State of Mobility and Congestion

North Bayshore
Congestion Pricing Feasibility Study

FINAL

April 2021

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Contents

Image source: Sundry Photography

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Project overview

What is congestion pricing?

- Congestion pricing charges motorists a **user fee to drive** in specific, congested areas during periods of peak demand.
- This price **incentivizes some travelers** to change travel behavior and/or mode – a small shift creates huge benefits.
- **Revenue** is commonly used to support more and better travel options, further catalyzing congestion reduction.

Image source: Tony Webster, CC BY SA 2.0

What is congestion pricing?

Congestion pricing has many flavors…

- Cordon pricing
- Area pricing
- Corridor pricing
- Vehicle miles traveled (VMT) fee
- Fleet pricing
- Express lanes
- Parking pricing
- License plate-restricted zones

Image source: Flickr user mroach, CC BY SA 2.0

What is congestion pricing?

- **Cordon pricing:** Vehicles pay a fee when they *cross* a boundary into a specific zone.
- **Area pricing:** Vehicles pay a fee for driving *inside* a specific zone.
- **Corridor pricing:** Vehicles pay a fee when they use a specific stretch of roadway, such as a major arterial or highway.
- **Fleet pricing:** Certain vehicle types, such as ride-hailing vehicles, pay a fee to drive in a specific zone.
- **VMT pricing:** Vehicles pay a fee based on the distance they travel in a specific zone.
- **License plate-restricted zones:** Only certain vehicles are permitted to travel in a specific zone.
- **Express lanes:** Vehicles pay a fee to access uncongested lanes on a highway.
- **Parking pricing:** Vehicles pay a fee to park in a specific zone, thereby reducing demand for travel to that zone.

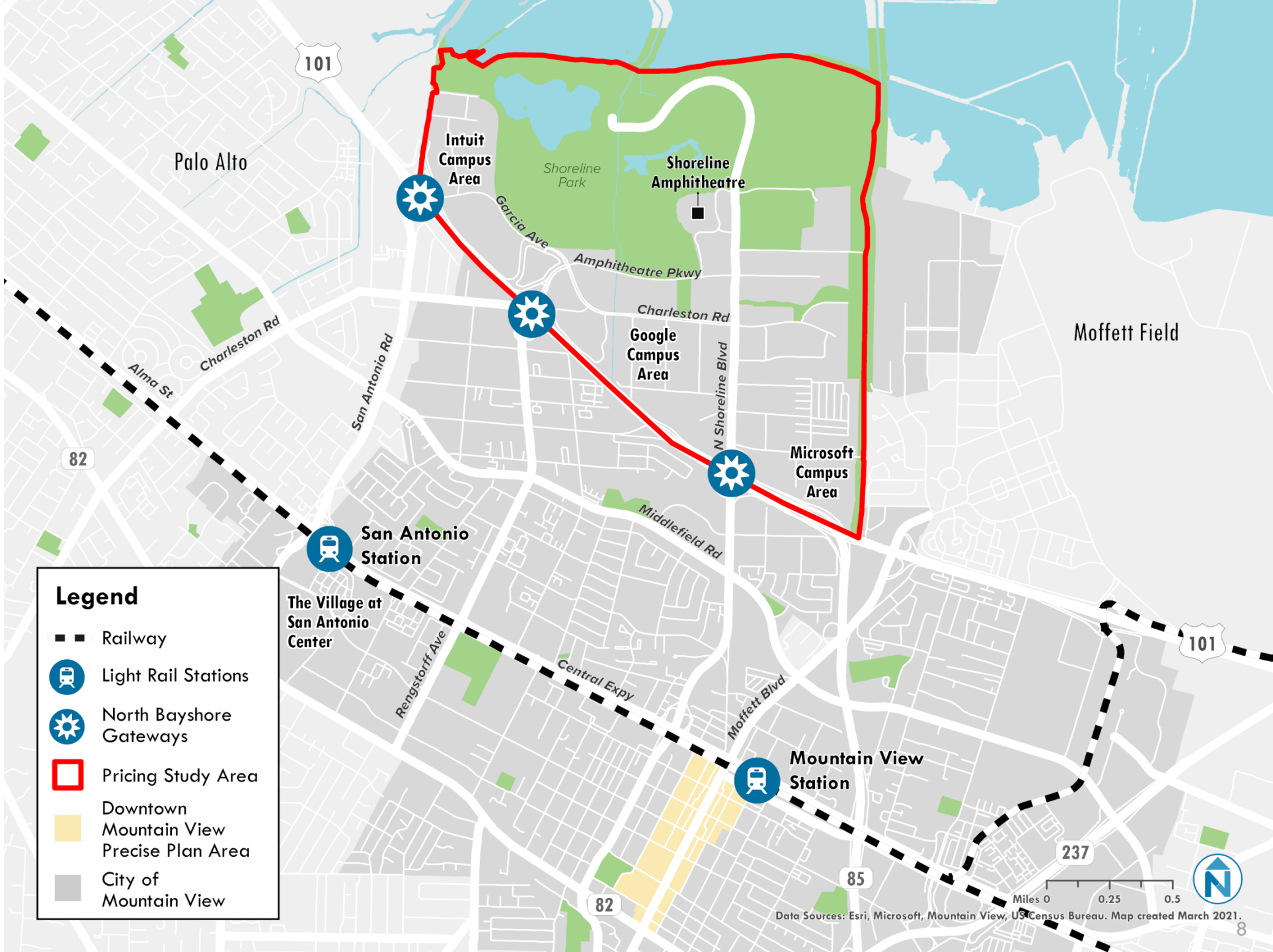
Where is congestion pricing happening?

Cordon, corridor, and area pricing programs have existed outside the US for decades.

Many North American cities are studying congestion pricing.

Goals, tools, and policies vary from city to city.

Study area


Palo Alto
Moffett Field
101
82
85
237
Intuit Campus Area
Shoreline Park
Shoreline Amphitheatre
Garcia Ave
Amphitheatre Pkwy
Charleston Rd
Google Campus Area
N Shoreline Blvd
Microsoft Campus Area
Middlefield Rd
San Antonio Rd
Alma St
San Antonio Station
The Village at San Antonio Center
Rengstorff Ave
Central Expy
Moffett Blvd
Mountain View Station
Legend
Railway
Light Rail Stations
North Bayshore Gateways
Pricing Study Area
Downtown Mountain View Precise Plan Area
City of Mountain View
Miles 0
0.25
0.5
N
Data Sources: Esri, Microsoft, Mountain View, US Census Bureau. Map created March 2021.

Scope of work

1

Assess overall feasibility

- What is the congestion problem in North Bayshore?
- How and when can congestion pricing complement other vehicle trip reduction efforts?
- Can congestion pricing support district goals?

2

Evaluate pricing tools and program elements

- What tool is most effective?
- Where does pricing occur?
- When does pricing occur?
- Who is priced?
- How does one pay?
- What can revenue fund?

3

Identify next steps

- Legal and regulatory
- Phased action plan
- Lead and support partners

COVID-19

- COVID-19 has significantly **reduced vehicle traffic** in the region and North Bayshore.
- Travel behavior and commutes have also changed – **more work-from-home** and less transit use.
- This study **assumes a "new normal"** – in time, vehicle trips will return as the pandemic subsides and district growth continues.
- The **time to plan is now** and be prepared with all potential congestion mitigation tools.
- This study will identify appropriate **thresholds for implementation**.

