerous local, regional state and Federal agencies and with the private sector to address congestion. Key initiatives include:

- Downtown Congestion Pricing Study
- Vision Zero Program
- New Transbay Rail Crossing
- Freeway Corridor Management Study (managed lanes/carpool lane feasibility)
- Transportation Sustainability Program (including the Transportation Sustainability Fee and the Travel Demand Management Ordinance))
- Van Ness, Geary, and Geneva/Harney Bus Rapid Transit
- Better Market Street Project
- Treasure Island Mobility Management Program
- Neighborhood Transportation Improvement Program (planning and capital improvement grants)

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- Emerging Mobility, Commuter Shuttle, Late Night Transportation, and School Transportation sector studies
- San Francisco Subway Vision

FUNDING AND DELIVERING PROJECTS

The Transportation Authority is addressing near- and long-term transportation needs for San Francisco by funding projects and programs – mainly capital infrastructure, through grant programs such as the Proposition K transportation sales tax, Proposition AA vehicle registration fee and regional One Bay Area Grants (OBAG) programs, as well as coordinating with other local and regional agencies to apply for State and Federal funding to match local investments. Below are a few signature projects supported with Transportation Authority programmed funds.

- Muni New and Renovated Vehicles
- BART New and Renovated Vehicles
- Central Subway
- Caltrain Extension to the new Transbay Transit Center
- Peninsula Corridor Electrification Project

In its role as Congestion Management Agency, as part of the OBAG framework for distribution of federal transportation funds, the Transportation Authority prepared the Transportation Investment and Growth Strategy and, through OBAG Cycle 2 has programmed funds to the following projects:

- Better Market Street
- Embarcadero Station: New Northside Platform Elevator and Faregates
- Geary Bus Rapid Transit Phase 1
- John Yehall Chin Elementary Safe Routes to School
- Peninsula Corridor Electrification Project
- San Francisco Safe Routes to School Non-Infrastructure 2019 – 2021

The Transportation Authority is also overseeing and leading the delivery of key projects, many of which support infill transit-oriented development, including serving as co-sponsor or lead agency for the construction of:

- Presidio Parkway (co-sponsor with Caltrans))
- Folsom Street Off-Ramp Realignment (lead)
- Yerba Buena Island I-80 Interchange Improvement Project (lead)