



San Francisco
County Transportation
Authority



January 23, 2023

California Public Utilities Commission
Consumer Protection & Enforcement Division
505 Van Ness Avenue
San Francisco, CA 94102

Via electronic mail only
Douglas.ito@cpuc.ca.gov
AVprograms@cpuc.ca.gov¹

Re: Protest of Waymo LLC Tier 3 Advice Letter (0001)

Dear Consumer Protection & Enforcement Division,

By submission of a Tier 3 Advice Letter on December 12, 2022 (the **Waymo Advice Letter**) Waymo seeks Commission approval to offer commercial Automated Vehicle Passenger Services (**AVPS**) throughout San Francisco, 24 hours a day, 7 days a week and with a fleet of unlimited size on “freeways, highways, city streets, rural roads, and other roadways . . . including roadways with posted speed limits up to 65 miles per hour.” Waymo’s request encompasses more than 95% of the city’s road miles, including the dense downtown core, as well as peak travel hours for San Francisco residents and travelers (7-9 AM and 4-7 PM). Waymo seeks blanket approval that would put all expansion decisions within San Francisco at the company’s sole discretion. If approved as requested, increases in service area, hours of operation and fleet size would be made without input from Commission staff or members, without judgment from San Francisco, and without input from the public.

The San Francisco Municipal Transportation Agency (**SFMTA**) and the San Francisco County Transportation Authority (**SFCTA**), and the Mayor’s Office on Disability (MOD) (collectively **San Francisco**) do not oppose the Commission authorizing Waymo to deploy commercial service in San Francisco. For several years, Waymo has actively sought City input about its AV testing and deployment, has demonstrated intent to address several city concerns, and appears to have apparently invested significant resources in doing so. Many details described in the Advice Letter reflect attention to city concerns about the safety and integrity of

¹ On January 4, 2023, by email to the service lists of R.12-12-011, R.19-02-012, and R.21-11-014, CPED issued an extension of the time for protest and response to the Waymo Advice Letter to 5 pm on January 23, 2023. As required by the definition of a Protest in General Order 96-B, Section 3.11, this protest was sent to waymo-regulatory-permits@google.com on the day it was submitted to CPED (Attn. Mari Davidson and Rem Dekker).



the transportation network and about providing equitable service that is accessible to people with disabilities. Waymo has been an industry leader in reaching out to the stewards of the city's transportation network as stakeholders in Waymo user experience and product development research.

More generally, San Francisco is excited about the potential that automated driving could expand the menu of transportation choices available in the city. We hope that this emerging technology will contribute to improving street safety and enhancing equitable and accessible mobility for a wide population. But the nearly unrestrained scope of service sought by Waymo is too much for its first foray into paid driverless service in San Francisco. In the months since the Commission approved the first small commercial AV deployment in San Francisco, we have observed significant new operational challenges in interactions between AVs and other street users where AVs have interfered with traffic and transit operations. If the Commission approves sweeping authorizations for both Waymo and Cruise, without timely holding permittees accountable for addressing operational issues in a transparent and incremental way, the scale of these operational challenges may soon affect a large percentage of all San Francisco travelers. These challenges call for continuous collaboration between industry and all levels of government. Collaboration is all the more important because the climate emergency leaves little room for policy error; we cannot allow acute disparities in freedom of movement and resulting economic opportunity and public health to worsen.

While San Francisco would support Waymo commercial deployment under conditions discussed below, Waymo's sweeping request is inconsistent with the Commission's general and longstanding approach calling for incremental testing and expansion of AVPS. **San Francisco thus submits this protest to the Waymo Advice Letter because, under General Order 96-B, Waymo's request for authorization to deploy commercial service on virtually every street in the city, 24 hours a day and 7 days a week with an unlimited fleet is unreasonable in light of the following circumstances:**²

- 1) **Incrementalism.** San Francisco appreciates the Commission's effort to build a path from testing to commercial deployment of AVPS that provides for incremental review. No one anticipated the kind of street obstructions that members of the public have reported to 9-1-1 in the months since the Commission authorized Cruise to offer limited driverless commercial services. Cruise and Waymo now both seek blanket approval to provide unlimited commercial operations. While the Commission should consider each of these Advice Letters on their own merits, it should also be mindful of the cumulative effects on the City's transportation

² See General Order 96-B, Section 7.4.2 (6)



network if these problems in Cruise operations continue and are replicated by similar problems from Waymo. We urge the Commission to understand recent road and transit blockages as a message to proceed with caution and to continue its incremental approach to approving driverless AVPS expansion.