Image source: Nelson\Nygaard

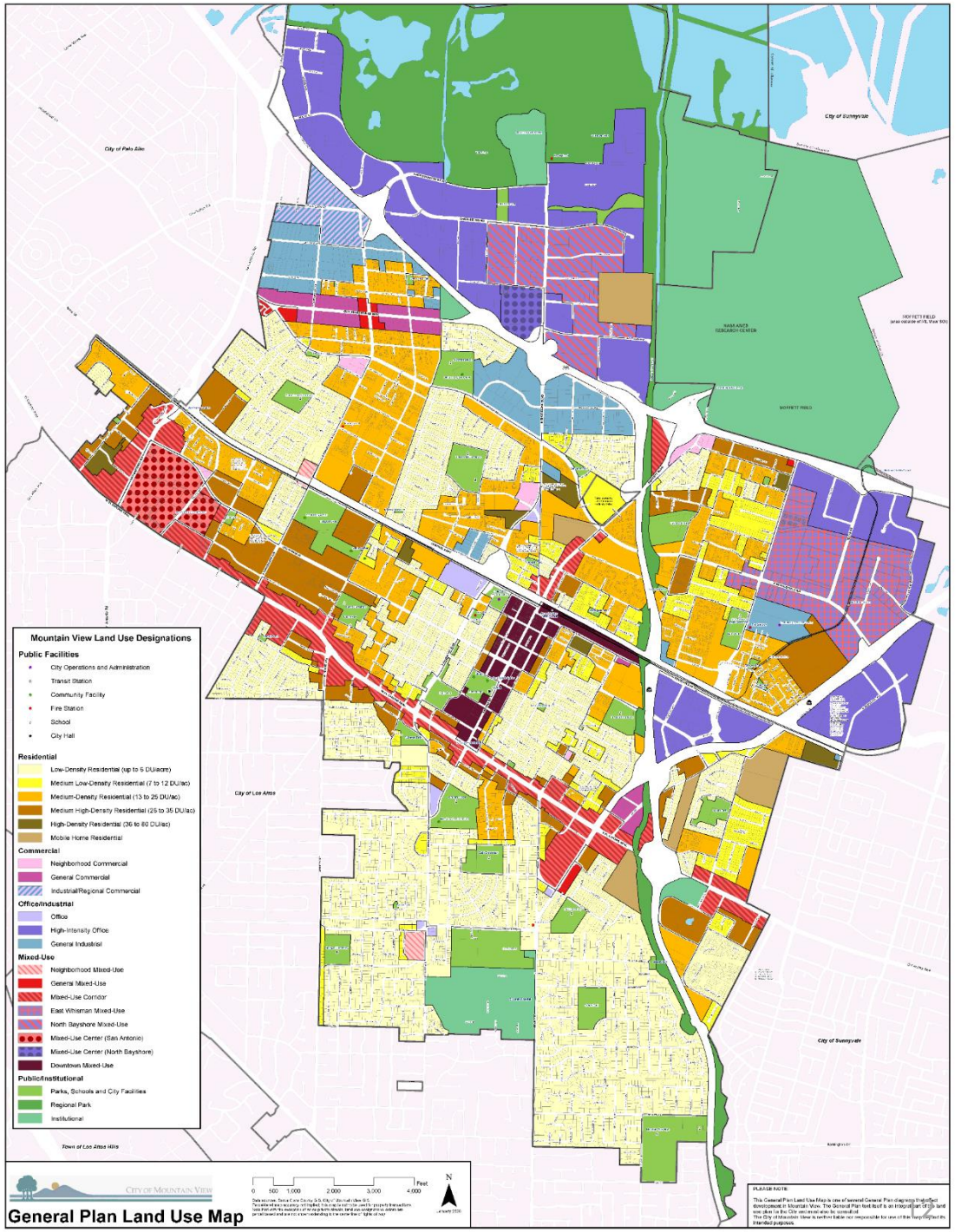
2

Planning context

PLANNING CONTEXT

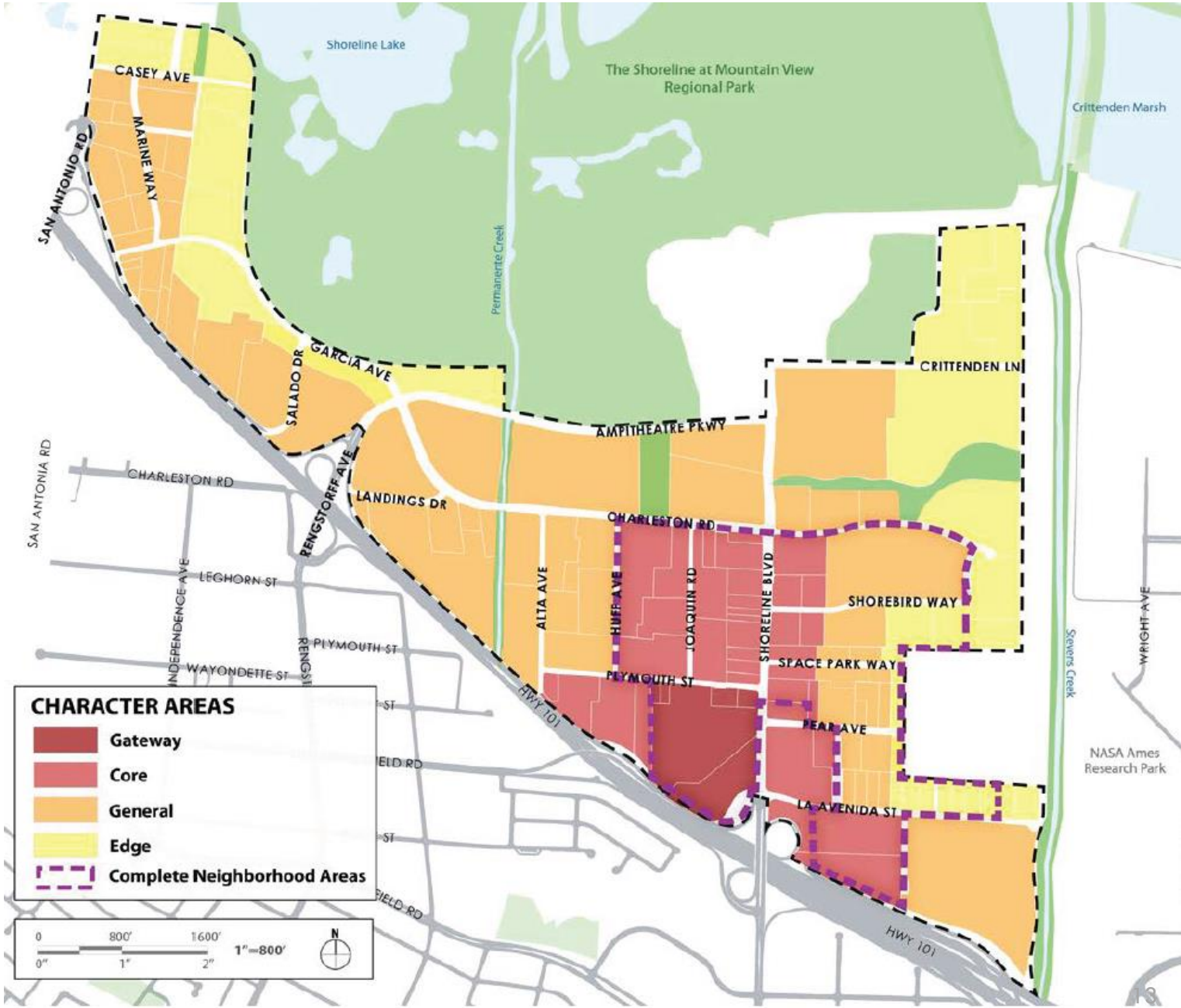
Guiding plans

- Mountain View + North Bayshore
  - 2030 General Plan
  - North Bayshore Precise Plan
  - Gateway Master Plan
  - Google North Bayshore Preliminary Master Plan
  - North Bayshore TDM Guidelines
  - Transit Center Master Plan
  - Bicycle + Pedestrian Master Plans
  - Shoreline Transportation Study
  - Shoreline Blvd. Corridor Study
  - Development applications + site plans
- Regional
  - Plan Bay Area
  - Silicon Valley Express Lanes Program
  - San Mateo 101 Express Lanes Project



NB Precise Plan

- Precise Plan approved in 2014.
- Vision Themes:
  - Innovation and sustainability
  - Habitat protection
  - Neighborhood design
  - Mobility
- Amended in 2017 to allow up to 9,850 residential units.



Map source: 2017 North Bayshore Precise Plan, p. 55

NB Precise Plan

- Mode share targets
  - 45% single-occupancy vehicle
- Vehicle trip cap
  - 2014 Precise Plan
    - 18,850 total inbound a.m. and 16,630 p.m. vehicle trips at the three gateways
  - 2017 Precise Plan
    - Bi-directional vehicle trips at each of the three gateways in the a.m. and p.m. peak hours
  - 2021 Circulation Plan
    - Proposed updates to trip cap policies under development

NB Precise Plan

- Priority transportation improvements:
  - Enhanced grid connectivity
  - Robust bike and pedestrian facilities
  - Shoreline Blvd. transit-only lane and protected bike lanes
  - US-101 to Shoreline Blvd. northbound off-ramp at La Avenida St.
  - New pedestrian and bike bridge over US-101
  - Rengstorff ramp realignment

Map source: 2017 North Bayshore Precise Plan, pp. 233-234, updated to reflect latest planning

NB Precise Plan

- Other transportation policy:
  - Implement TDM requirements and programs
  - Establish a TMA
  - Eliminate minimum parking requirements and set parking maximums
  - Develop new street typologies to support active transportation and transit
  - Identify key transportation infrastructure improvements
  - Develop complete bicycle network
  - **Establish congestion pricing as a tool for further study**

Image source: 2017 North Bayshore Precise Plan, p. 153

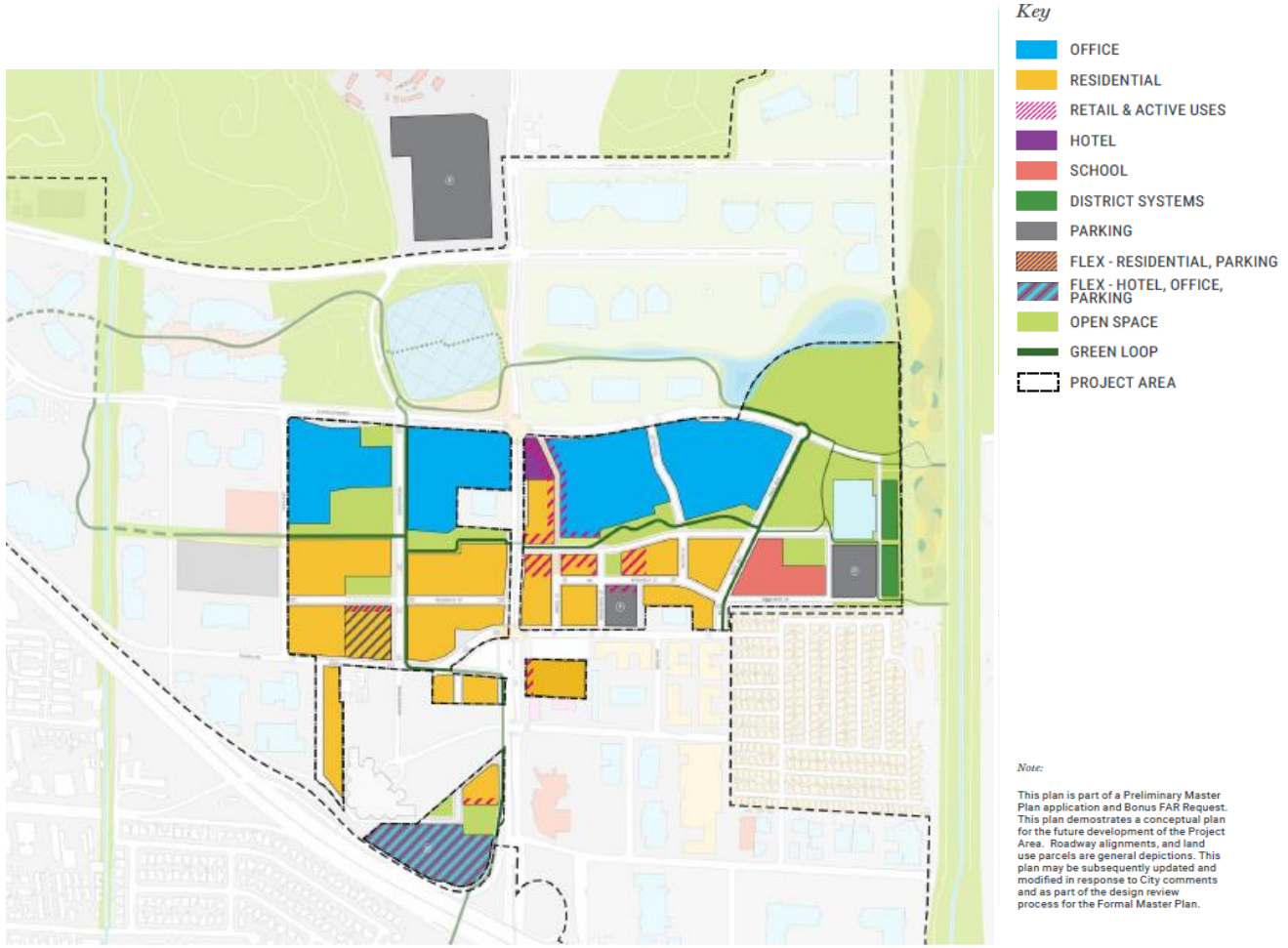
Congestion Pricing

*"If the employer TDM program requirement does not reduce the number of vehicle trips to less than the established a.m. peak period vehicle trip cap, **the City may implement a congestion pricing system.**"*

