

Transit Transformation Task Force (TTTF) Meeting 3

April 15, 2024

Welcome to San Diego



Source: [San Diego Tourism Authority](#)

Agenda

Topic

1. Welcome & Opening Remarks

2. Roll Call

3. Approval of the TTTF Meeting Minutes for December 19, 2023 and February 29, 2024 (Verbal/Roll Call)

4. Importance of availability Discussion #1: Definition of “availability” and ranges of thresholds by geography

5.1 Goals and metrics Discussion #2: Prioritize and define customer goals

Lunch Break

Discussion #2 (continued) – Define metrics and thresholds for prioritized goals to facilitate mode shift


5.2 Outline what needs to change to reach the goals and metrics discussed, including those directly and indirectly related to transit

Discussion #3: Review and align on proposed list of what needs to change in California

6. Public comment

7. Next steps: Outline how outcomes from today’s discussion will be translated into topics for further investigation in upcoming TTTF meetings

Themes

 Diagnostic phase  Design phase

	Theme	Date	Location	Duration
1	Introduction	Dec 19, 2023	Virtual	2 hours
2	What outcomes does transit need to achieve in order to meet State mandates?	Feb 29, 2024	Sacramento, CA	2 hours
3	How would the customer experience need to change to meet the State's goals?	April 15, 2024	San Diego, CA	4 hours
4	What level/types of service do these outcomes require?	June 17, 2024	San Francisco, CA	4 hours
5	What does this level of service imply for OpEx spend, workforce development, and employee engagement?	Aug 29, 2024	Los Angeles, CA	4 hours
6	What does this level of service imply for CapEx spend?	Oct 28, 2024	Monterey/Salinas, CA	4 hours
7	How can this level of OpEx and CapEx be funded?	Dec 10, 2024	Clovis (Fresno), CA	4 hours
8	What prioritized topics and draft decisions should be included in the report?	Early Feb 2025	Riverside, CA	4 hours
9	Draft report review ¹	April 2025	Sacramento, CA	4 hours
10	Final report briefing before submission ¹	Sept 2025	San Francisco, CA (TBD)	4 hours

1. Final report due to legislature October 31, 2025

Today we will discuss how to align on specific aspirations that enable analytics

Overview

- As the TTTF progresses from diagnostic to design phase, it will begin to **translate customer experience expectations** into specific goals and ranges
- Determining quantitative ranges will allow the TTTF to analyze **what it will take to deliver the service** that customers expect (e.g., OpEx, CapEx, funding) and understand **costs and tradeoffs**
- Aligning on specific goals and metrics now will also help **inform the recommendations and prioritizations** in the future TTTF report

Objectives of Meeting #3

1. Preliminary definition of **“availability”** and range of performance thresholds
2. Prioritized **goals and specific quantifiable ranges** across customer considerations (e.g., reliability, speed, safety)
3. Prioritized list of **topics to investigate** (i.e., improvement opportunities)

For customers to choose transit, it must first be available to them

How am I going to get there?



Objectives of this section

1. Discuss the state of transit availability in California today
2. Review components of availability and example targets defined by TWG
3. Align on what transit availability needs to be in California by 2045 to achieve a transformational increase in ridership, and how this may vary across California

A pre-requisite to achieving a transformational ridership increase is increasing availability of transit



Current state

Today, transit is not an option for many Californians, because **transit is not available to them**



Key elements of availability

- Connects origins of where people start their journeys
- Goes where people want to go (e.g., work and non-work centers of activity)
- Has connections from origins and destinations to transit
- Connects multiple services to form a network
- Provides a span of service that allows trips when customers want to take them
- Allows all users to use the service (e.g., with disabilities, non-English speakers)



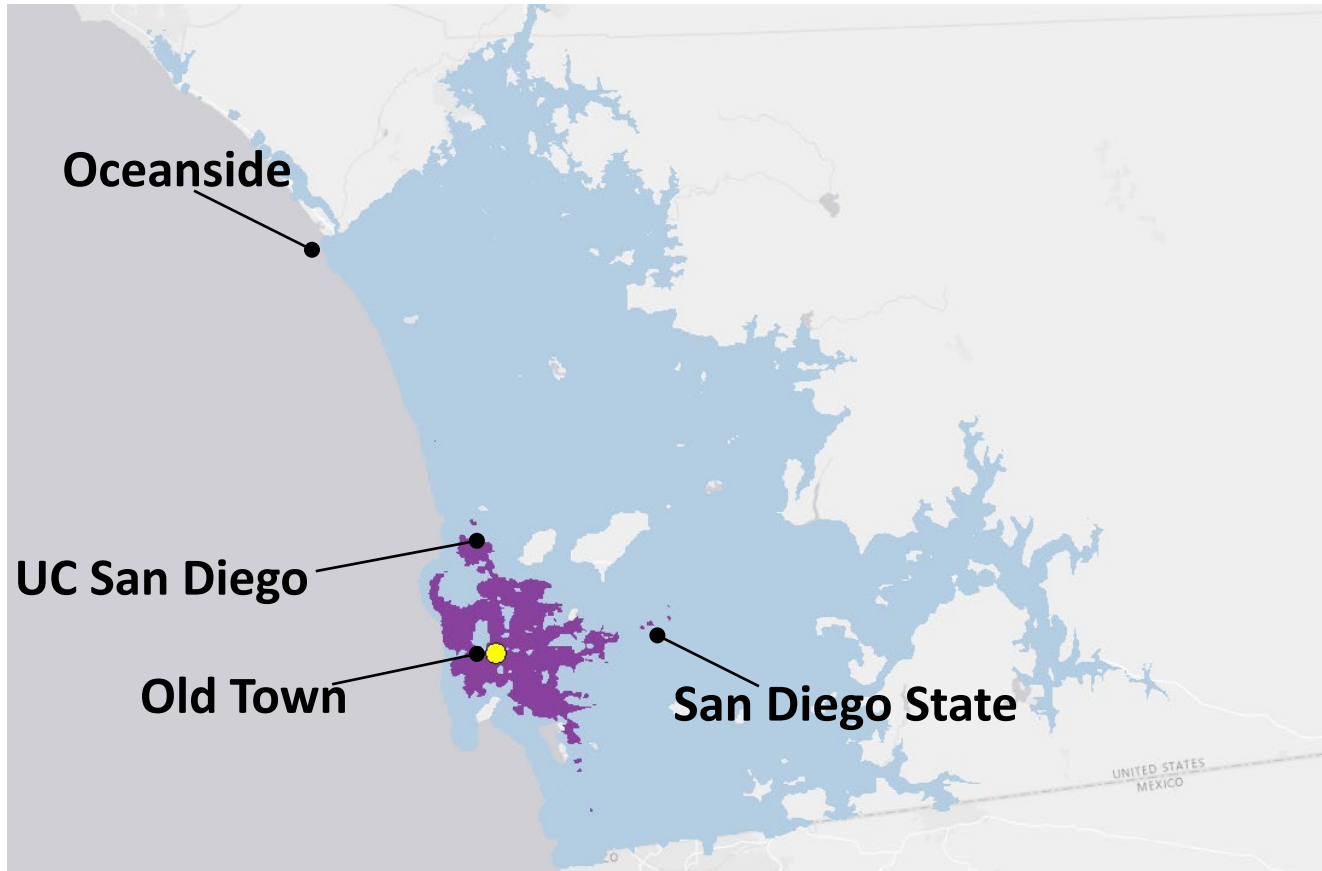
Customer considerations

For customers to take transit, transit must first be **available to them**

Once customers have access to an **available** network, other factors (e.g., reliability, speed, safety, affordability, experience) **impact whether customers choose transit over other options** (e.g., cars)

