



San Francisco Downtown Congestion Pricing Study

Goals and Evaluation Metrics

May 2020

Congestion affects everyone

Traffic congestion affects everyone as clogged streets slow travelers down. Too many cars on the road means more air pollution, an increased likelihood of crashes, and negative impacts on health and quality of life in nearby neighborhoods.

Although San Francisco's record levels of congestion have now vanished due to the global pandemic, in the past the city's economy has been resilient. The future beyond this pandemic is uncertain, but without intervention we expect a rebounding economy to bring the return of congestion and its negative impacts. The pandemic is spurring cities to envision the future they want to see. Congestion pricing would not be implemented during a pandemic or recession but we can plan today for a return to economic vibrancy without congestion.

When there are too many cars on the road:

- **If you're on a bus:** Traffic delays your trip, sometimes even if you're in a bus-only lane.
 - Buses go 6 mph downtown, even slower than private cars (which average 9 mph), in the evening commute period.
- **If you're in a car:** traffic also delays your trip.
 - You spend about 97 hours a year in traffic.¹
 - Between 2009 and 2019, arterial auto speeds in Northeast San Francisco declined by approximately 30%.
- **If you walk or bike:** You're more likely to be injured when there are more cars on the road.
 - The downtown area is one of the highest injury areas for people walking and biking, with a high concentration of streets on the Vision Zero high-injury network.
- **If you live or work downtown:** Air pollution from cars puts your health at risk.
 - Vehicles cause most of our region's air pollution, with concentrations of unhealthy pollutants near congested streets and freeways.
 - Transportation is responsible for the largest share of San Francisco's greenhouse gas emissions (46%)

¹ INRIX 2019 Global Traffic Scorecard



- **If you are a business:** you may have to wait longer and pay more for deliveries because of congestion.

Congestion in 2019 was concentrated in northeast San Francisco, as shown in Figure 1, and about half of all trips in northeast San Francisco were made in private cars and ride-hail vehicles.