- 2) **Transparency.** Waymo and Cruise have both sought confidential treatment of basic operational data about AV driving. Since 2020, the Commission has issued numerous decisions and rulings that reflect California’s strong public policy favoring public access to documents and data that inform the public about both the performance of regulated transportation providers and the performance of the Commission itself as regulator. Yet Waymo seeks exclusive authority to make judgments about the readiness of its systems for driverless operation while obscuring basic operational data from the public.
- 3) **Driverless Testing.** Waymo has tested both automated driving and passenger service extensively, but as of August 31, 2022, the latest date for which information is available to the public, Waymo had not tested any passenger service in San Francisco in vehicles that have no safety driver. This increases concern about the potential for increased AV street obstructions.
- 4) **Inadequate Reporting and Monitoring.** The Commission’s existing data collection requirements, public disclosure, and analysis do not provide the information necessary to assess how automated driving technology is *actually affecting* the safety, operations, equity, and accessibility of the City’s transportation network—as distinct from how the industry hopes and asserts that it will. While the Commission has not set any specific benchmarks for required AVPS performance, where events illustrate significant performance problems, San Francisco urges the Commission to collect performance data about those problems and use that data to support transparent evaluation of more incremental expansion approvals.

San Francisco appreciates the wisdom reflected in the Commission’s Resolution TL-19137 approving the first commercial AVPS deployment in California for a small fleet of Cruise AVs operating only at night. San Francisco recommends that the results of that limited deployment to date call for further restraint and limited initial deployments outside the downtown core³ and peak travel hours (weekdays, 7-10 AM and 4-7 PM) until a permittee demonstrates that they can operate in the most demanding circumstances without compromising safety, equity, accessibility and street capacity. A series of limited deployments—rather than unlimited authorizations—offer the best path toward public

³ For purposes of AVPS permitting, San Francisco recommends that the Commission define the downtown core as reflected in the boundaries of “Northeast San Francisco” in Exhibit A, an area in which transit density, communities of concern and overall traffic congestion are all high. However, the more acute concerns could be addressed by protecting the smaller area identified in Exhibit A.



confidence in driving automation and industry success in San Francisco and beyond. San Francisco thus requests that CPED take the following actions:

- 1) **Collect New Data to Support Incremental Expansion Evaluation:** Develop and recommend to the Commission, as a condition of approval for any commercial AVPS deployment, new driverless readiness data collection requirements consistent with those recommended below. Driverless readiness data collection should support effective, reliable, timely, and transparent analysis of the immediate effects of AVPS operations on the San Francisco transportation network and transit services before approving initial or expansion requests;
- 2) **Transparent Data Collection:** Require AVPS permittees to submit, at a minimum, the newly required data on a public basis without requests for confidential treatment as a condition of approval of any Tier 2 or Tier 3 AVPS deployment Advice Letter and provide at least 30 days of opportunity for public review and analysis of that data before approving new commercial deployments or expansions;
- 3) **Protect Downtown Core and Peak Travel Hours via Incremental Expansion:** Authorize delivery of commercial AVPS on San Francisco's dense downtown core streets and during the City's peak transit and travel hours (weekdays, 7-10 AM and 4-7 PM) only after an AVPS provider has demonstrated that they can operate a significant volume of commercial AVPS on San Francisco streets over a period of at least several months without significant interruption of street operations and transit services; and
- 4) **Fleet Size Increments:** Authorize expansion of fleet size in limited increments, such as 100, 200, 400 (with further increments to be considered in later workshops and rules) to ensure that new impacts that may appear as services scale do not compromise San Francisco's transportation network. This is particularly important given that two companies both propose to offer service in San Francisco.

Alternate Protest Grounds and Path to Approval: If the Commission believes that adopting new data reporting requirements to support analysis that may limit the scope for approval of Advice Letters exceeds the proper use of the Advice letter process, San Francisco protests on the alternate ground that the relief requested in the advice letter is inappropriate for the advice letter process because it requires approval based on issues that were not contemplated in the Deployment Decisions.⁴ We call on the Commission to instead address these recommendations by moving promptly to workshops and further rulemaking to establish new driverless readiness metrics addressing AVs blocking travel lanes—industry conditions that have arisen since Commission approval of Decision 20-11-046 (as modified by Decision 21-05-017) (together, the **Deployment Decisions**). Any such rulemaking should precede approval of additional AVPS deployments or expansions.