Even where transit is available, it may not be an attractive mode, as cars access more destinations in the same time

● Caltrans District 11 office ■ Transit travel shed²: 60 minutes ■ Car travel shed²: 60 minutes



Accessible destinations from Caltrans District 11 office in Old Town, within 60 minutes by transit and car¹

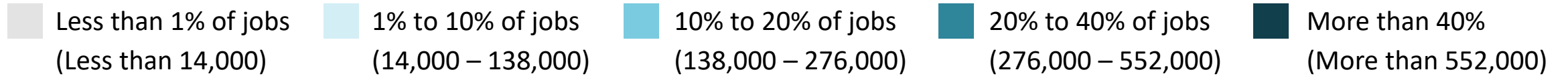
Old Town San Diego is served by numerous transit options, including

- San Diego Trolley
- North County Transit District's COASTER trains
- Numerous bus lines

Despite the availability of transit, fewer destinations are accessible by transit than by car in the same time

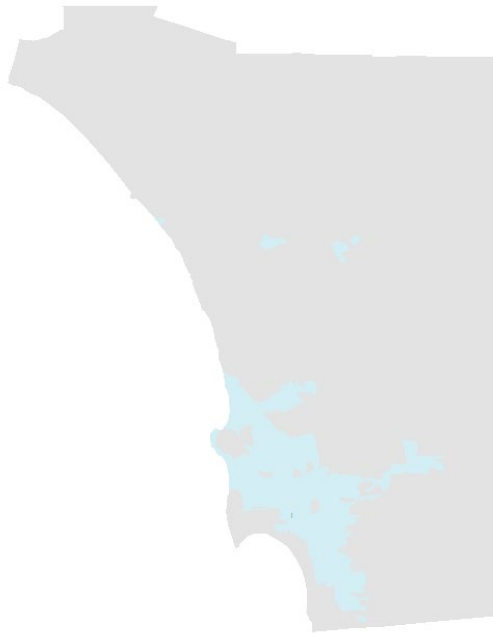
1. Includes residents in other counties (e.g., Orange County); excludes residents in Mexico
2. The shaded areas represent destinations residents can access from a central point of interest by transit and by car

Many California residents do not have access to transit. Here in San Diego, residents can access less than 10% of jobs by transit in under 45 minutes.

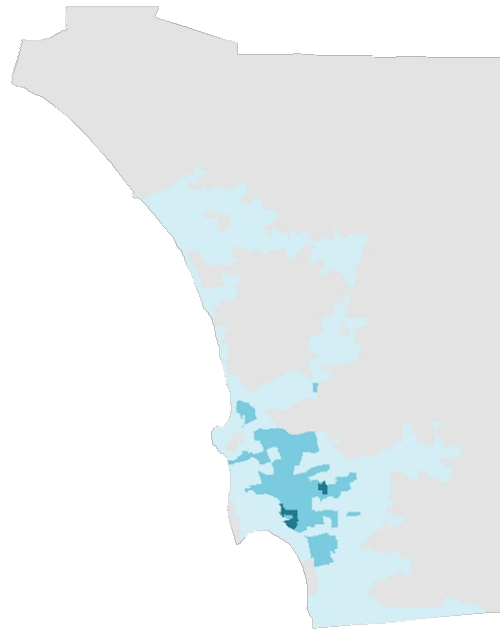


Share of regional jobs in San Diego County accessible via transit in 45, 60, and 90 minutes, by Census tract^{1,2}

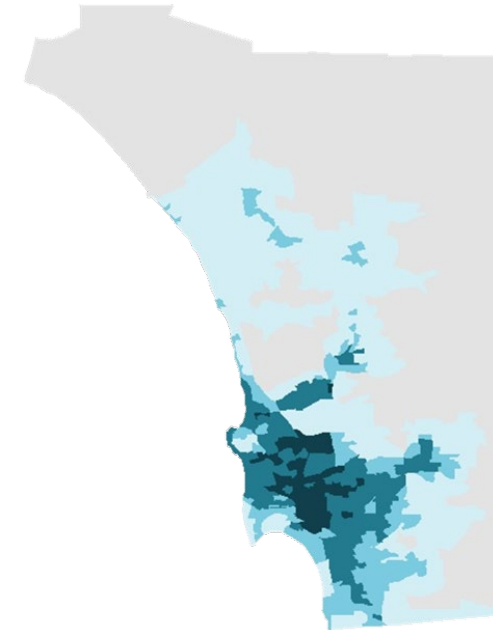
45 minutes



60 minutes



90 minutes



1. Assumes regional jobs are only those within San Diego County
2. San Diego County extends West, beyond what is depicted in maps. In counties not shown, share of regional jobs accessible via transit is <1%.





Source: 2021 US Census LEHD Origin-Destination Employment Statistics (LODES) worker and job data; Conveyal Software analysis, performed March 8-20, 2024

What does transit availability need to be in California to achieve a transformational increase in ridership by 2045?

How might this vary across California?

The Technical Working Group was asked to define transit availability based on customer expectations

■ *Detail to follow*

Component	Explanation
 Connections to destinations	Number and type of destinations available via transit
 Distance to a transit stop	How far a resident lives from a transit stop (e.g., in minutes, in miles)
 Span of service	Number of hours in a day / days in a week transit service is provided
 Understanding of transit	Knowledge of where transit is and how to use it (e.g., existence of transit, routes, cost, how to pay, legibility)



For discussion

What components should be added or removed from this list?

Connections to destinations: Definition and destinations for consideration



Example definition

Percent of destinations in a metropolitan statistical area (MSA) that are **accessible by transit, for average residents and members of disadvantaged communities, in the same amount of time as a car**



Destinations for consideration proposed by Technical Working Group

Destinations include places where residents:

- **Live**
- **Work**
- **Learn**
- **Relax** (e.g., cultural centers, recreation facilities)
- **Practice religion**
- **Carry out basic needs** (e.g., grocery stores, medical offices)



For discussion

What changes would you make to the destinations for consideration?

Connections to destinations: Proposed metrics and thresholds



Threshold ranges proposed by Technical Working Group

- *Urban*¹: **70-100% of all destinations** should be available within same time as a car, with some variation across destinations
- *Suburban*¹: **50-60% of all destinations** should be available within same time as a car
- *Exurban*¹: **25-40% of all destinations** should be available within same time as a car via **fixed route** service; additionally, destinations that are unserved by transit require integrated **demand response**, to increase availability to additional destinations

1. The categorization of geographies (i.e., Urban, Suburban, Exurban) is determined by the locations of transit agencies, geographies served by them, and their respective unlinked passenger trip (UPT) volumes



For discussion

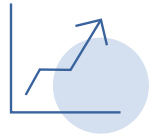
What would you change about these metrics and thresholds?