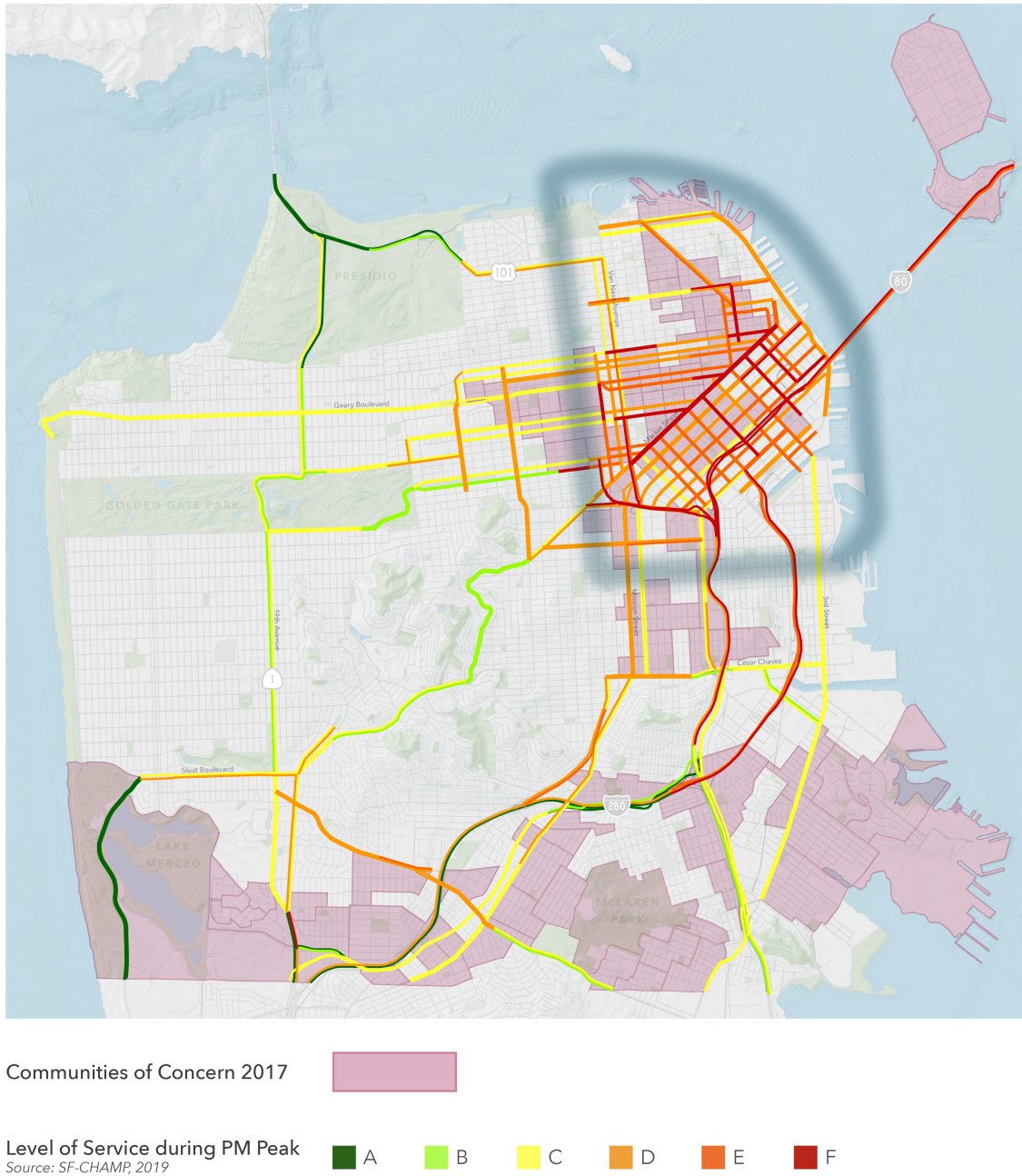


Figure 1: Auto Speeds in San Francisco



The increase in San Francisco's levels of congestion from 2010 to 2019 can be primarily attributed to two main primary factors: **1) population and employment growth in the Bay Area, and 2) the proliferation of ride-hail services, such as Lyft and Uber.** These phenomena had an especially large impact on congestion in Northeast San Francisco. The Bay Area and San Francisco grew rapidly. From 2010 to 2018, San Francisco's workforce grew at an average annual rate of 3.7% and its population at an average annual rate of 1.2%. Ride-hail services proliferated in San Francisco, contributing significantly to congestion. As of 2016, ride-hail vehicles made over 170,000 vehicle trips within San Francisco on a typical weekday, accounting for 15% of all intra-San Francisco vehicle trips. On weekdays, ride-hail use was highest during morning and evening commute periods—when congestion is greatest—and at night following the commute period.

More cars on the road disproportionately affect low-income communities of color because they are more likely to:

- ride the bus, which is stuck in car traffic;
- live in areas with higher rates of traffic collisions;
- have health impacts like asthma from polluted air; and
- spend a disproportionate amount of income on transportation, especially those who drive.

WHY CONGESTION PRICING

Our challenge

The Transportation Authority monitors congestion on San Francisco streets and tests ways to improve traffic flow. The most space-efficient way to move people in busy areas is when most people travel by transit, walking, and biking. San Francisco has made concerted efforts to encourage modes of travel that allow more people to move in limited street space, including adding transit-only lanes, installing protected bike lanes, and taxing ride-hail trips to support transit, walking, and biking. The City has also implemented the SF Park program, which includes parking pricing policies designed to keep some spaces available on every block and thereby reduces circling and double-parking.

While these efforts helped, they were not enough. For example, SFMTA implemented red transit-only lanes on many streets to improve transit travel times and reliability. While these investments successfully improved transit speeds relative to auto speeds, the overall increase in auto volumes and congestion downtown means transit riders' trips were still delayed by traffic.² Buses can still be delayed by cars turning, parking, blocking intersections, or illegally using the transit-only lane. On some key corridors, like 3rd Street and O'Farrell

² SFMTA Red Transit Lanes Final Evaluation Report.