- 2017 North Bayshore Precise Plan, p. 247

Google NB Master Plan

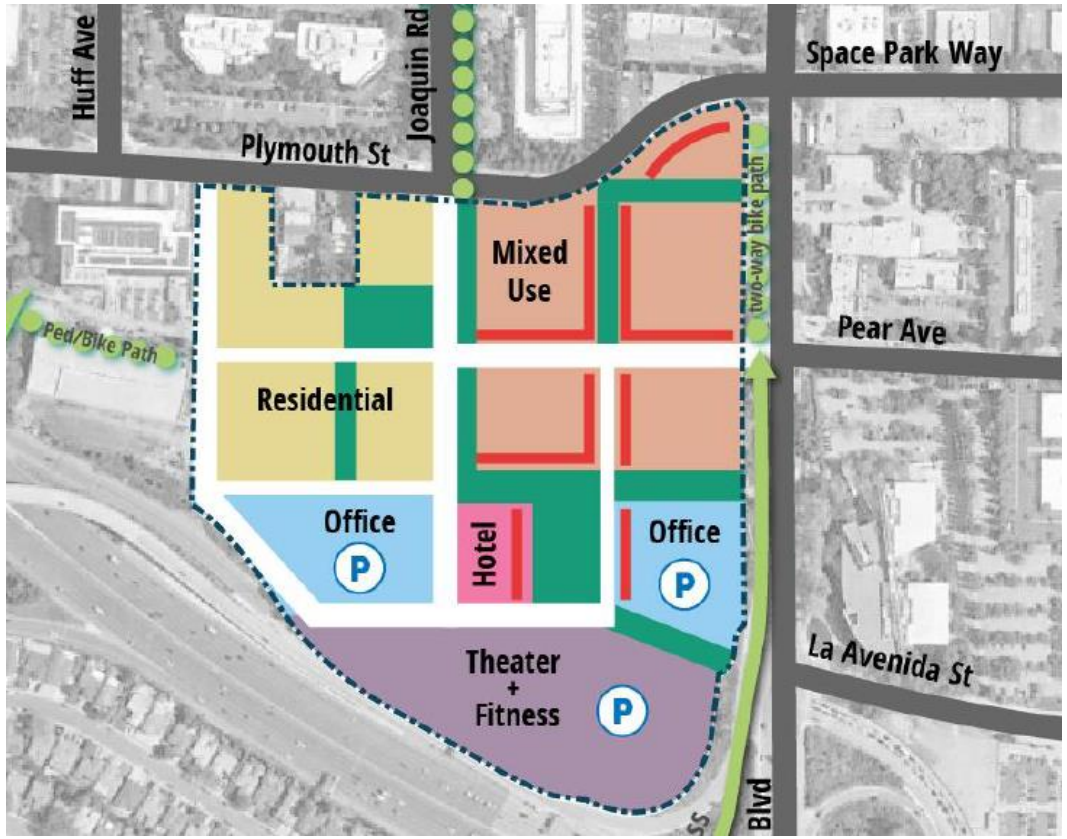
- 7,000 residential units (1,400 affordable units)
- 400 hotel rooms
- 3.15 million SF of office, including 1.3 million SF of new office space
- 285,000 SF of retail/community space
- $35 million towards Charleston transit corridor
- Four-acre open space and elementary school site
- ±8,230 maximum district parking stalls



Source: Google North Bayshore Preliminary Master Plan – February 2021, p. 33

Gateway Master Plan

- The Gateway district is envisioned as a mixed-use neighborhood and landmark entrance to North Bayshore.
- Major landowners are Google and SyWest.
- Latest SyWest proposal is for over 2,000 residential units.
- Plans are still under development and consideration by City Council.



Sources: City of Mountain View Gateway Master Plan Environmental Planning Commission Staff Report. October 16, 2019. p. 18; Sywest

Study area


San Francisco Bay
Terminal Blvd
Shoreline Lake
Shoreline Park
San Antonio Rd
101
Intuit Campus Area
San Antonio Rd Gateway
Shoreline Amphitheatre
North Rd
Garcia Ave
Amphitheatre Pkwy
Stierlin Ct
N Shoreline Blvd
Palo Alto
E Charleston Rd
Rengstorff Ave Gateway
Charleston Rd
Google Campus Area
Moffett Field
San Antonio Rd
Rengstorff Ave
Plymouth St
101
Santiago Villa Mobile Homes
La Avenida St
Shoreline Blvd Gateway
Microsoft Campus Area
W Middlefield Rd
Potential North Bayshore Congestion Pricing Area
North Bayshore Gateways
Potential Pricing Area
City of Mountain View
Miles 0
0.25
0.5
Data Sources: Esri, Microsoft, Mountain View, US Census Bureau. Map created March 2021.
85

Major employers

- Google
- Intuit
- Microsoft

Other key destinations

- Shoreline Park and trails
- Shoreline Amphitheatre
- Century Cinema
- Computer History Museum
- Retail and small businesses
- VTA North Yard
- Santiago Villa

Trip-making by destination

- Work trips are the dominant trip type purpose in the peak hour.
- Tech workers tend to commute during the peak periods. PM trips are more dispersed.
- Non-tech worker commutes and non-commute trips are spread to a greater degree.
- Parks and entertainment:
  - Golfers visit throughout day
  - Shoreline Park and Computer History Museum visitors mostly arrive in late morning and afternoon
  - Movie theatergoers arrive in late afternoon/evening
  - Other trips such as lunch outings, contractor visits, and business travel, occur throughout the day

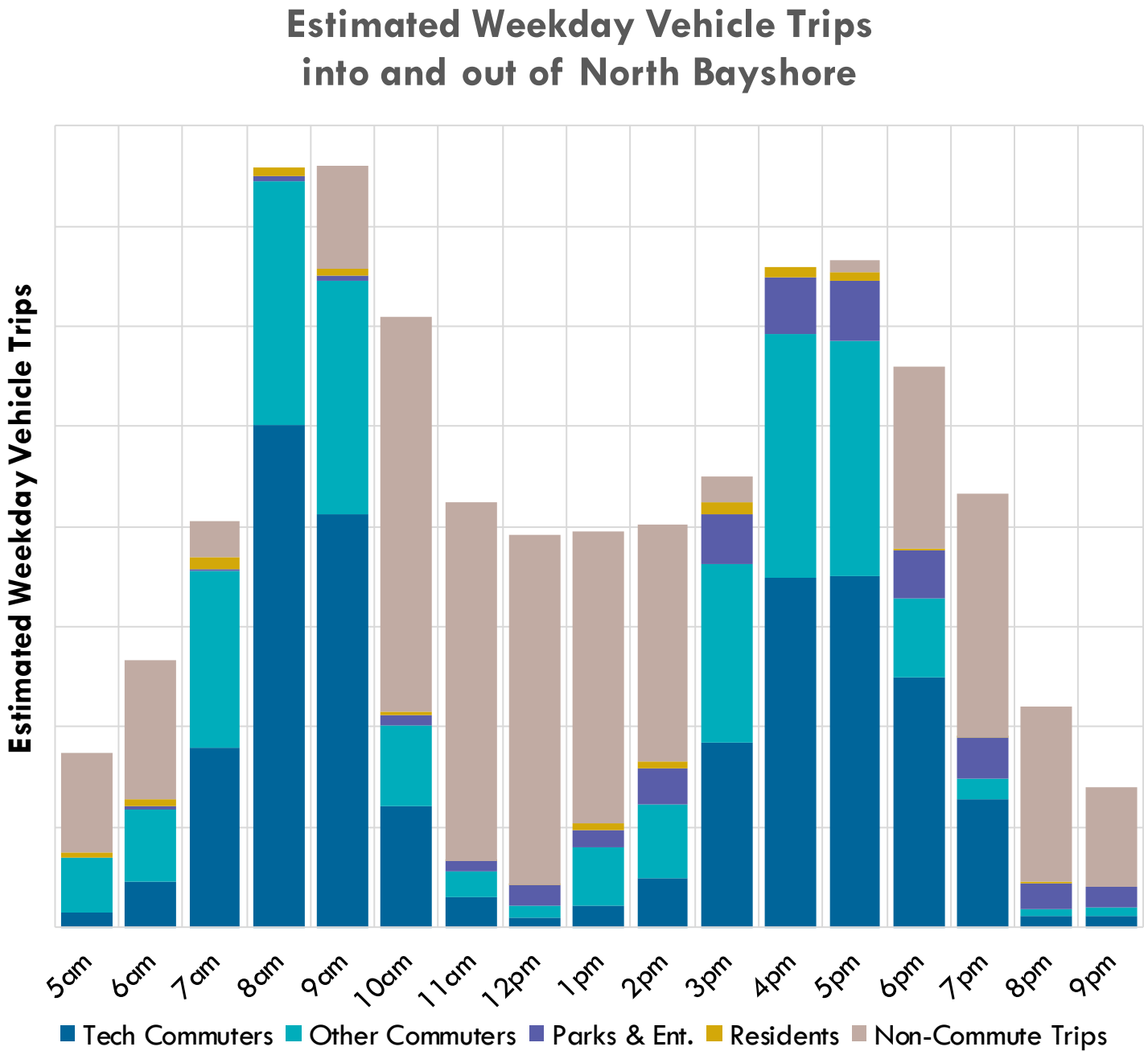
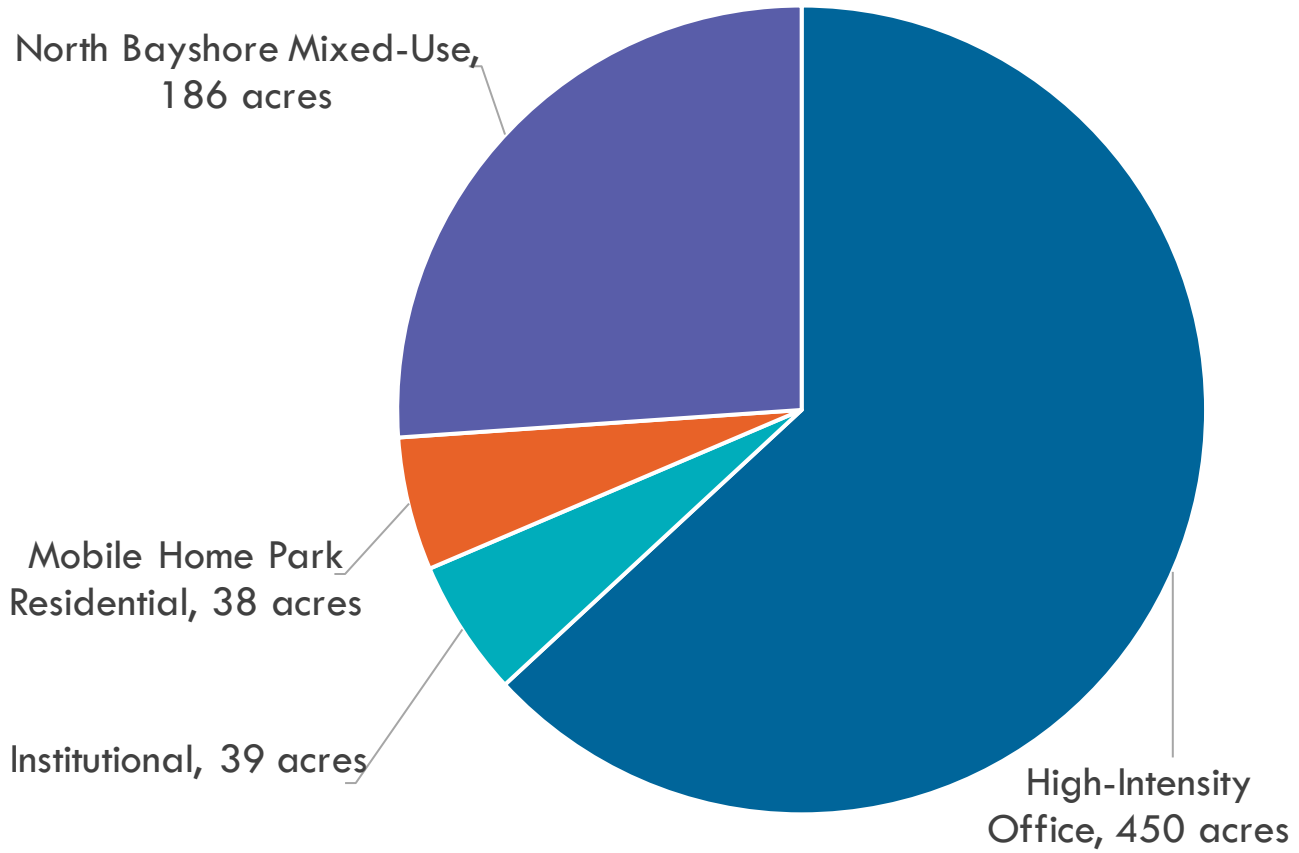


Chart is conceptual only and is based on data from CTPP, stakeholder interviews, and North Bayshore trip monitoring reports.