Distance to a transit stop: Definition and potential metrics



Example definition

- Percent of residents who live **within a certain time** (e.g., 10-minute walk, 20-minute walk) or **distance of a transit stop** (e.g., ½ mile, 1 mile)
- Includes considerations of **how residents may reach transit**



Threshold ranges proposed by Technical Working Group






- Percent of residents who live **within a 10-minute walk or ½ mile of transit** stop varies by region
 - Urban: 90-100%
 - Suburban: 75-100%
 - Exurban (fixed routes): 80-90%
- Across geographies, including Exurban demand response, there was agreement that 95-100% of residents should live **within a 20-minute walk or 1 mile of transit**



For discussion

What would you change about these definitions and thresholds?

Places with high levels of transit ridership commit to having transit stops within a short distance from customers

Component	Agency	Example goals
Coverage	 Transport for London	“A bus network that provides better connectivity for longer trips , particularly in outer London, while maintaining our network coverage of more than 96% of Londoners living within 400 meters distance of a bus stop ” ¹
	 5678 SMRT	“Constructing a metropolitan rail network accessible from anywhere in Seoul in only 10 minutes ” ²
	 MINISTRY OF TRANSPORT CONNECTING SINGAPORE	“By 2030, 8 in 10 households will live within a ten-minute walk of a train station , making getting around Singapore significantly easier” ³
	 VBZ Züri Linie	“There must be a bus stop within 400 meters (~0.25 miles) or a train stop within 750 meters (~0.47 miles) around any built-up area with at least one service per hour ” ⁴
Accessibility	 RATP	“We strive to achieve 100% of buses and RER stations to be accessible to people with reduced mobility by 2022 ” ⁵

1) Transport for London; 2) Seoul SMRT; 3) Singapore Ministry of Transport; 4) Built-up area is defined as having at least 300 inhabitants, job, or trainees/students. [The Canton's Public Transport Act of 1988](#), Zurich Transport Policy. ; 5) RATP; 6) Seamless Bay Area

96%

of Londoners live **within 400 meters** of a bus stop¹

72%

of Seoul residents live **within 10 minutes** of a metro stop²

78%

of Singapore residents live in high-density Housing Development Board flats, intended to be **completely accessible without car access**⁶

Span of service: Definition and potential metrics



Example definition

- The number of **hours in a day** and the **number of days a week** that transit service is provided
- Span of service **may vary on weekdays versus weekends**



Threshold ranges proposed by Technical Working Group

Across all geographies, customers expect similar spans of service:

- **16-18 hours per day**
- **7 days per week**



For discussion

What would you change about these definitions and thresholds?







Public comment

Discussion

1. How should availability be defined? What components should be included?
2. What performance thresholds should California set for availability? How should they differ by geography?

Worksheet: What metrics / thresholds do you propose for the components of availability?

Component	Example metrics	Metrics: What metrics / thresholds should be set for each component?
 Connections to destinations	<i>XX% of destinations available in same amount of time as car</i>	Urban: Suburban: Exurban:
 Distance to a transit stop	<i>XX% of residents live within a 10-minute walk, or ½ mile of a transit stop</i>	Urban: Suburban: Exurban:
 Span of service	<i>Revenue service is provided XX hours per day, YY days per week</i>	Urban: Suburban: Exurban:
 Other: Are there other components of availability that could be considered by the TTF?		Urban: Suburban: Exurban:






Availability is not enough. There are additional considerations for the customer to choose transit



Objectives of this section

1. Discuss additional customer considerations that might drive ridership
2. Review examples of customer goals developed by the Technical Working Group and prioritize top goals that will drive greatest impact
3. For prioritized goals, review metrics and ranges of thresholds to align on values that will facilitate sufficient mode shift across geographies

How might customer needs be addressed by transit, to make it an attractive mode?

Example consideration	Customer needs	Example transit goals to address customer needs
Reliability (e.g., on time performance)	“I am confident I will reach my destination on time”	 <p>Meet on-time performance standard (95%). Respond to service delays with clear communications and prompt contingency operations³</p>
Speed (including frequency and transfer time)	“The end-to-end trip is comparable to driving”	 <p>We strive for 4-8 minutes of waiting time during off-peak times²</p>
Safety (including security)	“I feel safe and secure throughout my trip”	 <p>We steadily reduce serious traffic injuries and fatalities by at least 5% annually until we reach zero by 2050¹</p>
Experience (including navigation / legibility, comfort, customer service)	“My trip is enjoyable, easy, and comfortable”	 <p>Enhance customer experience at key transit stops (e.g., add more shelters, heated shelters/benches, next vehicle arrival screens, wayfinding maps)⁵</p>
Affordability	“It is the lowest cost way to meet my travel needs”	 <p>We commit to an affordable transport system for all, ensuring our fares target those who need them the most⁴</p>

1) [Translink](#); 2) [Paris RATP](#); 3) [Caltrain, Caltrain](#); 4) [MTR Pledge](#); 5) [Toronto](#)

Transit may also take inspiration from how customers consider other types of travel, to become a competitive mode of choice



Outcomes	Customer's considerations: Automobile	Potential metrics	Customer's considerations: Travel	Potential metrics
Reliability	“” How confident am I that I will reach my destination on time?	Time spent in congestion per year	“” How likely is it that my flight is delayed, and I miss my connection?	On-time percentage
Speed	“” How much faster will my trip be if I drive?	Estimated travel time	“” Does my preferred airline fly to the destination I want to reach without long layovers?	Number of daily timed connections
Safety	“” How safe will I feel walking from the parking lot to my destination?	Property crime per capita	“” What is my chance of getting into an accident?	Aviation fatalities per million customers
Experience	“” Can I easily navigate to where I need to go (e.g., data published in GTFS Real Time)?	Quality of agency GTFS Real Time data.	“” If my flight is cancelled, how easy is it for me to get booked on a new flight (e.g., # of steps, # of interactions required)?	% of cancelled flights rebooked to same day
Afford-ability	“” How cost competitive is the entire trip with other travel options?	Average price of gas	“” Are there certain travel times, dates, or destinations where I can get a good deal?	Airline average fare

The Technical Working Group developed a set of options around customer goals and metrics for the TTTF to consider



Overview

- TWG members **reviewed goals and metrics surveyed** across 130+ California and global transit agencies
- TWG members participated in breakout discussions by geography – **Urban, Suburban, and Exurban** – around potential customer goals, metrics, and thresholds for California customers to choose transit
- TWG members then prioritized **customer goals, metrics, and thresholds** that were most likely to drive change, for California to reach transformational ridership



Outcomes

- Example customer goals
- Example customer metrics and performance thresholds

In addition to availability, Technical Working Group results show that other customer considerations are broadly similar across geographies



Reliability: To take transit, customers must trust that it will get them to their destinations on time, and be there when they need to return home



Speed: Across regions, customers expect transit to be competitive with the car on total travel time, and expect transit to come frequently (e.g., every 10 minutes)



Safety: Customers consider safety at every step in their journeys, including reaching transit stops (e.g., safe sidewalks), waiting (e.g., short wait times), and while actively taking transit (e.g., CCTV, presence of attendants)



Experience: Customers expect ease and consistency of use, including how to find and pay for service (e.g., regardless of agency providing service) and portability of benefits (e.g., ability to use senior / youth benefits across systems)



Affordability: To determine cost competitiveness with the car, customers often consider the marginal cost of driving (e.g., tolls, gas, parking) more than the overall cost of car ownership