<https://www.sfmta.com/sites/default/files/reports/2017/Red%20Transit%20Lanes%20Final%20Evaluation%20Report%202-10-2017.pdf>



Street, transit-only lanes prevented bus speeds from declining as much as auto speeds but buses still became slower as traffic increased during the most congested periods.

We will not be able to build our way out of this problem – congestion is a result of too much demand for driving and not enough road space to accommodate the demand. Moreover, between now and 2040, the city is expected to add 200,000 new residents and 150,000 new jobs. Even with other planned improvements to the transportation system, traffic congestion is still expected to get worse. **When our economy rebounds, we will need to reduce the number of car trips downtown to make our walking, biking, and transit improvements work.**

Introducing congestion pricing

We are exploring how a fee to drive downtown during busy hours could keep traffic moving. This is a strategy called congestion pricing. Congestion pricing would reduce the number of cars driving downtown, making it one of the most effective tools we can use to reduce congestion. Congestion pricing could help get traffic moving, increase safety, clean the air, and advance equity. Certain groups, like travelers with low incomes or disabilities, could receive an exemption or discount. Revenue from the fee could be reinvested in safer streets and better transit. Using revenue from a congestion charge to improve the transit system could further help reduce the number of people driving alone and make it easier to get around downtown.

Congestion pricing is one tool that has proven to work. For example, London launched its congestion pricing program in 2003 along with increased transit service. The program resulted in a 30% reduction in traffic congestion, 38% increase in transit ridership, and a 12% reduction in greenhouse gasses. Stockholm launched a congestion pricing program in 2007. The program resulted in a 22% reduction in traffic congestion, 5% increase in ridership, and a 14% reduction in greenhouse gases.

Based on results from other cities, the Transportation Authority studied congestion pricing in the 2010 Mobility Access and Pricing Study. The study found that congestion pricing in northeastern San Francisco would significantly reduce peak period vehicle trips downtown and improve the flow of traffic. Projected benefits in the priced area included:

- 12% fewer peak period auto trips,
- 21% reduction in vehicle delay,
- 20% - 25% transit speed improvements,
- 16% reduction in greenhouse gas emissions, and
- 12% reduction in pedestrian collisions.

Congestion pricing is a proven and effective solution to mitigate congestion; it is also a proven strategy to meet city goals of cleaner air, safer streets, and increased equity. Based on the findings of the 2010 study and results from other cities, in December 2018 the



Transportation Authority Board directed the agency to launch a new study of congestion pricing in downtown San Francisco with a strong focus on transportation equity (Resolution Number 19-29).

Based on the results of congestion pricing programs in other cities and the projected benefits for San Francisco identified in the 2010 congestion pricing study, city, regional, regional, and state-level plans since then have identified a congestion pricing program as key to achieving a variety of established goals.

- **San Francisco Transportation Plan 2040:** Adopted in 2017, the plan is a citywide long-range investment and policy blueprint for San Francisco’s transportation system. It includes congestion pricing as a key strategy to reduce greenhouse gas emissions.³
- **San Francisco Climate Action Strategy:** The San Francisco Department of the Environment (SFE)’s 2013 Climate Action Strategy and 2017 Transportation Climate Action Strategy include congestion pricing as one of the most powerful tools available to rapidly reduce greenhouse gas emissions from transportation. The City’s Climate State of Emergency Resolution adopted in April 2019 further establishes a goal of 68% reduction in emissions below 1990 levels by 2030 and a 90% reduction by 2050.⁴ SFE’s 2019 Focus 2030: A Pathway to Net Zero Emissions report evaluates policy strategies achieve these goals, including a target to shift 80% of all trips to sustainable modes (transit, walking, and biking) by 2030. The report identifies downtown congestion

Parking Pricing and Congestion Management

SFMTA implemented the SF Park program in 2010 to better manage the City’s parking supply in busy areas through demand-based pricing and ensure one or two spaces would typically remain available on every block. As a result of improving parking availability, the program decreases congestion by reducing circling and double-parking and encouraging drivers to shift trips to off-peak times. However, these effects have not been enough to offset overall increases in traffic congestion.