Current land use in North Bayshore

- **High-Intensity Office**
  - ~6.2 million sq. ft. of office and R&D
  - ~24,800 tech-/office-related jobs
- **Retail and Commercial**
  - Restaurants, shopping, and other commercial destinations in Shoreline Park and elsewhere in North Bayshore
- **Housing**
  - ~360 dwelling units in Santiago Villa mobile home community

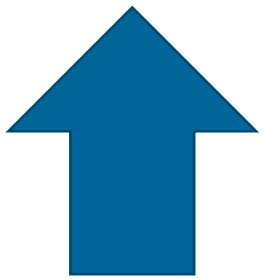
*Plus over 900 acres of **park space** (not shown in this chart)*



Sources: Mountain View 2030 General Plan land use designations, CTPP 2012-16, City staff

Future land use in North Bayshore

	Workers	Residents
Current (2020)	25,100 workers (6.2 million sq. ft. office/R&D)	630 residents (360 dwelling units)
Full Buildout (~2035)	42,500 workers (10.5 million sq. ft. office/R&D)	16,630 residents (9,500 dwelling units)
Growth	**+17,400 more workers** **(+4.3 million more sq. ft. office/R&D)**	**+16,000 more residents** **(+9,140 more units)**



2X more people

Total residents and employees in North Bayshore **could more than double** if planned growth occurs.

Sources: City of Mountain View, proposed and ongoing development plans, LEHD. Figures are rounded.

Major ongoing and planned developments

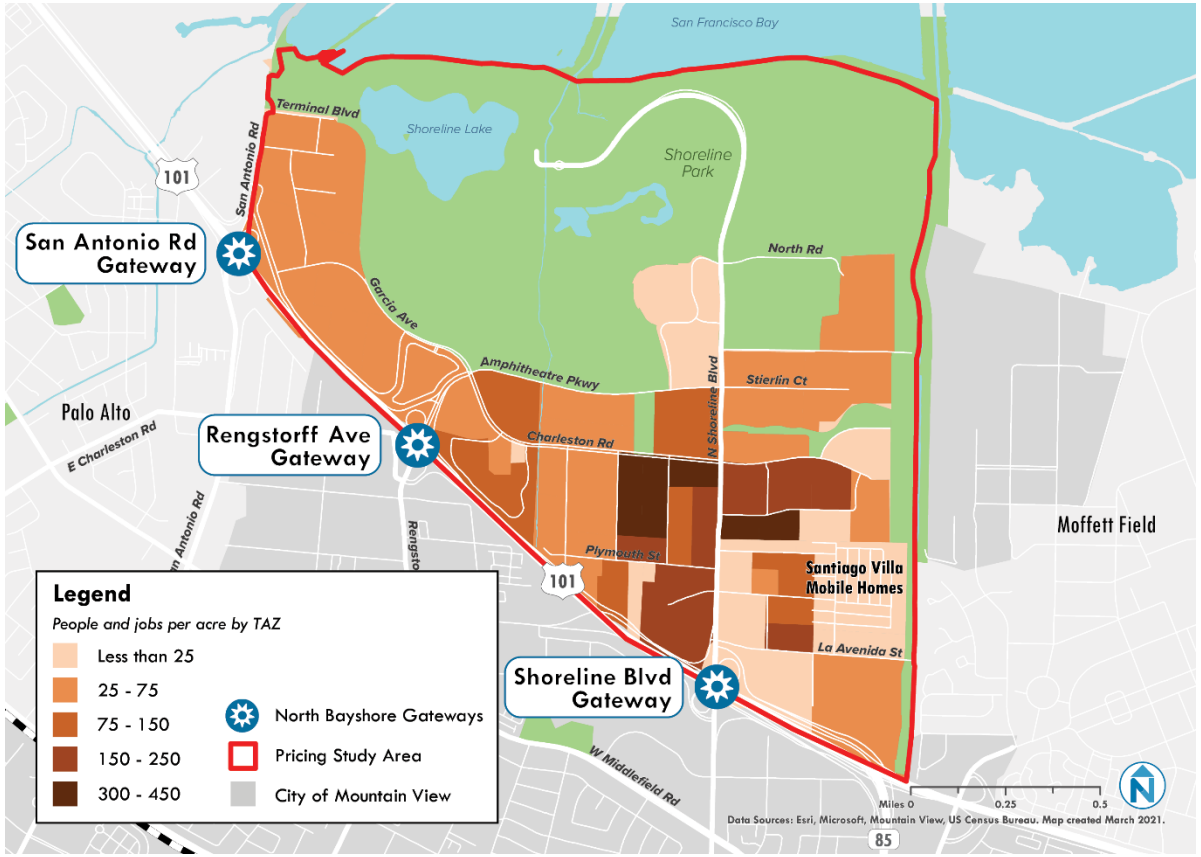
- Under construction
  - Google Charleston East
  - Microsoft Silicon Valley
- Planned
  - Google North Bayshore Preliminary Master Plan
  - SyWest Gateway development
  - Eden and Sobrato affordable housing projects

Land use changes from current to full buildout

- Growth concentrated in Gateway and Core character areas*
- District parking strategy and multimodal network seek to distribute trips across the network

Current jobs and population density

Full buildout jobs and population density



* Gateway and Core character areas are defined in the 2017 North Bayshore Precise Plan

3

State of mobility

Local streets today

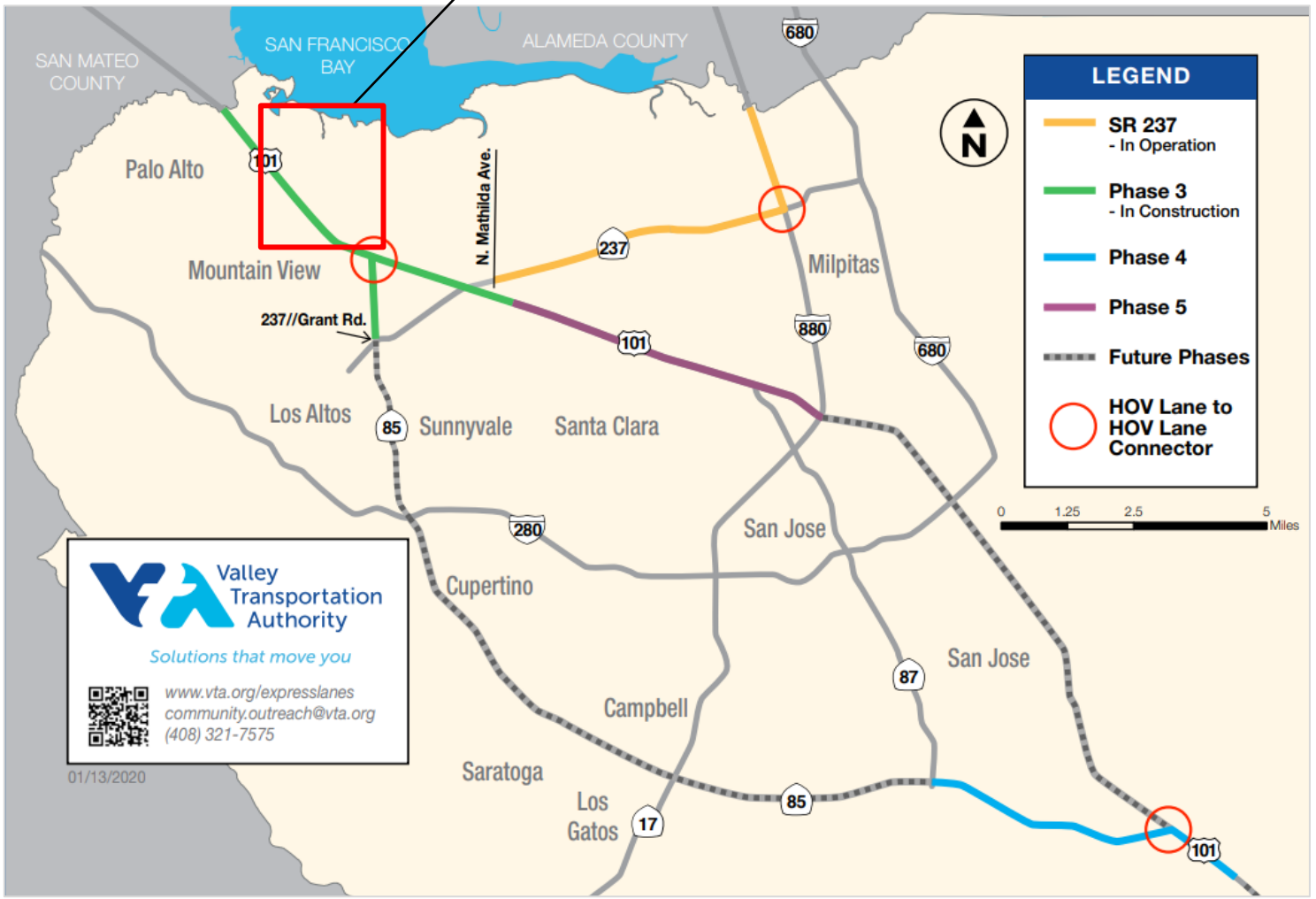
- Vehicle access to North Bayshore is restricted to three Gateways.
- Street network within North Bayshore is largely auto-oriented and the grid is not fully connected.
- Some streets do not have welcoming pedestrian and bike facilities.