Customers consider many factors when determining if transit is an attractive choice

Consideration Example customer goal statements

Reliability	<ul style="list-style-type: none">• “I will choose transit when the schedule is consistent and dependable (i.e., transit arrives on time as scheduled or announced, transfers are smooth and won’t lead to unnecessary waiting).”• “I will choose transit when I can trust that it will get me to and from important events (e.g., meetings, concerts, celebrations) on-time.”
Speed	<ul style="list-style-type: none">• “I will choose transit when the door-to-door travel time is competitive with driving to my destination (e.g., 1-1.5X travel time of the car).”• “I will choose transit when it comes frequently enough that I know I won’t have to wait long if I miss it.”
Safety	<ul style="list-style-type: none">• “I will choose transit when I feel safe across the end-to-end journey (e.g., getting to and from transit, waiting alone or on the curb).”
Experience	<ul style="list-style-type: none">• “I will choose transit when I can easily understand how to use it (e.g., payment methods, benefit enrollment, navigation, no special apps to download).”• “I will choose transit when the entire journey is comfortable (e.g., seating, shelter at stops, lighting at stops) and addresses my specific travel needs (e.g., limited mobility, strollers, baggage).”
Affordability	<ul style="list-style-type: none">• “I will choose transit when it is less expensive than driving (e.g., the cost is less than the marginal cost of other modes such as driving, inclusive of parking, tolls, gas).”



For discussion

- How do you **prioritize** across these goals?
- What **elements** within each are most important?

Reliability: What is the performance level that will drive transformational ridership increase?

Example components of reliability

Reliability includes customer expectations of **on-time performance** (e.g., vehicle shows up, arrives as scheduled, completes trip without disruptions), which may **vary by trip purpose** (e.g., customers may require higher reliability for work trips), and the **ability to make necessary connections with ease** (e.g., timed transfers)

Threshold ranges proposed by Technical Working Group (TWG)

- Across all geographies, **customers expect similar reliability of transit** (e.g., 80-95% of trips arrive on-time within 5 minutes)
- Reliability may **vary more by mode than by geography, with higher reliability** (e.g., 90-95%) expected of trains, and slightly lower reliability (e.g., 80-85%) expected of buses

Example performance targets



99% of trips arrive on-time within 5 minutes (rail)¹



96% of trips arrive on-time within 2 minutes (rail)²



96% of trips arrive on-time within 15 minutes (bus)³

1. Hong Kong Mass Transit Railway (MTR) Pledge; 2. SMRT report; 3. Toronto Metrolinx GO Transit

Speed: What is the performance level that will drive transformational ridership increase?

Example components of speed

Speed includes customer expectations of **frequency** (e.g., how frequently transit arrives, both on- and off-peak), **total travel time** (e.g., the total time it takes to complete the trip from start to finish), and total **number of transfers** (e.g., inter- and intra-modal transfers)¹

Threshold ranges proposed by Technical Working Group (TWG)

- Across all geographies, **customers expect similar frequency** for peak times of <15 minutes
- However, **for off-peak times, range of expectations is wider:**
 - Urban geographies expect highest frequency (<15 min)
 - Suburban (<30 min)
 - Exurban (<60 minutes); customers may expect lower frequency for longer trip lengths
- Urban geographies expect speeds to be **more competitive** with the car (e.g., 1-1.25x speed of car) than Suburban and Exurban (e.g., <1.5x speed of car)
- Across all geographies, customers expect fewer than 1 transfer for short trips

Example performance targets



80-100 seconds on-peak frequency (rail)²

4-8 minutes off-peak frequency (rail)²

10 minutes for all areas within 300 meters / 0.18 miles around built-up areas (bus)³

1. Speed also includes components related to reliability and availability, which will be assessed separately 2. Régie Autonome des Transports Parisiens (RATP); 3. The Canton's Public Transport Act of 1988, Zurich Transport Policy. Built-up areas are defined as having at least 300 inhabitants, job, or trainees/students

Safety: What is the performance level that will drive transformational ridership increase?




Example components of safety

- Safety includes both **security** (e.g., potential property and violent offenses against customers) and **safety** (e.g., likelihood of injury / death from transit occurrence)
- **Customer perceptions of security** may be the critical component and may exist **throughout entirety of trip**, including elements outside transit's control

Threshold ranges proposed by Technical Working Group (TWG)

- Safety thresholds may be considered in relation to other forms of transportation (e.g., driving, walking, rideshare)
- Across geographies, transit should be at least **as safe as the street (e.g., walking)**; in Urban and Exurban geographies, customers may expect transit to outperform street safety

Example performance (actuals)

-  99% customers feel safe on board / at station during daytime (rail and bus)¹
-  83% customers feel safe on board / at station during nighttime (rail and bus)¹
-  88 – 94% customers rate satisfied with safety and security (rail and bus)²

1. Singapore Public Transport Council, 2022; 2. Australia Transperth, 2023

Experience: What is the performance level that will drive transformational ridership increase?

Example components of experience

Experience includes customer expectations of transit-related activities, such as **comfort** (e.g., seating), **ease of payment** (e.g., common payment methods, portable benefits), and **ease of wayfinding** (e.g., legibility, network integration, standard passenger information, no special apps to download), for all customers and particularly members of disadvantaged communities

Threshold ranges proposed by Technical Working Group (TWG)

- Across all geographies, customers associate **ease of use** with their **understanding of transit** (e.g., standardized information, knowledge of benefit programs)
- Urban geographies have higher expectations around **comfort** (e.g., 100% of stops expected with shelters/benches) than Suburban and Exurban (e.g., 50 – 80% of stops expected with shelters/benches)
- In areas without infrastructure, lighting and other elements of experience may be more important to customers

Example performance (actuals)



97% Berliners surveyed are satisfied with transit services (e.g., comfort) (rail and bus)¹



97% commuters surveyed are satisfied with SMRT bus service (bus)²

1. CNN, 2023; 2. Singapore Public Transport Council, 2022;

Affordability: What is the performance level that will drive transformational ridership increase?


Example components of affordability


Affordability includes customer expectations of **cost competitiveness with the car**, where customers may consider the **marginal cost of driving (e.g., tolls, gas, parking)** more than the overall cost of car ownership

Threshold ranges proposed by Technical Working Group (TWG)

- **Urban and suburban** customers are likely more price-sensitive, as driving may incur more costs (e.g., higher parking, toll prices)
- Expectations may **vary across trip lengths** – transit could be **more competitive for shorter trips** by saving on potential **“cost of convenience” for parking** (e.g., higher % of total travel time is spent on looking for parking), while customers may be **willing to sacrifice certain aspects of affordability on longer trips for comfort of experience**

Example performance (actuals)

 Transit travel cost is 14 times less expensive than cost of travel via car (including ownership cost) (rail and bus)¹

 Transit is 80% cost to park car (excluding toll fee, congestion fee, ownership) (rail and bus)²

 62 – 72% customers surveyed rate transit as good to excellent value of money (rail and bus)³

1. Massachusetts Institute of Technology report, 2008; 2. Australian Railway Association, New Zealand, 2015; 3. Australia Transperth, 2023



Public comment

Discussion

1. What customer goals should be **prioritized**?
2. What **elements** within each are most important?

Worksheet: How would you modify and prioritize customer goals to reach transformational ridership increase? (1/2)

Consideration Example customer goal statements

Reliability

"I will choose transit when the schedule is **consistent** and **dependable** (i.e., transit arrives on time as scheduled, transfers are smooth and won't lead to unnecessary waiting)."