A 2016 Transportation Authority study of parking supply and utilization found that congestion pricing would be more than twice as effective as expanded parking fees in reducing congestion in the downtown area, mainly because many peak hour trips pass through, rather than end within, the downtown area.

https://www.sfcta.org/sites/default/files/2019-03/Parking_Supply_summary_report_11.29.16.pdf

http://sfpark.org/wp-content/uploads/2014/06/SFpark_Pilot_Project_Evaluation.pdf

³ <https://www.sfcta.org/projects/san-francisco-transportation-plan>

⁴ <https://sfenvironment.org/policy/resolution-in-support-of-the-san-francisco-climate-emergency-declaration>



pricing as a key policy needed to achieve these established transportation and climate goals.⁵

- **Vision Zero Action Strategy:** Adopted in 2014, Vision Zero is a commitment to eliminate traffic fatalities by 2024 by building better and safer streets, enforcing laws, and adopting street safety policies to effect change.⁶ Released in 2019, the Action Strategy outlines how to achieve Vision Zero and identifies congestion pricing as a key policy needed to achieve the goal.⁷
- **Transportation Demand Management Ordinance and Plan:** Adopted in 2016, the ordinance strives to reduce the need for driving trips in San Francisco and shift trips to walking, biking, and transit. The plan identifies strategies, including congestion pricing, needed to encourage sustainable modes of transportation.⁸
- **Transportation Task Force 2045 Report:** Released in 2018, the report identifies funding needs, gaps in resources, and potential revenue options. It includes congestion pricing as a way to fund transportation improvements and meet the city's transportation policy objectives.⁹
- **Plan Bay Area 2040:** Adopted in 2017, Metropolitan Transportation Commission's long-range Regional Transportation Plan and Sustainable Communities Strategy for the Bay Area identifies transportation and land use strategies to enable a more sustainable, equitable and economically vibrant future for the region. The plan includes downtown congestion pricing in San Francisco and rated it as a high-performing project given its benefits including shortening travel times, reducing air pollution, and improving health and safety.¹⁰
- **California Sustainable Communities and Climate Protection Act Progress Report:** Released in 2018, the report provides an update on Senate Bill (SB) 375, which recognizes the critical role of integrated transportation, land use, and housing decisions to meet climate goals. It identifies road pricing programs as an important element to meeting the state's greenhouse gas reduction goals.¹¹

⁵ https://sfenvironment.org/sites/default/files/fliers/files/sfe_cc_climateactionstrategyupdate2013.pdf

⁶ <https://www.visionzerosf.org/about/what-is-vision-zero/>

⁷ https://www.visionzerosf.org/wp-content/uploads/2019/04/VZAS_040419_web.pdf

⁸ <https://www.sfmta.com/projects/transportation-demand-management>

⁹ https://www.sftransportation2045.com/sites/default/files/pdfs/Final_Report/T2045%20TF%20Report%20for%20TA%20Board_v2.pdf

¹⁰ <http://2040.planbayarea.org/about>

¹¹ https://ww2.arb.ca.gov/sites/default/files/2018-11/Final2018Report_SB150_112618_02_Report.pdf



Study Goals

A congestion pricing program in San Francisco could lead to fewer car trips, shorter travel times, safer streets, and cleaner air. Congestion pricing is one of the most effective tools available to achieve these outcomes. Discounts and exemptions can be built into the program to protect communities of concern and other disadvantaged people in the region who need to drive.

Based on the experience of other cities that have implemented congestion pricing and the 2010 study of what the policy could achieve in San Francisco, we estimate that **we need to reduce peak period vehicle trips in northeast San Francisco by at least 15%** in order to meaningfully reduce congestion and achieve the four goals below.

The Transportation Authority strives to develop a fair and equitable program for public consideration, driven by four goals. The goals are as follows.