⁴ See General Order 96-B, Section 7.4.2 (5)



Workshops and Rulemaking: Even if the Commission develops measures to guide incremental expansion through the permit condition approach recommended above, San Francisco urges CPED to promptly schedule workshops and initiate a subsequent phase of the proceeding (as contemplated by the Deployment Decision and Cruise Resolution) to address industry developments since approval of the Deployment Decisions. San Francisco recommends prompt additional consideration of a broader range of data collection and disclosure issues, as well as disability access issues, including especially wheelchair accessible service.

Commendations: Developing automated driving technology that seeks to meet and exceed the driving performance of good human drivers is a fantastic technical challenge, and we appreciate the achievements that Waymo and others have made to date. In addition to general admiration for the purpose and intent of this effort, San Francisco commends the following specific features reflected in Waymo's Advice Letter that reflect efforts to address some of the concerns raised by the City over the last several years:

- While Waymo has not developed an autonomous wheelchair accessible vehicle (WAV), Waymo took initiative to participate in the USDOT Inclusive Design Challenge to refine wayfinding features for users with a variety of disabilities. Waymo also provides people who use power wheelchairs an opportunity to request a ride through the Waymo One app. Service comparable to that available for non-WAV users is delivered in conventional WAV vehicles. Delivery of WAV service in conventional non-AV vehicles is an important interim step that current Commission data collection requirements obscure.
- Waymo uses a number of tools to educate users that they may need to walk to access a safe pick up or drop off location. Waymo provides walking directions between a user's location at the time of a trip request and the approved pickup location and between a drop off location and the user's ultimate destination. These features facilitate a virtuous cycle in which Waymo and users are encouraged to minimize pick up and drop off (PUDO) impacts on other street users while also providing an accessible option for people who need to minimize walking.
- Waymo has made significant use of the communication potential of the main ADS sensor module on the roof of the vehicle. In addition to using the sides of this space to communicate to an individual passenger that they have identified the correct vehicle, they have also used the front and rear of the space to post board and de-boarding icons during dwell time. While this does not resolve risks associated with pick up and drop off stops in the travel lane, it may help road users behind a Waymo vehicle to recognize that it is currently stationary and to increase alertness that passengers could approach or open a door.



Discussion & Recommendations

Section 1: New Information About Hazards & Network Impacts Caused by Planned & Unplanned AV Stops Obstructing Travel Lanes Calls for New Driverless Readiness Data Collection and Further Incremental Approvals for Commercial AVPS at This Time.

Section 2: Additional Data Collection is Necessary to Inform Incremental Deployment Improvements.

Section 3: CPED Should Promptly Convene Workshops to Address Recent Industry Developments, Consider Further Data Collection and Disclosure and Address Disability Access Issues

Section 1: New Information About Hazards & Network Impacts Caused by Planned and Unplanned AV Stops Obstructing Travel Lanes⁵ Calls for New Driverless Readiness Data Collection and Further Incremental Approvals for Commercial AVPS at This Time.

Unplanned Travel Lane AV Stops: Starting in late May 2022, long after the Commission adopted Decision 20-11-046 (as it was modified by Decision 21-05-017 in November, 2020) (together, **the Deployment Decisions**) managers in the City’s Department of Emergency Management began to notice a number of calls to 9-1-1 from people who witnessed or were affected by driverless AVs obstructing travel lanes. Sometimes these AVs caused extended traffic backups. Callers also complained of erratic driving (including signaling in one direction while moving in the other direction) or a Cruise AV blocking a transit vehicle. In other cases, callers reported evasive maneuvers by other road users such as driving on a sidewalk to get around a blockage caused by a disabled AV. The duration of these unplanned AV stops obstructing travel lanes appeared to range from minutes (extending through many traffic light cycles) to hours. Additional incidents were posted on social media or reported by the media. The number of reported incidents is likely a fraction of the total unplanned stops because most are reported during late night hours when few people are on the streets to notice them and because many people would not think to call 9-1-1 in these circumstances.