Please modify here, if applicable:

"I will choose transit when I can **trust** that it will get me to and from **important events** (e.g., meetings, concerts, celebrations) **on-time**."

Please modify here, if applicable:

Speed

"I will choose transit when the door-to-door travel time is **competitive with driving** to my destination (e.g., 1-1.5X travel time of the car)."

Please modify here, if applicable:

"I will choose transit when it comes **frequently** enough that I know **I won't have to wait long if I miss it**."

Please modify here, if applicable:

Prioritization

(Please label as 1-8, with 1 being most important)

Worksheet: How would you modify and prioritize customer goals to reach transformational ridership increase? (2/2)

Consideration Example customer goal statements

Safety

"I will choose transit when I **feel safe across the end-to-end journey** (e.g., getting to and from transit, waiting alone or on the curb)."

Please modify here, if applicable:

Experience

"I will choose transit when I can **easily understand** how to use it (e.g., payment methods, benefit enrollment, navigation)."

Please modify here, if applicable:

"I will choose transit when the entire journey is **comfortable** (e.g., seating, shelter at stops, lighting at stops) and **addresses my specific travel needs** (e.g., limited mobility)."

Please modify here, if applicable:

Affordability

"I will choose transit when it is **less expensive than driving** (e.g., the cost is less than the marginal cost of other modes such as driving, inclusive of parking, tolls, gas)."

Please modify here, if applicable:

Prioritization

(Please label as 1-8, with 1 being most important)

Lunch

30 minutes

Reliability: What is the performance level that will drive transformational ridership increase?

Example components of reliability

Reliability includes customer expectations of **on-time performance** (e.g., vehicle shows up, arrives as scheduled, completes trip without disruptions), which may **vary by trip purpose** (e.g., customers may require higher reliability for work trips), and the **ability to make necessary connections with ease** (e.g., timed transfers)

Threshold ranges proposed by Technical Working Group (TWG)

- Across all geographies, **customers expect similar reliability of transit** (e.g., 80-95% of trips arrive on-time within 5 minutes)
- Reliability may **vary more by mode than by geography, with higher reliability** (e.g., 90-95%) expected of trains, and slightly lower reliability (e.g., 80-85%) expected of buses

Example performance targets



99% of trips arrive on-time within 5 minutes (rail)¹



96% of trips arrive on-time within 2 minutes (rail)²



96% of trips arrive on-time within 15 minutes (bus)³

1. Hong Kong Mass Transit Railway (MTR) Pledge; 2. SMRT report; 3. Toronto Metrolinx GO Transit

Speed: What is the performance level that will drive transformational ridership increase?

Example components of speed

Speed includes customer expectations of **frequency** (e.g., how frequently transit arrives, both on- and off-peak), **total travel time** (e.g., the total time it takes to complete the trip from start to finish), and total **number of transfers** (e.g., inter- and intra-modal transfers)¹

Threshold ranges proposed by Technical Working Group (TWG)

- Across all geographies, **customers expect similar frequency** for peak times of <15 minutes
- However, **for off-peak times, range of expectations is wider:**
 - Urban geographies expect highest frequency (<15 min)
 - Suburban (<30 min)
 - Exurban (<60 minutes); customers may expect lower frequency for longer trip lengths
- Urban geographies expect speeds to be **more competitive** with the car (e.g., 1-1.25x speed of car) than Suburban and Exurban (e.g., <1.5x speed of car)
- Across all geographies, customers expect fewer than 1 transfer for short trips

Example performance targets



80-100 seconds on-peak frequency (rail)²

4-8 minutes off-peak frequency (rail)²

10 minutes for all areas within 300 meters / 0.18 miles around built-up areas (bus)³

1. Speed also includes components related to reliability and availability, which will be assessed separately 2. Régie Autonome des Transports Parisiens (RATP); 3. The Canton's Public Transport Act of 1988, Zurich Transport Policy. Built-up areas are defined as having at least 300 inhabitants, job, or trainees/students

Safety: What is the performance level that will drive transformational ridership increase?




Example components of safety

- Safety includes both **security** (e.g., potential property and violent offenses against customers) and **safety** (e.g., likelihood of injury / death from transit occurrence)
- **Customer perceptions of security** may be the critical component and may exist **throughout entirety of trip**, including elements outside transit's control

Threshold ranges proposed by Technical Working Group (TWG)

- Safety thresholds may be considered in relation to other forms of transportation (e.g., driving, walking, rideshare)
- Across geographies, transit should be at least **as safe as the street (e.g., walking)**; in Urban and Exurban geographies, customers may expect transit to outperform street safety

Example performance (actuals)

-  99% customers feel safe on board / at station during daytime (rail and bus)¹
-  83% customers feel safe on board / at station during nighttime (rail and bus)¹
-  88 – 94% customers rate satisfied with safety and security (rail and bus)²

1. Singapore Public Transport Council, 2022; 2. Australia Transperth, 2023

Experience: What is the performance level that will drive transformational ridership increase?



Example components of experience

Experience includes customer expectations of transit-related activities, such as **comfort** (e.g., seating), **ease of payment** (e.g., common payment methods, portable benefits), and **ease of wayfinding** (e.g., legibility, network integration, standard passenger information, no special apps to download), for all customers and particularly members of disadvantaged communities

Threshold ranges proposed by Technical Working Group (TWG)

- Across all geographies, customers associate **ease of use** with their **understanding of transit** (e.g., standardized information, knowledge of benefit programs)
- Urban geographies have higher expectations around **comfort** (e.g., 100% of stops expected with shelters/benches) than Suburban and Exurban (e.g., 50 – 80% of stops expected with shelters/benches)
- In areas without infrastructure, lighting and other elements of experience may be more important to customers

Example performance (actuals)

-  97% Berliners surveyed are satisfied with transit services (e.g., comfort) (rail and bus)¹
-  97% commuters surveyed are satisfied with SMRT bus service (bus)²

1. CNN, 2023; 2. Singapore Public Transport Council, 2022;

Affordability: What is the performance level that will drive transformational ridership increase?


Example components of affordability


Affordability includes customer expectations of **cost competitiveness with the car**, where customers may consider the **marginal cost of driving (e.g., tolls, gas, parking)** more than the overall cost of car ownership


Threshold ranges proposed by Technical Working Group (TWG)

- **Urban and suburban** customers are likely more price-sensitive, as driving may incur more costs (e.g., higher parking, toll prices)
- Expectations may **vary across trip lengths** – transit could be **more competitive for shorter trips** by saving on potential **“cost of convenience” for parking** (e.g., higher % of total travel time is spent on looking for parking), while customers may be **willing to sacrifice certain aspects of affordability on longer trips for comfort of experience**

Example performance (actuals)

 Transit travel cost is 14 times less expensive than cost of travel via car (including ownership cost) (rail and bus)¹

 Transit is 80% cost to park car (excluding toll fee, congestion fee, ownership) (rail and bus)²

 62 – 72% customers surveyed rate transit as good to excellent value of money (rail and bus)³

1. Massachusetts Institute of Technology report, 2008; 2. Australian Railway Association, New Zealand, 2015; 3. Australia Transperth, 2023

Discussion

1. What are the metrics and thresholds that California should set around each goal category (e.g., Reliability, Speed, Safety, Experience, Affordability)?
2. Should the thresholds vary by geography?