Image sources: Nelson\Nygaard

Regional roadways

- The Bay Area Tolling Authority (BATA) facilitates a network of tolled bridges and Express Lanes via FasTrak.
- Silicon Valley Express Lanes
  - Administered by VTA, opened in 2012
  - Tolled facilities on I-880 and portion of SR-237
  - Expansion to US-101 and SR-85



Map source: VTA

Regional roadways

- San Mateo County Express Lanes
  - 22 miles of bi-directional express lanes from the Santa Clara County line north to I-380
  - Lanes will by dynamically priced
  - Fully operational in late 2022

Map source: Caltrans

Transit in North Bayshore

- Regional rail
  - Caltrain (connected to North Bayshore via VTA 40, Microsoft Shuttle, and MVgo B, C, and D)
  - ACE (connected to North Bayshore via VTA ACE Orange Shuttle)
- Light rail
  - Orange Line to Downtown Mountain View
- Public bus and shuttles
  - VTA 40
  - ACE Orange Shuttle
  - MVgo shuttles
  - MV Community Shuttle
- Employer-provided bus
  - Commuter buses provided by Google, Intuit, and Microsoft
  - Shuttles to Caltrain

Source: Wikimedia user Grendelkhan, CC BY SA 4.0

Source: Wikimedia user mliu92, CC BY SA 2.0

Source: Mountain View TMA

Source: Chris Enright, CC BY SA 2.0

Transit

- Public transit in North Bayshore is mostly last-mile shuttle from rail stations.
- Few one-seat public transit rides serve North Bayshore.
- Employer shuttles are generally available only to FTEs.
- Community Shuttle serves North Bayshore on weekends only.

Transit ridership (2019)

- Most transit ridership in North Bayshore is on employer-provided shuttles
- Approx. 4,500 weekday Caltrain boardings at Mountain View Station
  - Many of these riders use first-last-mile shuttles to access North Bayshore

Route/Service	Total Average Weekday Boardings
Google Employer-Provided Shuttles*	7,825
Intuit Employer-Provided Shuttles	116
Microsoft Employer-Provided Shuttles*	257
MVgo East Bayshore	115
MVgo West Bayshore	199
Community Shuttle	648
VTA ACE Orange Shuttle	84
VTA Route 40	844
Total	**10,004**

Sources: Caltrain, City of Mountain View, Google, Intuit, Microsoft, Mountain View TMA, VTA
*Estimates only, based on employer-reported mode share and North Bayshore FTE estimates.
Note that ridership reflects pre-pandemic travel.

Bikes and pedestrians

- Bike infrastructure *within* North Bayshore is more developed than bike infrastructure *connecting to* North Bayshore.
- Barriers, such as creeks and US-101, constrain active transportation access and safety.

Planned bicycle infrastructure are as of 2018 and from City of Mountain View.

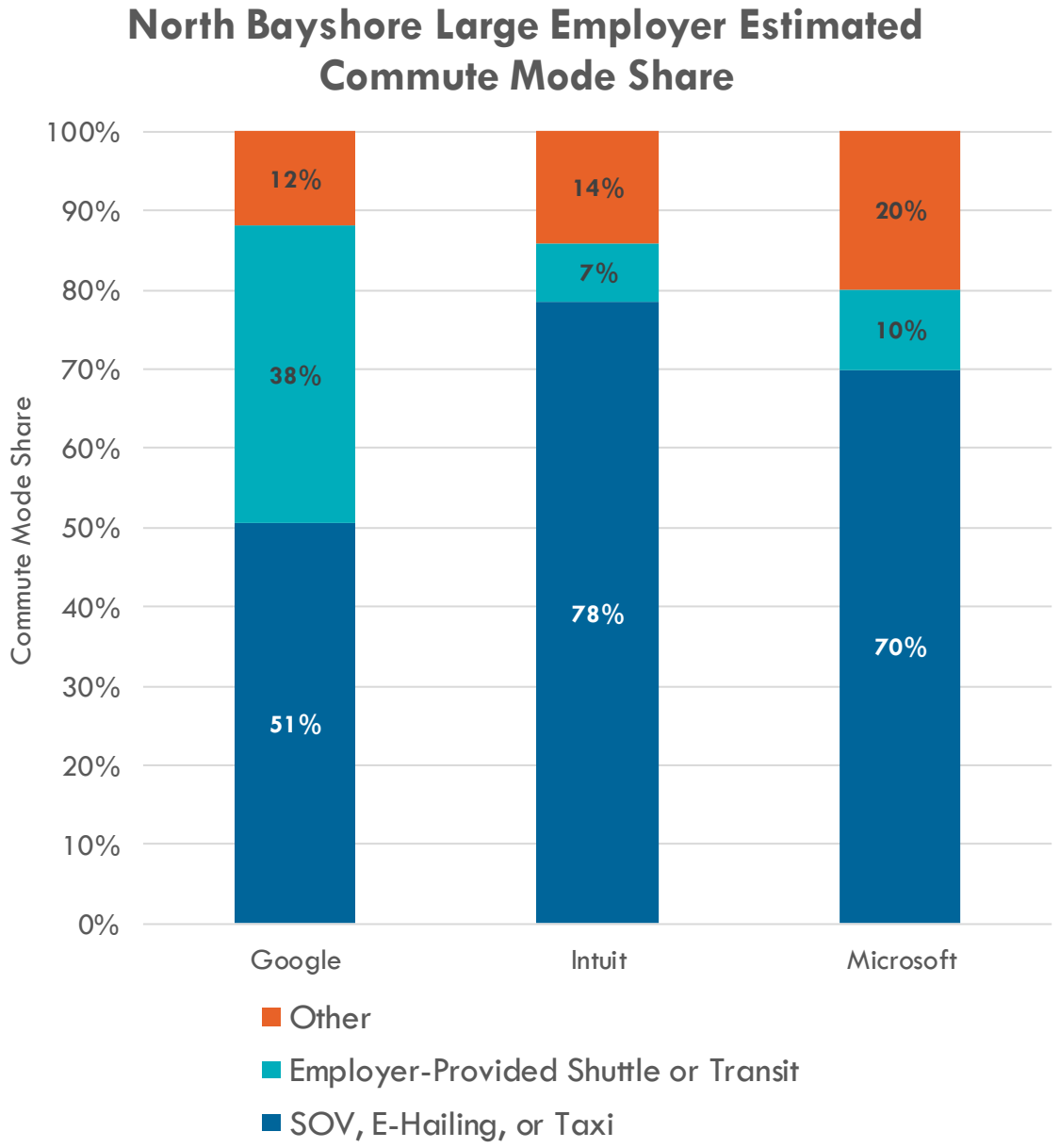
Mobility Programs

- MVgo
  - Citywide TMA - employer and developer membership
  - Shuttles
    - Free and open to all
    - Connect to Transit Center and Routes B, C, and D serve North Bayshore
    - Guaranteed travel reimbursements if shuttles are 15+ mins. late
    - Discontinued during COVID-19; restarting in July
  - Carpool Link
    - $5 subsidy on Waze Carpool trips to or from Mountain View
    - Trips within 10 miles are free
- Mountain View Community Shuttle
  - Google and City partnership; Free, everyday circulator
  - Does not serve North Bayshore on weekdays
  - Planned expansion of service hours this summer

Image source: Mountain View TMA

Employer TDM

- Precise Plan requires baseline TDM program
- Major employers provide robust commuter services, including:
  - Long-haul commute buses and first/last-mile shuttles
  - Priority parking for carpools
  - Bicycle parking and employee lockers/showers
  - Subsidized or free transit passes
  - Pre-tax commute programs
  - Shared bikes
  - On-site services
  - Rideshare matching + GRH programs
  - On-site transportation coordinators



Data source: Intuit, Google in Motion 2019 Mobility Report, Microsoft Silicon Valley 2015 TDM plan

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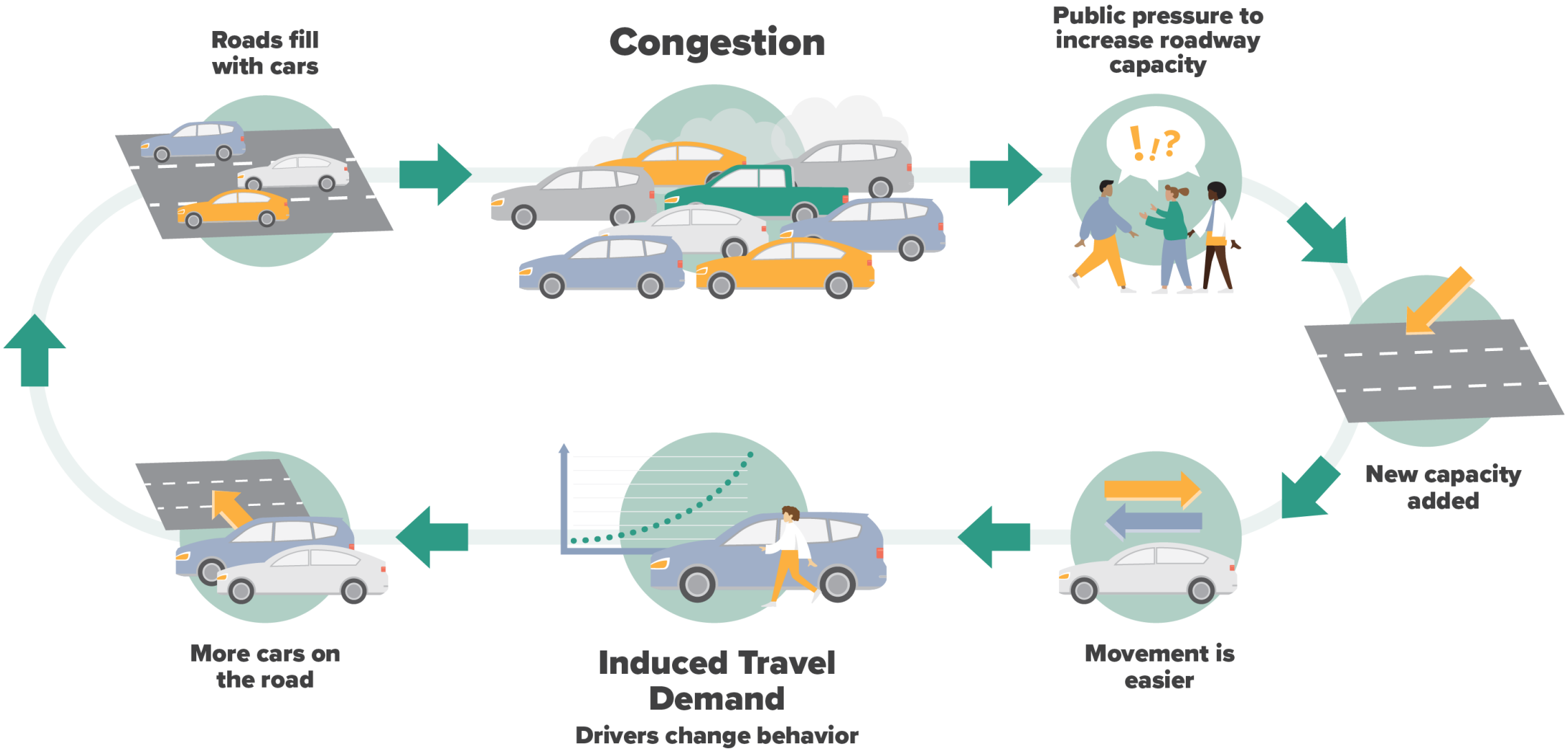
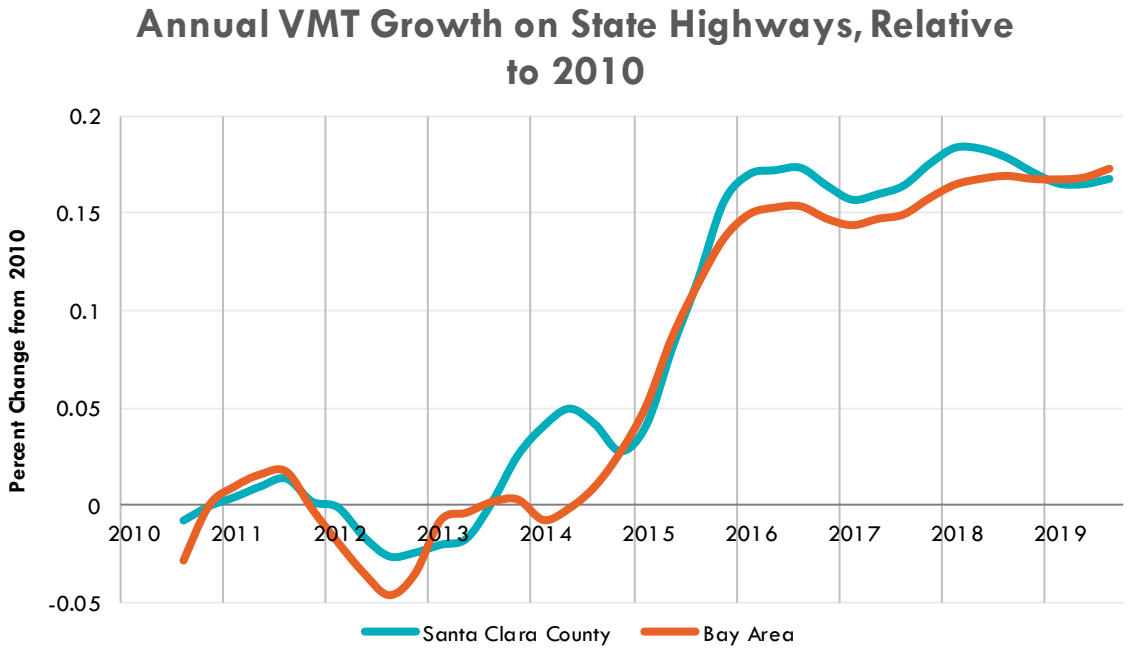
State of congestion