⁵ By the term “Unplanned AV Stops Obstructing Travel Lanes,” San Francisco intends to incorporate both minimal risk condition incidents that occur in travel lanes and vehicle retrieval events where field staff are dispatched to retrieve an AV with human drivers. We are concerned with impacts on the transportation network and transit services. San Francisco does not intend to reach incidents in which AVs achieve a minimal risk condition or must be retrieved by human drivers from private property or where an AV is parked at a curb.



Unexpected and unplanned stops obstructing travel lanes create hazards. They can cause other vehicles to make dangerous abrupt lane changes, brake or accelerate rapidly, or veer into bike lanes or crosswalks. They can cause rear end collisions. The impact of these stops varies because all streets are not equal. Small residential streets may serve only dozens of travelers in an hour while others serve thousands or tens of thousands in an hour. Some are used heavily by vulnerable road users and transit riders. Unfortunately, the AV failure incidents reported by the public have been significantly concentrated on streets of great importance in the City's transportation network: downtown streets, streets with transit service, streets on the bike network, intersections, and streets on the City's High Injury Network (the 12% of San Francisco streets that account for more than 68% of severe or fatal injury crashes).

The large majority of the unplanned travel lane AV stops reported through December 2022 involved Cruise AVs rather than Waymo vehicles. However, because the Commission does not currently collect data on these incidents, it is not possible to fully understand the frequency or overall effects of these stops. The low rate of complaints addressing Waymo vehicles may reflect only a lower volume of Waymo driverless vehicle miles traveled (VMT) rather than superior Waymo performance—or could reflect both VMT and performance differences. While the absence of comprehensive data makes it difficult to discern meaningful trends, the number of unique incidents reported to the City in December 2022 was the highest since the Commission approved the limited Cruise deployment. Incidents could increase very significantly if both Cruise and Waymo are allowed to significantly increase driverless operations.

Under the circumstances, the Commission should promptly collect data measuring the frequency and severity of road impacts (lanes affected and duration of impact). Because public transit offers the most efficient mode of transportation from both a space and energy perspective, it is important to assess transit impacts. Transit service disruptions do not just affect passengers on board a vehicle directly affected; they also affect those waiting for transit vehicles further along a route. The Commission should work with San Francisco to understand these effects, because analysis requires detailed understanding of San Francisco transit and street operations. Many transit routes travel through the downtown core, and obstructions in the downtown core have an outsized impact on both vehicle traffic and transit in this area. No AVPS provider should be authorized to deploy commercial services on densely traveled streets in the downtown core or during peak travel hours (weekdays 7-10 AM and 4-7 PM) before demonstrating low rates of unplanned stops that obstruct travel lanes and transit operations because unplanned stops in these locations and hours will have outsized effects on the City's transportation network that are directly correlated with the scale of those incidents. Because



Waymo has conducted little or no driverless passenger service testing in San Francisco, no such readiness determination is possible at this time.

Planned Stops for Passenger Pick Up and Drop Off (PUDO). In Decision 20-11-046 (as modified by Decision 21-05-017) (together, the **Deployment Decisions**) the Commission required AVPS permittees to report trip data that includes the location of stops to pick up and drop off of passengers. These requirements were identified as serving equity goals and environmental goals. Thereafter, in Resolution TL-19137 approving the first Advice Letter authorizing commercial AV Passenger Services in California, the Commission acknowledged that “passenger pickup and drop-off is a critical nexus of many of the safety and accessibility issues applicable to AV operations.”⁶ The Commission further recognized “the broader safety concerns inherent to in-lane pickup and drop off operations” and noted that it is “challenging to quantify the associated safety risk to passengers and to other road users.” The Commission noted that nonetheless, rigorous evaluation is necessary. Finally, the Commission recognized that near miss events represent a substantial risk to all road users.⁷

The City agrees with the Commission both that data collection to assess safety hazards arising from PUDO operations is difficult and that rigorous evaluation is necessary. Resolution TL-19137 notes that CPED “will collaborate with stakeholders to develop the categorization of incidents and complaints,” including data related to pickup and drop-off. We are not aware of any workshop or other context in which CPED discussed these issues with stakeholders, but CPED did adopt data reporting requirements for AV deployment that appear intended to inform the Commission about hazards created by travel lane PUDO stops. San Francisco considers the required data collection extremely unlikely to accomplish the difficult task of quantifying the safety of permittee PUDO operations or the risks to passengers and other road users caused by those operations.⁸ We recommend an alternative approach in Section 2 below and urge CPED to revise or add to PUDO related data collection before approving Waymo or Cruise Advice Letters so that information about both planned and unplanned stops blocking travel lanes can inform incremental approval authorizations.