Worksheet: What are the metrics and thresholds that California should set around customer goals to achieve transformational ridership?

Goal categories	Potential metrics	Metrics: What metrics and thresholds should California set around this goal? Should they vary by geography?
Reliability	<i>XX% trips arrive within 5-minutes of scheduled time</i>	Urban: Suburban: Exurban:
Speed	<i>XX-minute frequencies (on-peak, off-peak)</i>	Urban: Suburban: Exurban:
Safety	<i>Customers perceive transit as safer than/as safe as other options</i>	Urban: Suburban: Exurban:
Experience	<i>XX% of transit stops have shelter / lighting / benches</i>	Urban: Suburban: Exurban:
Affordability	<i>Transit costs XX times the marginal cost of driving</i>	Urban: Suburban: Exurban:
Other: <i>Are there other metrics that could be considered by the TTTF?</i>		Urban: Suburban: Exurban:

Given the goals and metrics defined in the previous section, what needs to change for California to meet them?

Objectives of this section

1. Share case studies of transit agencies that achieved transformative performance increases across key metrics
2. Discuss factors directly and indirectly related to transit to enable change
3. Prioritize factors directly and indirectly related to transit that are most likely to drive significant change

Case studies: Six transit agencies provide examples of transformative performance increases across key metrics (1/2)



Transport for London (TFL)

Key factors: Availability, Reliability

Transport for London has achieved high bus mode share by focusing on availability and reliability

Impact: Achieved a bus mode share of 28% of person trips in London and an 80% increase in passenger kilometers between 1999 and 2012 by¹:

- Increasing availability of buses (94% of Londoners live within 400 meters of a bus stop)
- Improving reliability (>20% increase in on-time service between 1999-2011)



Melbourne's metropolitan rail network

Key factors: Reliability, Speed

Metro Trains Melbourne took over as the contractor in 2009

Impact: Improved punctuality from <85% in 2009 to 92% in 2024, while increasing capacity from 56K trains in Dec. 2009 to 67K trains in Dec. 2023 by²:

- Improving reliability of the network's assets
- Simplifying the timetable
- Introducing a new automated system
- Adopting an organization-wide every-minute-counts philosophy



Singapore Mass Rapid Transit system

Key factors: Reliability, Speed

SMRT undertook a major effort from 2011-2015 to renew and improve the North-South and East-West Lines

Impact: Reduced train withdrawal rate³ from 3.19 in 2011 to 0.99 in 2015; reduced service delays⁴ from 1.8 in 2011 to 0.7 in 2015 by:

- Upgrading software
- Improving the signaling system to reduce power and signaling faults
- Refurbishing aging components to improve reliability

1. Roads Task Force – Technical Note 7; 2. [Melbourne Metro](#); 3. [Mobility Lab](#); 4. [SMRT](#)

Case studies: Six transit agencies provide examples of transformative performance increases across key metrics (2/2)



NJ TRANSIT

Key factors: Availability, Speed

NJ TRANSIT has grown ridership by focusing on increasing coverage of train lines

Impact: Increased ridership by over 100% on select lines through¹:

- Launching one-seat, direct rail service into Manhattan on the Morris-Essex Lines in 1996
- Providing one-seat, direct rail service into Manhattan on the Montclair-Boonton Line in 2002 with construction of Montclair Connection



METRO Harris County (Houston)²

Key factors: Availability, Speed

In 2015, METRO implemented the New Bus Network, a cost-neutral bus network redesign focused on increasing frequency

Impact: Houston was one of the few US systems that saw an increase in ridership in 2010s (3.3M in first half of 2016)³, through:

- Replacing peak-oriented low-frequency radial network with high-frequency all-times grid, allowing for simplified, more direct service
- Doubling the number of routes with headways of 15 minutes or fewer



Metropolitan Transportation Authority (MTA)

Key factors: Experience

In 2020, New York MTA established contactless fare payment, with the intention of improving the transit experience for all riders – including infrequent riders, such as tourists – and increasing operational efficiency⁴

Impact: Reached over 1B taps by 2023⁵

- Study found that 88% of surveyed riders expect to be able to use contactless payment for trains and buses⁶

1. NJ TRANSIT ridership data; 2. NACTO Houston Case study; 3. Mobility Lab; 4. JP Morgan; 5. NY governor; 6. Visa

A host of enablers will be necessary to meet the goals and metrics for transformational ridership (1/2)

Potential enablers *directly* related to transit, in order suggested by the TWG

Evaluation metrics	Forward-looking metrics (e.g., excessive focus on farebox recovery ratio to determine investment levels can lead to a cycle of service cuts and further reductions in ridership / fares)
Service	Increased service level to be competitive against cars (e.g., coverage, frequency, speed, reliability)
Workforce	Larger workforce and improved workforce treatment to support increased service level (e.g., increased attractiveness of transit jobs through driver compensation, provision of workforce housing)
Road prioritization	Collective adoption of authority and right of first refusal to enable transit prioritization (e.g., bus-only lanes)
Transit legislation	Focused segregation of Transportation Development Act (TDA) funds through Local Transportation Fund (LTF), and State Transit Assistance (STA) fund
Transit infrastructure	Improved transit infrastructure (e.g., basic connectivity statewide, open payment hardware statewide, signage for transit stops, power / utility grid capacity)
Funding / capital programs	Available, flexible funding and investment (e.g., support for increased service levels, procurement of buses, ZEVs, and utility grids, maintenance of current systems, paratransit and on-demand services)



For discussion

- What changes should be added to / removed from this list?
- What are the 2-3 most important changes to prioritize for investigation by the task force?

A host of enablers will be necessary to meet the goals and metrics for transformational ridership (2/2)

Potential enablers *indirectly* related to transit, in order suggested by the TWG

Land-use	Alignment of high-frequency transit with housing and development goals (e.g., RHNA, housing affordability)
Pricing	Pricing of externalities (e.g., parking, tolls)
State alignment	Alignment from California policymakers on transit goals (e.g., policy alignment, resourcing, and capacity to deliver with time-bound goals)
Governance and policies	Alignment from governance authorities (e.g., board members) with transit-promoting incentives (e.g., policies to reevaluate resource allocation to areas that are most in need, policies favoring transit against other modes)
Demographic shifts	Changing customer needs and ability to serve more diverse population (e.g., ages, origins / destinations)
Grants / Procurements	State purchasing schedules / grant consolidation, which could be categorized by agency sizes (to reduce challenges for small agencies to access funding)
Cultural norm shifts	Change in cultural norms (e.g., change management to encourage Californians to take transit)
Standardization	Standardization across California on terminologies and eligibility programs to reduce customer confusion



For discussion

- What changes should be added to / removed from this list?
- What are the 2-3 most important changes to prioritize for investigation by the task force?



Public comment

Discussion

1. Are there any changes that should be added or removed from the lists?
2. What are the 2-3 most important changes directly related to transit that would drive significant change and should be further investigated?
3. What are the 2-3 most important changes indirectly related to transit that would drive significant change and should be further investigated?