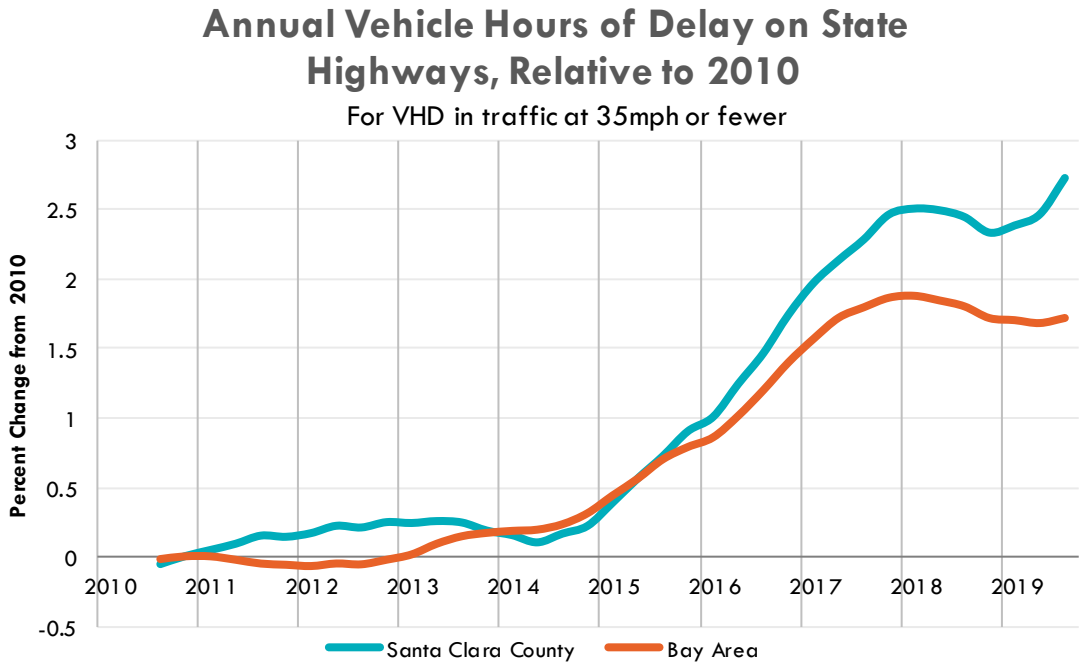
The life cycle of congestion



Regional congestion

- North Bayshore's congestion challenges **track with regional trends**.
- Pre-COVID-19, **VMT was increasing**.
  - Total VMT increased **18%** in both the Bay Area and Santa Clara County (2010-19).
- Pre-COVID-19, vehicle delay on highways **grew faster in Santa Clara County**.
  - The amount of time spent in congestion increased **173%** in the Bay Area but **285%** in Santa Clara County, from 2010-2019.