Section 2: Additional Data Collection is Necessary to Inform Incremental Deployment Approvals.

⁶ Resolution TL19137, p. 11.

⁷ *Id.* at p. 12

⁸ Pickup and drop off in relation to travel lanes and the curb is reflected only in the incidents-complaints dictionary. See CPUC AV Deployment Data Template and Dictionary 20221012 at Incidents-Complaints Dictionary Page. Microsoft Excel file. Accessed at <https://www.cpuc.ca.gov/regulatory-services/licensing/transportation-licensing-and-analysis-branch/autonomous-vehicle-programs/quarterly-reporting>



The CPUC collects data quarterly on AV passenger service authorized under its pilot and deployment permits. The pilot data is narrowly focused, aggregate, and contains no geographic information.⁹ The deployment data is broader in scope, contains detailed trip level information, and includes information on vehicle charging and public safety incidents. Under the Commission’s Deployment Decisions and previous Testing Decisions the Commission receives no data that documents planned or unplanned stops obstructing travel lanes at all. While San Francisco believes the Commission should adopt a wide range of driverless readiness metrics for evaluating permit requests, we focus here on issues that address recent problems that initial AVPS deployments have caused in San Francisco street operations. San Francisco distinguishes readiness metrics from impact metrics that address issues that may reasonably evolve over time. These include, for example, metrics identifying the occupancy of AVPS trips, deadheading miles, and their related congestion and energy effects.

To assess how unexpected and unplanned stops obstructing travel lanes impact the transportation network it is critical to know the location and duration of each unplanned stop. San Francisco also recommends using a metric that assesses the rate at which these unplanned stops occur. Given the importance of transit in meeting state climate and equity goals, special consideration should be given to obstructions impacting transit operations.

For purposes of assessing whether and how well AVs approach the curb for passenger pick up and drop off, San Francisco recommends a metric that identifies the distribution of these planned stops in terms of the vehicle distance from the curb. Distance from the curb alone does not directly measure whether any particular stop is safe or lawful; however, distributional data on distance from the curb for all PUDO stops may document the overall success of an AVPS provider in the many skills required to identify and maneuver into available curb spaces on San Francisco streets. Stakeholders should discuss how such a metric should capture PUDO stops made in off street locations such as driveways and parking lots, and the metric could also be refined to focus on the high-volume travel streets where planned stops have the greatest impact on road safety and capacity.

San Francisco recommends that the Commission adopt the following readiness metrics as a condition of approval of AVPS deployment permits:

- Unplanned AV stops (including minimal risk condition and vehicle retrieval events) obstructing travel lanes in relation to driverless vehicle miles traveled;

⁹ See Deployment Decisions at Conclusions of Law Paragraphs 5(k), 5(m), 7(m), 7(o), 13, and 14; Ordering Paragraphs 5(k), 5(m), 7(m), 7(o), and 14; CPUC AV Deployment Data Template and Dictionary 20221012 at Trip-Level Data Dictionary Page. Microsoft Excel file. Accessed at <https://www.cpuc.ca.gov/regulatory-services/licensing/transportation-licensing-and-analysis-branch/autonomous-vehicle-programs/quarterly-reporting>.



- Total lane minutes of obstruction from driverless failures obstructing travel lanes in relation to driverless VMT;
- Distribution of passenger pick up and drop off stops by distance from the curb; and
- Distribution of passenger pick up and drop off stops by dwell time.

Accordingly, applicants for Phase 1 Driverless Deployment permits should be required to submit the following information for all driverless operations under any CPUC permit. Monthly data reporting would best balance the public interest in understanding basic readiness information when it is relevant to Commission decisions with industry desires to expand quickly:

- All driverless vehicle miles traveled (VMT) for each permit;
- Location and duration of unplanned AV stops (including minimal risk condition (MRC) and vehicle retrieval events (VRE)) obstructing travel lanes by vehicle and underlying permit; and
- Passenger pick up stops by location, distance from the curb and dwell time for all passenger stops.