1. **Get traffic moving** so people and goods get where they need to go
2. **Increase safety** for people walking, biking, and driving
3. **Clean the air** to support public health and fight climate change
4. **Advance equity** by improving health and transportation access for disadvantaged communities

The need to reduce peak period vehicle trips by 15% to meet these goals is based on the experience of other cities and the previous congestion pricing study in San Francisco. For example, in London an 18% reduction in vehicles in the congestion charging zone over the first year of the program's implementation was needed to achieve the program's benefits. Similarly, in Stockholm traffic crossing the cordon decreased about 20% when the congestion pricing program was implemented, although the program goal was to reduce vehicle volumes by only 10% to 15%. In San Francisco, the Transportation Authority's 2010 congestion pricing study projected that a 12% reduction in vehicle trips in the recommended pricing zone would result in substantial congestion reduction, but traffic volumes have increased significantly since completion of that study. Therefore, we expect we need to achieve a larger 15% reduction in peak period vehicle trips from current levels to achieve the program goals.



Evaluation Metrics

The four study goals will be used to evaluate different congestion pricing policy scenarios. To create a data-driven evaluation process, each goal is supported by metrics that are based on existing data sources and can be evaluated using quantitative and/or qualitative tools to identify the likely performance of different scenarios relative to the study goals. Where possible, metrics will be evaluated using the Transportation Authority's travel model (SF CHAMP). In many cases, a metric supports more than one goal; in these cases, the metrics are listed under the primary goal. However, many equity metrics consider how effects in other goal areas are distributed to disadvantaged communities; these equity-focused variants of each metric are grouped under the equity goal. Where appropriate, each metric will be produced for the study area, the city, the region, and communities of concern. Since congestion pricing would only be implemented when economic growth and congestion return, metrics will be used to measure expected program success relative to congested conditions by using 2019 as the baseline comparison period.

The program scenarios will be developed through an iterative process, starting with a long list of design options (e.g., area, time, price, exemptions) that will be refined through technical evaluation and public input. The long list of options will be shaped into a small set of more refined alternatives and further evaluated to identify which best meet the project goals. Ultimately, the technical and public evaluation process will help the study team identify a recommended scenario for consideration by the Transportation Authority Board and a determination of whether to move forward with next steps toward possible implementation. The four study goals and accompanying metrics for use in the evaluation process are outlined below.

1. GET TRAFFIC MOVING SO PEOPLE AND GOODS GET WHERE THEY NEED TO GO

If more people replace driving trips with transit, walking and biking trips, or travel outside peak hours, San Francisco streets would operate more smoothly and predictably; this means shorter and more reliable travel times for people on buses and in cars.



METRIC		TARGET	DATA SOURCES
T-1	Vehicle trips	Decrease peak period vehicle trips by 15%	Peak and off-peak vehicle trips
T-2	Vehicle delay	<ul style="list-style-type: none"> ▪ Decrease the amount of time vehicles are sitting in traffic ▪ Decrease the amount of time that transit vehicles are sitting in traffic 	<ul style="list-style-type: none"> ▪ Total vehicle hours of delay ▪ Transit vehicle hours of delay
T-3	Person trips	Maintain the number of daily person trips	Daily person trips
T-4	Transit crowding	Decrease the time spent in crowded conditions on transit	Total hours in crowded conditions

2. INCREASE SAFETY FOR PEOPLE WALKING, BIKING, AND DRIVING

The number of miles vehicles are driving is a major predictor of traffic collisions, so traffic safety is expected to improve if more people shift to non-driving trips as a result of congestion pricing. A congestion pricing program could also provide revenue to be invested in infrastructure projects that make travel safer and more comfortable.

METRIC		TARGET	DATA SOURCES
S-1	Crashes	Decrease fatal and serious injury crashes in the study area	<ul style="list-style-type: none"> ▪ Baseline Crash Statistics [SWITRS] ▪ Program scenario vehicle miles traveled

3. CLEAN THE AIR TO IMPROVE PUBLIC HEALTH AND FIGHT CLIMATE CHANGE

With a shift away from driving, San Francisco can reduce greenhouse gases and other pollution to improve public health and fight climate change. Cleaner air and a shift toward active and other sustainable travel modes also have other public health benefits, such as reducing asthma rates and increasing physical activity.