Worksheet: How would you modify and prioritize what enablers *directly* related to transit, should be investigated by TTTF? (1/2)

Enablers *directly* related to transit

Evaluation metrics: Forward-looking metrics (e.g., excessive focus on farebox recovery ratio to determine investment levels can lead to a cycle of service cuts and further reductions in ridership / fares)

Please modify here, if applicable:

Service: Increased service level to be competitive against cars (e.g., coverage, frequency, speed, reliability)

Please modify here, if applicable:

Workforce: Larger workforce and improved workforce treatment to support increased service level (e.g., increased attractiveness of transit jobs through driver compensation, provision of workforce housing)

Please modify here, if applicable:

Road prioritization: Collective adoption of authority and right of first refusal to enable transit prioritization (e.g., bus-only lanes)

Please modify here, if applicable:

Prioritization

(Please label as 1-8, with 1 being most important)

Worksheet: How would you modify and prioritize what enablers *directly* related to transit, should be investigated by TTF? (2/2)

Enablers *directly* related to transit

Transit legislation: Focused segregation of Transportation Development Act (TDA) funds through Local Transportation Fund (LTF), and State Transit Assistance (STA) fund

Please modify here, if applicable:

Transit infrastructure: Improved transit infrastructure (e.g., basic connectivity statewide, open payment hardware statewide, signage for transit stops, power / utility grid capacity)

Please modify here, if applicable:

Funding / capital programs: Available, flexible funding and investment (e.g., support for increased service levels, procurement of buses, ZEVs, and utility grids, maintenance of current systems, paratransit and on-demand services)

Please modify here, if applicable:

Other: *If there are other goals the TTF should consider, include them below*

Prioritization

(Please label as 1-8, with 1 being most important)

Worksheet: How would you modify and prioritize what enablers, *indirectly* related to transit, should be investigated by TTTF? (1/2)

Enablers *indirectly* related to transit

Land-use: Alignment of high-frequency transit with housing and development goals (e.g., RHNA, housing affordability)

Please modify here, if applicable:

Pricing: Pricing of externalities (e.g., parking, tolls)

Please modify here, if applicable:

State alignment: Alignment from California policymakers on transit goals (e.g., policy alignment, resourcing, and capacity to deliver with time-bound goals)

Please modify here, if applicable:

Governance and policies: Alignment from governance authorities (e.g., board members) with transit-promoting incentives (e.g., policies to reevaluate resource allocation to areas that are most in need, policies favoring transit against other modes)

Please modify here, if applicable:

Prioritization

(Please label as 1-9, with 1 being most important)

Worksheet: How would you modify and prioritize what enablers *indirectly* related to transit, should be investigated by TTTF? (2/2)

Enablers *indirectly* related to transit

Demographic shifts: Changing customer needs and ability to serve more diverse population (e.g., ages, origins / destinations)

Please modify here, if applicable:

Grant / procurement consolidation: State purchasing schedules / grant consolidation, which could be categorized by agency sizes (to reduce challenges for small agencies to access funding)

Please modify here, if applicable:

Cultural norm shifts: Change in cultural norms (e.g., change management to encourage Californians to take transit)

Please modify here, if applicable:

Standardization: Standardization across California on terminologies and eligibility programs to reduce customer confusion

Please modify here, if applicable:

Other: *If there are other goals the TTTF should consider, include them below*

Prioritization
(Please label as 1-9, with 1 being most important)



Public comment

Next steps

We would appreciate your thoughts on the below topics:

- ① Levels and types of service required to meet ridership outcomes
- ② Coordination between agencies (e.g., service, fares, scheduling)
- ③ Additional feedback you have on today's discussions (availability, goals and metrics, topics to investigate)

We will follow up separately to gather your responses by April 29th, which will inform the work of the Technical Working Group (TWG) and content for the next TTTF meeting 4 (scheduled for Monday, June 17th, 10:30AM-3PM PT, San Francisco Bay Area Metro Center)

If you would like to share any reports, data, studies, and/or surveys which might be relevant to this work, please send them to SB125Transit@calsta.ca.gov

Technical Appendix

Methodology | Job accessibility analysis

Methodology



1. Determined the total number (and location) of jobs and the total number (and location) of workers, by 250m X 250m grid cell and tract, in California, using US Census data
2. (Transit share) Determined the number of jobs accessible by automobile and transit across multiple time periods (e.g., 90 minutes, 60 minutes, 45 minutes), using Conveyal software to simulate 1,200 random departure times during the weekday morning peak period and using the 50th percentile travel time for each potential trip to account for time spent waiting for transit
3. (Transit share) Divided jobs accessible by transit (see above) by total regional jobs (all jobs in San Diego County), to determine the share of all regional jobs accessible by transit; Classified into 5 categories (<1%, 1-10%, 10-20%, 20-40%, >40%)
4. (Travel shed) Chose a central point of interest (District 11 office) and determined the areas that are within a [30-, 45-, 60-, 120-minute] trip by both auto and transit modes, using Conveyal software

Interpretation



Transit share: The percent of regional jobs (e.g., jobs within the county) that are accessible by transit or auto within a certain timeframe (e.g., 90 minutes, 60 minutes, 45 minutes)

Travel shed: The shaded areas represent destinations residents can access from a central point of interest (e.g., Caltrans District 11 office) within a certain timeframe (e.g., 1-hour), by transit and by auto

Sources



2021 US Census LEHD Origin-Destination Employment Statistics (LODES) worker and job data

Conveyal Software (Analysis performed March 8-14, 2024)

Limitations: Job data does not include jobs in informal economy; Job data only includes “regional” jobs, or those within the county; Does not account for international travel between San Diego County and Mexico

Task Force feedback: What are the main challenges and constraints that need to be investigated and addressed to achieve transformational ridership by 2045? (1/2)

Takeaways on main challenges and constraints

Suboptimal end-to-end experience for customers: lack of seamless transit experience across routes/agencies/modes^{1,2}; decline in cleanliness due to opioid and narcotic drug crises³; lack of reliable, frequent, and direct options in public transit⁴

Concerns about security: increase in number of individuals engaging in illicit activities³; increase in number of individuals who experience homelessness in transit environments^{5,6}

Substandard service levels: insufficient capacity to meet the increase in service (e.g., workforce, supply chain support)⁷; insufficiently addressing transit workforce needs²

Potential analyses that will be performed

TTTF3 (Customer experience): e.g., analysis on goals and metrics related to customer experience

TTTF4 (Service levels): e.g., analysis of service level changes such as frequency and reliability and the potential impact on ridership

TTTF4 (Service levels): e.g., analysis of service level changes such as frequency and reliability and the potential impact on ridership

TTTF5 (OpEx): e.g., analysis on capacity (such as workforce) required to meet thresholds

Source: 1. Submission from UCLA Institute of Transportation Studies on 3/8: CTF Homework 3_18 – Matute 2. Submission from Seamless Bay Area on 3/18: Homework Assignment – SB 125 Meeting 2, Feb 29 3. Submission from LA Metro on 3/18: LA Metro Transit Transformation Task Force Response 4. Submission from UCLA Institute of Transportation Studies on 3/8: Transit & Traffic: A Primer (2023) 5. Submission from UCLA Institute of Transportation Studies on 3/8: Homelessness in Transit Environments: Survey Findings (2021) 6. Submission from UCLA Institute of Transportation Studies on 3/8: & Transit Agency Responses to Homelessness (2021) 7. Submission from California Transit Association on 3/18;