Both Cruise and Waymo have sought confidential treatment of most detailed deployment data currently required and have redacted it from their public filings. This includes the VMT information that would provide context for rates of unexpected and unplanned AV stops obstructing travel lanes. For example, Waymo has redacted data showing VMT of its drivered deployment operations and even high level location information, such as information at the zipcode or census tract level. As a result, the public has no access to information about either driving achievement or driving problems arising from operations to date that could support public input on either Tier 2 or Tier 3 advice letters. None of San Francisco's newly recommended data fields raise any privacy issues. Although the metrics may reflect on permittee performance in ways that applicants find uncomfortable, none of these data fields call for information that can be legitimately described as protected trade secrets. Thus, the Commission should require applicants to submit this data in public form without opportunity for claims of confidential treatment.

Section 3: CPED Should Promptly Convene Workshops to Address Recent Industry Developments, Consider Further Data Collection and Disclosure and Address Disability Access Issues

If CPED believes new data collection on the safety and congestion issues raised by planned and unplanned stops obstructing travel lanes cannot be addressed via new permit conditions in the Advice Letter process, San Francisco urges CPED to exercise the authority



delegated by TL-19137¹⁰ to promptly convene the workshop contemplated by that resolution to address these proposals—before approving the Waymo advice letter—and exercise the authority delegated to establish data reporting requirements consistent with that resolution.

In addition, the Deployment Decision stated that CPED would hold a workshop to evaluate the status of the Phase 1 AV deployment operations within a year of issuance of the decision and authorized CPED to adjust the timing of the workshop as necessary to ensure there is a meaningful amount of data to discuss. Among other things, the workshop was intended to address the quality and quantity of data gathered to date, whether and how to revise the data collection requirements, and whether to revise the program goals and establish targets or make any other changes to the AV pilot or Phase 1 deployment programs.¹¹ More than one year has now elapsed since the Commission approved this language, and if there is not sufficient data to discuss, that itself warrants prompt convening of a workshop.

In addition to the recommendations addressed in Section 2, San Francisco notes a need to improve data collection related to trips delivered to people who use wheelchairs. While Cruise has been working to develop a wheelchair accessible AV, Waymo has given passengers an opportunity to request a ride through the Waymo One app.¹² Waymo delivers these rides using conventional WAV vehicles with human drivers. While San Francisco believes delivery of truly equivalent service in automated WAVs should be a high priority, the use of conventional WAVs enables Waymo to provide comparable service and learn from WAV users about their needs in order to avoid the long-standing practice of excluding riders who require wheelchair accessible vehicles. At this time, WAV trip requests and the number of trips delivered in conventional wheelchair accessible vehicles are not captured in quantitative AVPS deployment reporting. These are only a few of many issues about implementation of the Commission’s goal to “expand the benefits of AV technologies to all Californians, including people with disabilities”¹³ that warrants further discussion at this time.

We encourage CPED to convene a workshop to discuss ways the Commission can avoid a situation in which its authorizations to deploy commercial AVPS without WAV service not only fail to serve people who need WAV service but also undermine WAV services provided by taxi and TNC competitors that, to varying degrees, do provide such services. WAV users who were excluded from the ability to use TNC services for many years should not face the same exclusion from the benefits of automated vehicle passenger services. Nor should they face the even worse situation of having inaccessible AV passenger services drive accessible alternatives out of the market.

¹⁰ Resolution TL19137, p. 14.

¹¹ Deployment Decisions at p. 75, Conclusions of Law Paragraph 11, Ordering Paragraph 12.

¹² See Waymo Advice Letter at pp. 2, Attachment B, pp. B-23 - B-25

¹³ Deployment Decisions at p. 39.