METRIC	TARGET	DATA SOURCES
A-1 Greenhouse gas emissions	Reduce greenhouse gas emissions	CO ₂ emissions
A-2 Local emissions	Reduce unhealthy particulate emissions (PM _{2.5})	PM _{2.5} emissions
A-3 Mode split	Increase share of person trips by sustainable modes (transit, walking, bicycling)	<ul style="list-style-type: none">▪ Mode split▪ Peak hour mode split

4. ADVANCE EQUITY BY IMPROVING HEALTH AND TRANSPORTATION ACCESS FOR DISADVANTAGED COMMUNITIES

Congestion pricing provides an opportunity to create a more equitable transportation system. Better performing streets allow for more reliable transit service and faster trips to downtown for disadvantaged communities. Potential revenue from a congestion pricing program could also support targeted investments in disadvantaged communities to improve transportation, safety, and air quality, as well as support program discounts.



METRIC		TARGET	DATA SOURCES
E-1	Travel time	Decrease travel time downtown for low-income households and from communities of concern	<ul style="list-style-type: none"> Travel time to study area from communities of concern, by mode Travel time to study area for low-income households, by mode
E-2	Travel costs	Maintain travel costs as a percent of household income for low-income households	Daily costs for trips to the study area by income group
E-3	Job access	Increase the number of jobs that can be accessed within 30 minutes by auto or 45 minutes by transit for low-income households and from communities of concern, by mode	<ul style="list-style-type: none"> Percent of population in communities of concern that live within a 30-minute travel time by auto or 45 minutes by transit of the study area, by mode Percent of low-income households that live within a 30-minute travel time by auto or 45 minutes by transit of the study area, by mode
Distribution Metrics for Goals 1, 2, and 3:			
E-T-1	Vehicle trips	Same as T-1, segmented by income level	Same as T-1, segmented by income level
E-T-3	Person delay	Same as T-3, segmented by income level	Same as T-3, segmented by income level
E-T-4	Time in crowded transit	Decrease the time spent in crowded conditions on transit, segmented by income	Time spent in crowded conditions, segmented by income level
E-S-1	Crashes	Same as S-1, segmented by Communities of Concern vs non-Communities of Concern	Same as S-1, segmented by Communities of Concern vs non-Communities of Concern
E-A-2	Local emissions	Same as A-2, segmented by Communities of Concern vs non-Communities of Concern	Same as A-2, segmented by Communities of Concern vs non-Communities of Concern



Additional Community Priorities

Congestion pricing in San Francisco could have broader effects beyond the four primary program goals and the Transportation Authority's initial stakeholder outreach identified broader community priorities that a congestion pricing program would need to support. The priorities below may be less direct and difficult to measure, so will not be quantified through the evaluation process, but will be considered through qualitative discussions as program alternatives are developed and refined. The aim will be to ensure that congestion pricing would at least be neutral or, where possible, have positive effects on the following priorities. Some of the metrics outlined above to support the specific program goals may also provide value to these discussions.

1. **Support the stability of communities of concern and other disadvantaged groups** (e.g. women, LGBTQ people, children and youth, older adults, people with disabilities, and people of color) through improved overall affordability, including access to affordable housing, and personal security.
 - Reducing traffic delay and increasing transit investments could potentially reduce travel times between northeast San Francisco and locations in the city and region that are more affordable but currently less accessible.
 - Program investments could contribute to a greater sense of personal security on streets and on public transit (e.g. more frequent transit to reduce waiting times, transit ambassadors, or streetscape or lighting upgrades).

2. **Support local businesses and the arts** by maintaining the number of people traveling to northeast San Francisco neighborhoods, ensuring business travel and goods movement are cost-effective and efficient, and by contributing to an enjoyable environment for people to spend time in the area.
 - Maintaining the number of people traveling to and within northeast San Francisco, as measured in metric T-5, would ensure community members and visitors have access to local businesses, arts and culture.
 - Reducing traffic congestion could allow auto- and truck-dependent services, such as deliveries and contractors, to be able to complete more business activities per day.
 - Reducing traffic congestion and implementing street safety investments could make northeast San Francisco a more enjoyable place to spend time.