Task Force feedback: What are the main challenges and constraints that need to be investigated and addressed to achieve transformational ridership by 2045? (2/2)

Takeaways on main challenges and constraints

Changing environment and employment patterns: shift in residential developments away from major city centers¹; implication of climate change (e.g., extreme heat causing slower speed and flooded tunnels)²

Constraints in funding for transit : subsidization of driving³; inadequate funding for operations and capital⁴; prioritization of capital programs over expanding service throughout the region⁵; cost and timelines for transit project⁶; fragmented funding that does not support a seamless network⁷

Less accommodating policy environment: lack of political support/advocates for transit³; local land use policies that prevent transit oriented developments¹

Increase in car ownership: increase in car ownership which contributed to a decline in ridership⁸ and decrease in transit competitiveness⁹; increase in remote work³; decline in ridership from traditionally frequent users such as Asians and Hispanics⁴

Potential analyses that will be performed

TTTF4 (Service levels): e.g., analysis of service level changes such as frequency and reliability and the potential impact on ridership

TTTF6 (CapEx): e.g., financial analysis on CapEx spend and potential savings from new strategy

TTTF7 (Funding): e.g., TDA, analysis of best-in-class example case studies on how other regions allocate funding

To be further investigated outside of TTTF meetings (e.g., TWG meetings, SME interviews)

Source: 1. Submission from Napa Valley Transportation Authority on 3/18: Transit Transformation Task Force (TTTF) Meeting 2 follow-up 2. Submission from UCLA Institute of Transportation Studies on 3/8: CTF Homework 3_18 – Matute 3. Submission from Southern California Association of Government on 3/18: SCAG TTTF Responses to Questions March 2024 4. Submission from UCLA Institute of Transportation Studies on 3/8: Transit Blues in the Golden State: Analyzing Recent California Ridership Trends (2020) 5. Submission from Move LA on 3/18: TDA Reform: Unmet Needs 6. Submission from Seamless Bay Area on 3/18: Homework Assignment – SB 125 Meeting 2, Feb 29 7. Submission from Bay Area Metro on 3/18 8. Submission from UCLA Institute of Transportation Studies on 3/8: Vehicle Ownership Trends and Their Implications for Transit Ridership (2020) 9. Submission from UCLA Institute of Transportation Studies on 3/8: & Transit Agency Responses to Homelessness (2021)

Task Force feedback: What other goals do you view as critical outcomes for the work of the Transit Transformation Task Force (TTTF)?

Takeaways regarding other goals viewed as critical outcomes







When this will be addressed

<p>Experience: improved access to destinations by transit¹; real-time information for customers²; transit speed and reliability³</p>	<p>TTTF3 (Customer experience), TTTF4 (Service levels)</p>
<p>Funding: reliable and sustainable funding³; funding required to realize the vision of the future⁶</p>	<p>TTTF7 (Funding)</p>
<p>Agency coordination: integration of different agencies' operations (e.g., single fare/payment method)⁵</p>	<p>TTTF4 (Service levels), TTTF5 (Opex), TTTF7 (Funding)</p>
<p>Equity: job creation and economic development opportunities for BIPOC communities (in construction, operations, small businesses)¹; equity integrated into all aspects of the Task Force⁴; improvement of transit infrastructure in underserved areas⁵</p>	<p>To be addressed across all TTTF meetings, throughout the effort</p>
<p>Community: creation of human-centered communities in urban, suburban, and rural settings to increase mobility options⁵; healthy and vibrant communities³</p>	
<p>Environment: reduced regional greenhouse gas emissions¹; development of infrastructure that is resilient to the impacts of climate change⁵</p>	<p>To be further investigated outside of TTTF meetings (e.g., TWG meetings, SME interviews)</p>

Source: 1. Submission from LA Metro on 3/18: LA Metro Transit Transformation Task Force Response 2. Submission from California Transit Association on 3/18 3. Submission from Bay Area Metro on 3/18 4. Submission from Public Advocates on 3/18 5. Submission from Southern California Association of Government on 3/18: SCAG TTTF Responses to Questions March 2024 6. Submission from Seamless Bay Area on 3/18: Homework Assignment – SB 125 Meeting 2, Feb 29

We surveyed 130+ agencies globally for their goals and metrics to determine what drives transit competitiveness against other modes (1/2)








Select examples of goals and metrics

Goals	Example metrics	Target	Actual	Mode	Agency
Reliability	% punctuality of train departure times	96% within 2 minutes of schedule weekly	95%	Rail	 ¹
	% of General Ticketing Machine Reliability	98% weekly	99.9%	Rail	 ¹
	Mean kilometer between failures (MKBF) (in train km)	N/A	16.45M ²	Rail	 ³
	# of delays over 5 minutes (annual count)	N/A	10 (2020)	Rail	 ³
Speed	Average travel speeds for each class of bus service compared to benchmark	30% improvement from previous year	10.8 mph (2019)	Bus	 ⁴
	Frequency of service (all areas within 300 meters / 0.18 miles around built-up areas) ⁵	Bus: 10 minutes ⁶ Rail: 30 minutes	7.5 minutes (2012)	Mix	 ⁵

1. [Singapore Mass Rapid Transit](#); 2. 16.45 million kilometers is around 10.22 million miles. New York City Transit recorded ~10,000 miles in 2020 (Source: [The City of Transit, 2023](#)); 3. [Taipei MRT](#) (source: [Taiwan News, 2023](#), [Taiwan News, 2022](#)); 4. [Los Angeles County Metropolitan Transportation Authority](#); 5. [Zurich Public Transport \(VBZ\), 2012](#). Built-up areas are defined as having at least 300 inhabitants, job, or trainees/students; 6. [Mineta Transportation Institute, 2001](#)

We surveyed 130+ agencies globally for their goals and metrics to determine what drives transit competitiveness against other modes (2/2)

Select examples of goals and metrics

Goals	Example metrics	Target	Actual	Mode	Agency
Safety	% of customers who receive information on incidents at stations	95%	98.4% (2021)	Rail	 ²
	<30 complaints per 1,000,000 boardings regarding safety	30 or fewer	Monthly 23.2	Mix	 ³
	Injury rate per million boardings	N/A	3.7 (2022)	Mix	 ⁴
Experience	% of month when cool, pleasant, and comfortable train environment is maintained at or below 26°C (~79°F)	97.5%	99.9% (2022)	Rail	 ⁵
	% of achieving daily cleaning of train compartments per month	99%	99.9% (2022)	Rail	 ⁵
	% of welcome staff in stations trained to assist people with mental disabilities	90% by 2022	86% (2021)	Mix	 ¹
Affordability	% of eligible population utilizing free or discounted MUNI fare programs	N/A	58% (2022)	Mix	 ⁶

1. [Paris Regie Autonome des Transports Parisiens](#); 2. [Madrid Metro](#); 3. [Toronto GO Transit](#); 4. [Vancouver TransLink System](#); 5. [Hong Kong Mass Transit Railway](#)
6. [San Francisco Municipal Transportation Agency](#)