**San Francisco
County Transportation
Authority**



Sincerely,

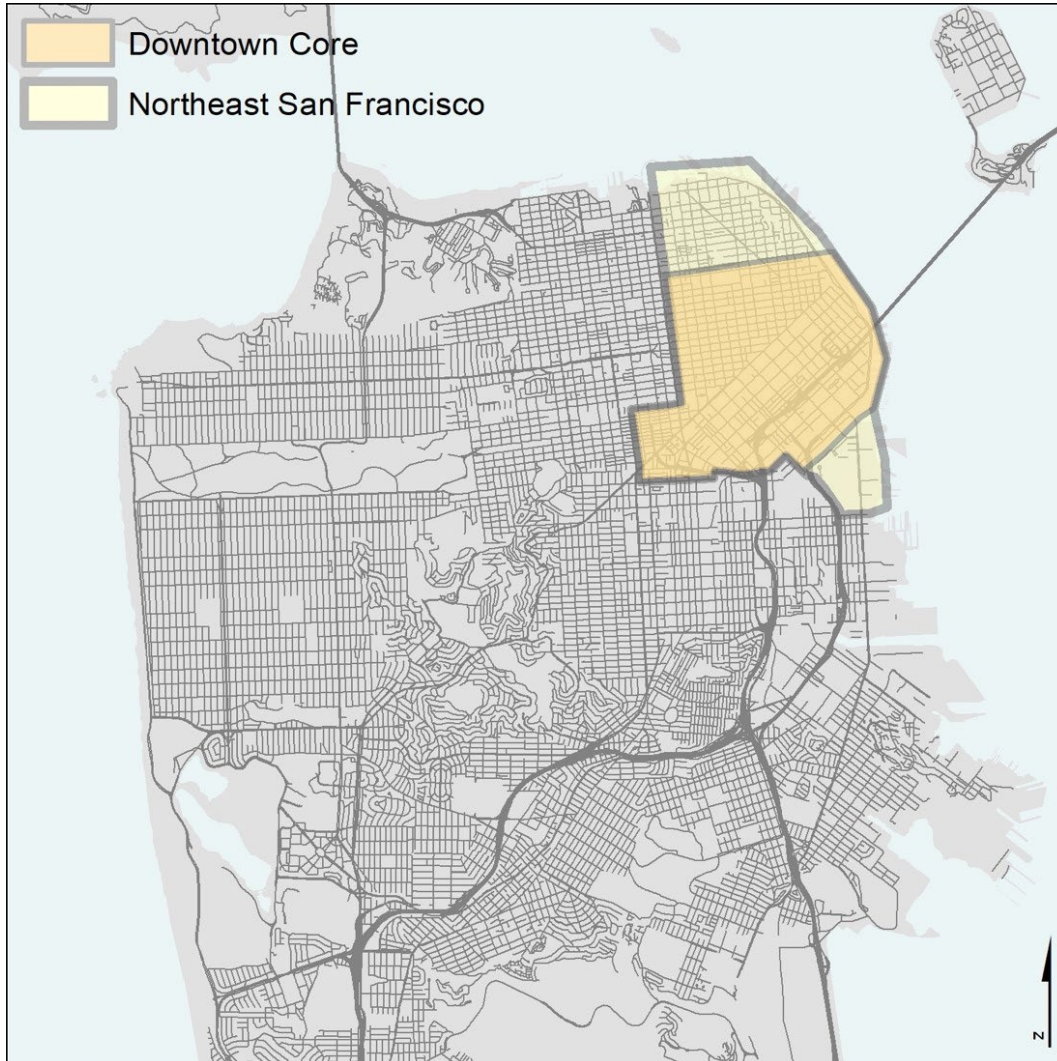
Jeffrey Tumlin
Director of Transportation
San Francisco Municipal Transportation Agency

Tilly Chang, SFCTA Executive Director
Tilly Chang
Executive Director
San Francisco County Transportation Authority

Nicole Bohn
Director
Mayor's Office on Disability



EXHIBIT A: San Francisco Downtown Core



From a transportation perspective, the downtown core road network refers to a concentration of streets and freeway on- and off-ramps of critical importance to the efficient functioning of the city's overall transportation network. Its boundaries are Broadway to the north, Van Ness, Fulton and Laguna to the west, and 14th, Division and Mission Creek to the South.

The importance of these roads can be summarized by four factors:

- High concentration of the high priority network to the city's Transit First policy, namely, high priority transit services, and high priority active transportation facilities.
- High concentration of the Vision Zero High Injury Network, meaning, roads in San Francisco with the highest concentration of injury collisions.
- High concentration of congested streets, i.e. streets where the average speed achieved is below a Level of Service D.



**San Francisco
County Transportation
Authority**



- High concentration of Equity Priority Communities, such as households with low incomes and people of color.

The map above also shows an extended area in the northeast quadrant of San Francisco which reflects a broader area of concentration of these priority considerations and the city's long-standing Transit First investment and policy focus. The western boundary continues along Van Ness, and the southern boundary continue along 7th and Mariposa.