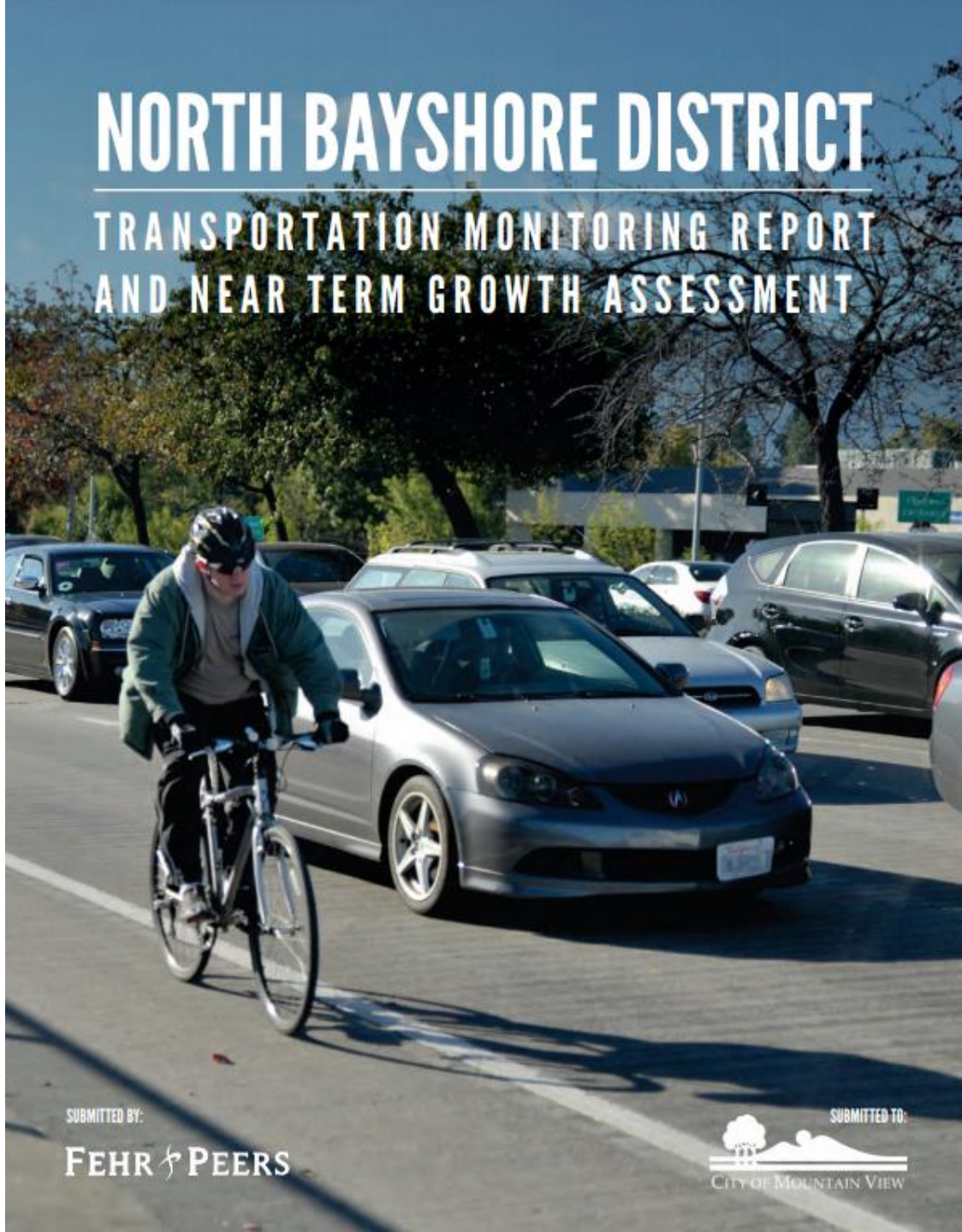




Data source: Caltrans PeMS and MTC

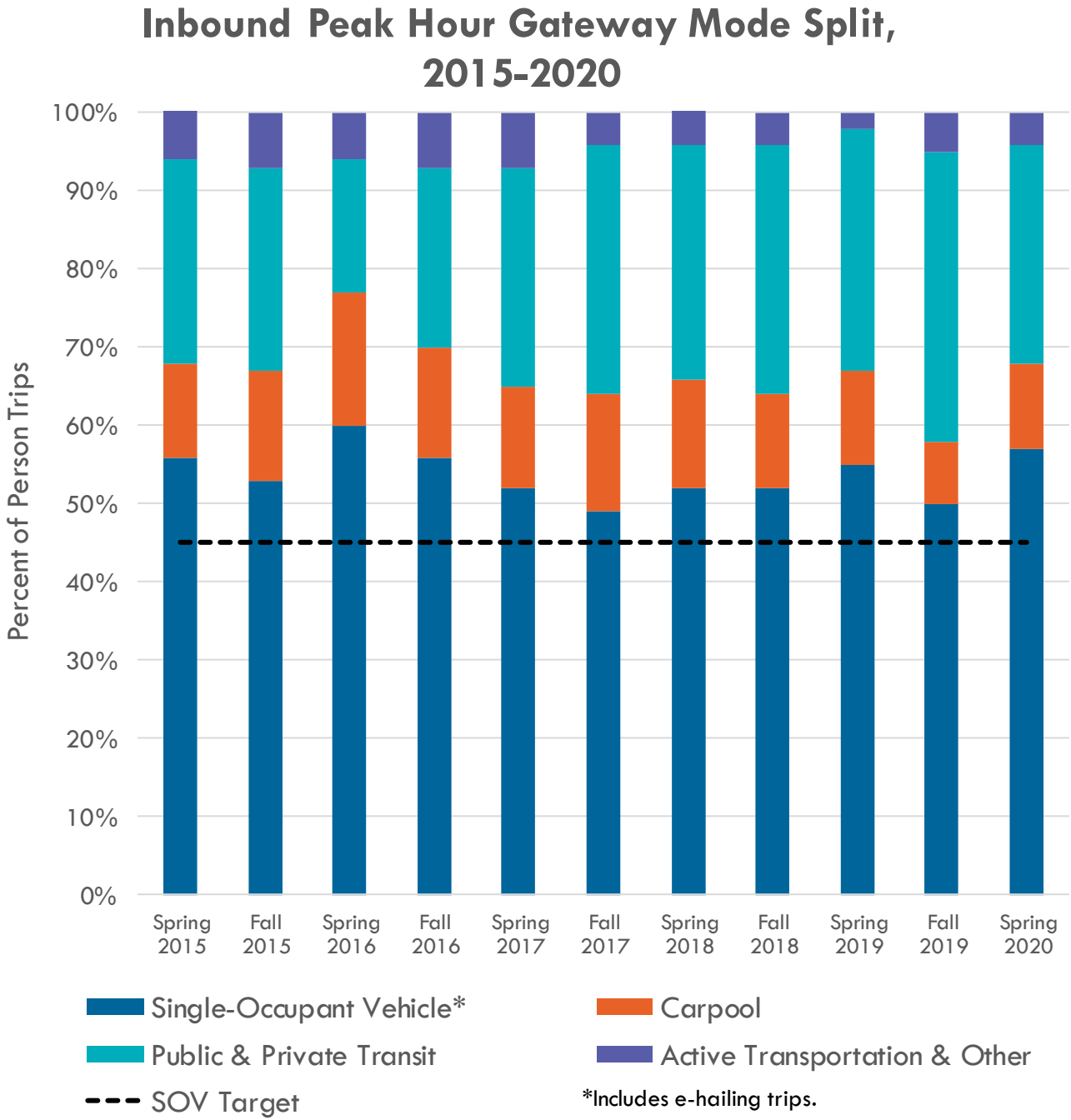
Local congestion

- North Bayshore trip monitoring
  - Bi-annual counts since 2014
  - Includes:
    - Vehicle counts, turning movement counts, and vehicle classifications at select locations
    - Public and private transit occupancy at select stops
    - Queuing at gateways
- Key congestion metrics are:
  - Vehicle trips at the three gateways, relative to trip caps
  - Travel mode share
  - Queue lengths
  - Travel time



Mode split

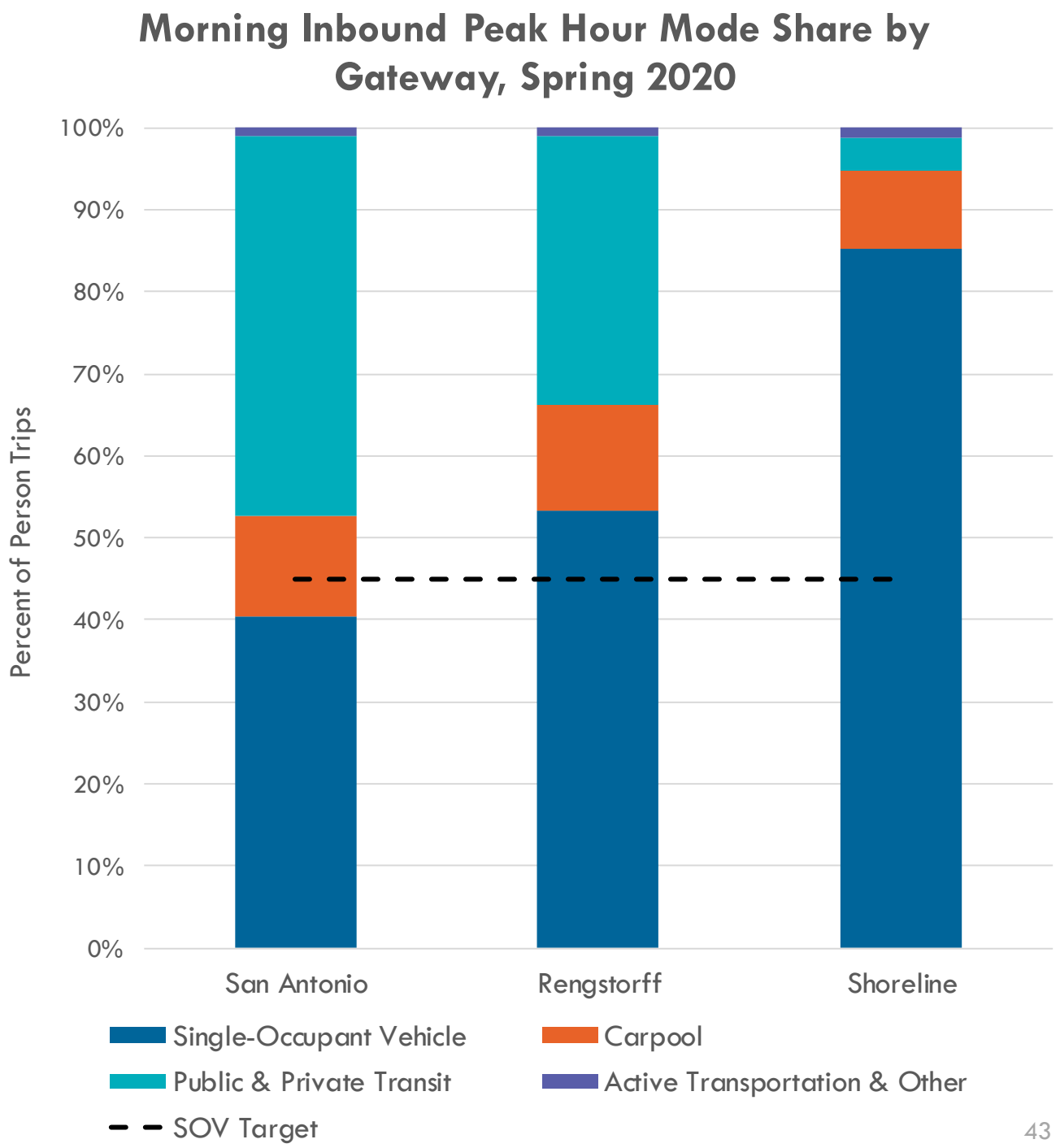
- Since 2015, NB gateways have **never achieved** inbound peak hour target of 45% SOV.
- Prior to COVID-19, SOV mode share was at **56%**.
- Transit mode share has **grown slightly** in recent years.



Data source: North Bayshore Trip Monitoring Reports

Mode split

- SOV mode share is **highest at the Shoreline gateway.**
- SOV mode share at the San Antonio gateway is **below the 45% target.**
- Mode share at each gateway is affected by the number of employer-provided commuter buses, which is greatest at San Antonio and lowest at Shoreline



Data source: North Bayshore Trip Monitoring Reports

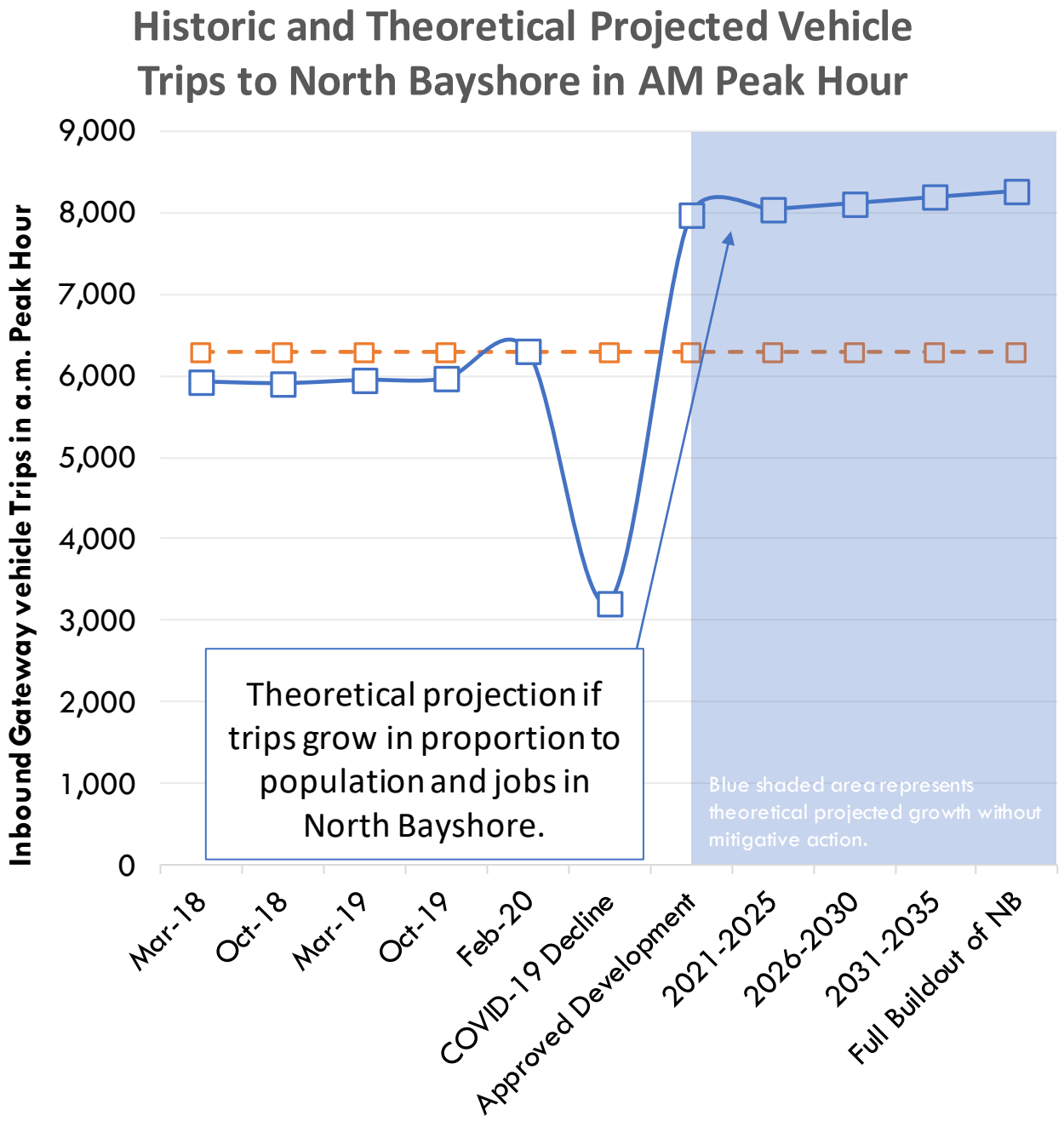
Vehicle queuing

- Queueing is most severe at the Shoreline Boulevard gateway, where it can last for **three or more hours** in the morning and evening peak periods.
- Morning maximum queues impact US-101 off-ramps and Shoreline Boulevard south and east of North Bayshore.
- Morning queue length on US-101 can be **2,800 ft.**

Map and data source: Spring 2020 Gateway Monitoring Report, pp. 32-34.

Do-nothing scenario

- With no changes to current mode share, vehicle trips to North Bayshore could theoretically **far exceed trip caps**.
- In reality, gateway capacity constraints will lead to **longer queues, increased travel times,** and a **longer peak period**.
- New trip reduction strategies are needed to preserve **growth plans, economic activity, and quality of life** in North Bayshore.



Data sources: Trip monitoring reports, Streetlight, City of Mountain View, proposed and ongoing development plans.

Impacts of congestion

Reduces public and private transit service reliability.

Harms employers' ability to attract and retain talent.

Shoppers and visitors visit less congested business districts.

Lowers air quality and increases GHG emissions.

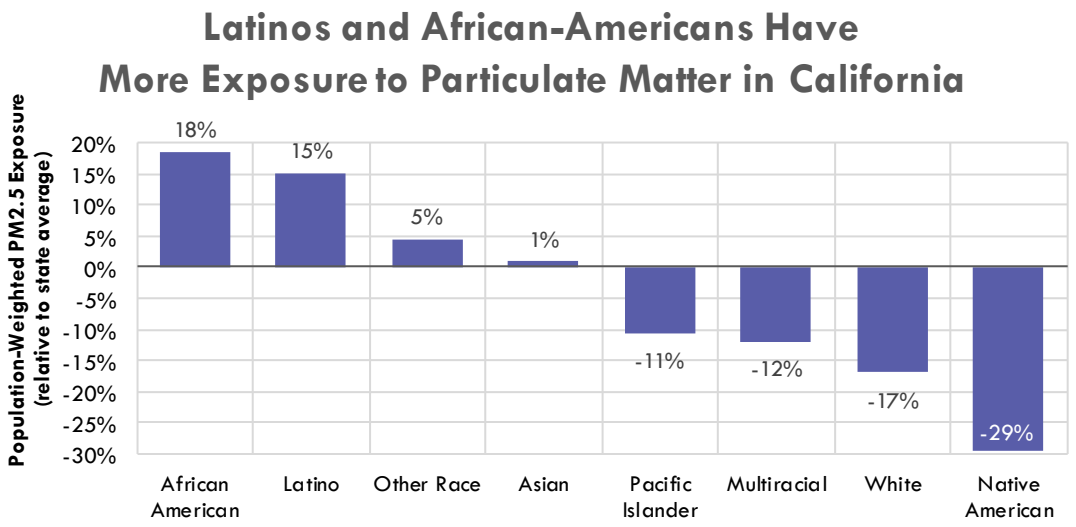
Reduces regional productivity by trapping workers in traffic, when they could be creating value supporting the innovation economy.

> "Highway traffic in Santa Clara County costs the economy **$834M a year in lost productivity**, if measured at a typical tech industry wage."

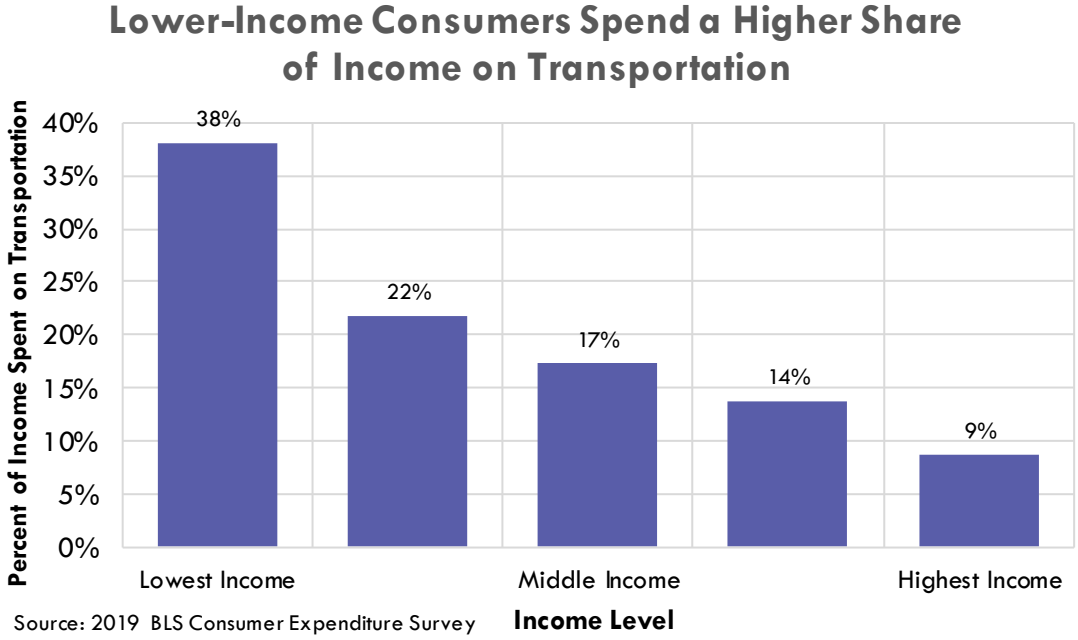
Caltrans PeMS 2019

Impacts of congestion

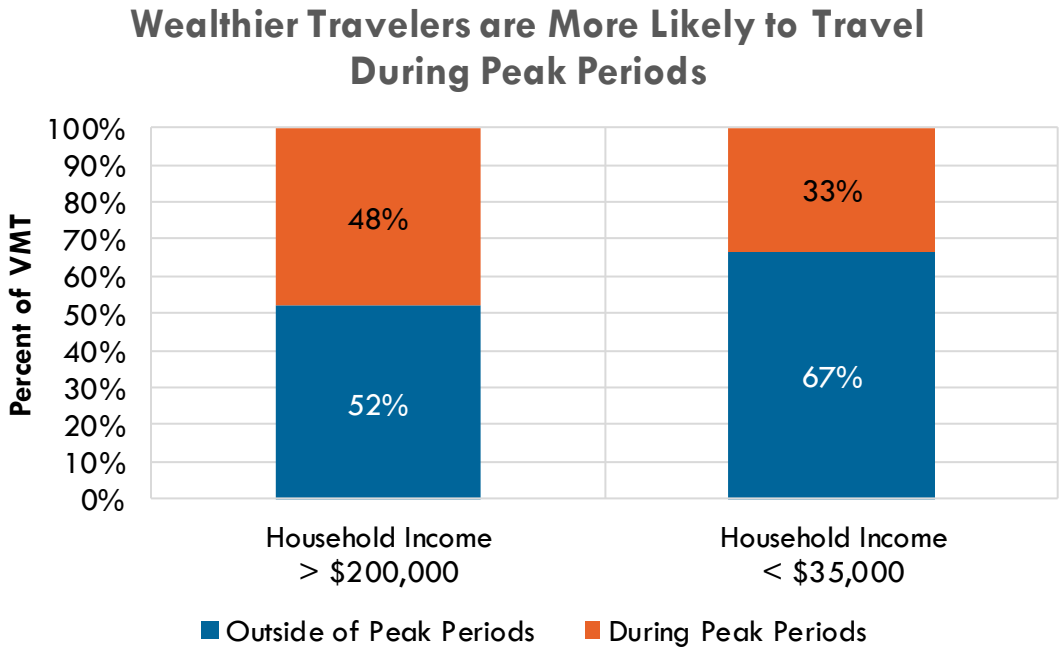
- Equity
  - Nationally, lower-income travelers spend a higher share of their income on transportation.
  - In California, vehicle emissions disproportionately impact African-American and Latino people.
  - In Silicon Valley, wealthier travelers are more likely to contribute to peak period congestion.



Source: Inequitable Exposure to Air Pollution from Vehicles in California. Union of Concerned Scientists, 2019



Source: 2019 BLS Consumer Expenditure Survey



Source: 2017 NHTS for San Jose CBSA

Impacts of congestion

> **Our shuttles get stuck in traffic**, making them less competitive than driving.
>
> **Revenue from congestion pricing** could help support our programs and services.

Mountain View Transportation Management Association

> Because we live in the potential pricing area, we have no choice but to pay the charge. **It would be fair to provide us an exemption.**

Santiago Villa Mobile Home Community

Impacts of congestion

"We're concerned about traffic but we don't want congestion pricing to make North Bayshore **a less attractive place for people to work.**

We're concerned about the **potential financial impact of congestion pricing** on our lower-paid contract workers.

If congestion pricing were implemented, we might **reimburse our full-time employees** for the charge."

Major Employers

Impacts of congestion

"We're concerned about traffic but don't want congestion pricing to **drive our customers to nearby competitors.**

Many of **our employees are low-income** and a congestion charge would be a hardship for them.

We'd like to see the City of Mountain View try to mitigate traffic problems with **other tools first**, such as by re-timing the traffic lights.

Big tech companies are causing the congestion, so why not just charge them?"

Small Business

Impacts of congestion

> “Our employees have **adjusted their schedules** so they don’t have to sit in traffic.”

Parks

> “**Our buses spend hours sitting in traffic** in North Bayshore every day.
>
> Our employees may not be affected by congestion pricing, as they **generally commute outside of peak hours.**”

VTA

Impacts of congestion

"We are hoping to **develop mixed-use properties in North Bayshore that will reduce overall trips**, because people will be able to work, shop, and play where they live.

We are concerned congestion pricing could make it **challenging for us to lease commercial and residential** space in North Bayshore.

Employees at **big tech companies cause most of the congestion**. Why use a sledgehammer that impacts all of North Bayshore when a scalpel that targets the biggest problem could be used?"

Developers

5

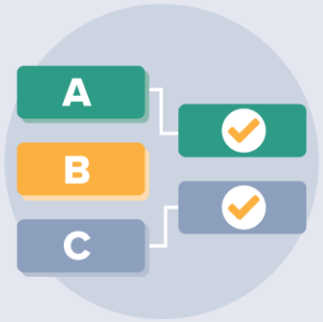
Next steps

Project Timeline

Kickoff

Winter/Spring 2021

- Stakeholder conversations
- Data Collection
- Peer Review



Analysis

Summer 2021

- Screening congestion pricing scenarios
- Assessing if any scenarios are feasible
- Identifying recommended scenario

Draft Plan

Fall 2021

- Presentation to City Council

Final Plan

Winter 2021

Implementation

2021 & Beyond

- Legislative approval
- Design
- Construction