COUNCIL REPORT

CITY OF MOUNTAIN VIEW

DATE: December 7, 2021

CATEGORY: New Business

DEPT.: Public Works

TITLE: **North Bayshore Circulation Study**

RECOMMENDATION

Approve the North Bayshore Circulation Study Draft Report (Attachment 1), including the list of recommendations in this Council report.

BACKGROUND

The North Bayshore Precise Plan (NBPP), adopted in 2014 and amended in 2017, envisions commercial and residential growth in North Bayshore while minimizing additional vehicle capacity through the three gateway corridors. In support of this vision, a number of multi-modal transportation improvements are being implemented, in conjunction with Transportation Demand Management (TDM) programs, to support reductions in single-occupant vehicles (SOV) into and out of the area. A cap on the number of peak-hour vehicles traveling through the gateways has been established, and volumes are measured semiannually.

On December 4, 2018, Council approved a contract with TJKM Transportation Consultants to conduct the North Bayshore Circulation Feasibility Study (Circulation Study). The purpose of the Circulation Study is to address the additional transportation issues identified in the 2017 NBPP and to develop a strategy that supports the full build-out of the NBPP. Jim Lightbody, through a contract with James Lightbody Consulting, is providing project management services for this Circulation Study.

Initially, the Circulation Study consultant team developed a traffic simulation model (VISSIM model), evaluated the feasibility of proposed transportation projects, and supported the analysis of the Google Landings project and Gateway Master Plan.

At a May 12, 2020 Study Session, Council reviewed the feasibility of two priority transportation projects that were identified in the NBPP 2017 amendment that would potentially augment the improvements embedded in the original 2014 NBPP:

- A new transit bridge over Stevens Creek—The Circulation Study identified feasible options for a Stevens Creek transit bridge. Council did not support further development of the Stevens Creek transit bridge but was open to consideration of a pedestrian and bicycle bridge.

- A potential Charleston Road connection under U.S. 101 at Rengstorff Avenue—Due to access problems and the very high estimated project cost, staff recommended against proceeding with further development of the Charleston Undercrossing. In its place, staff recommended an alternative Rengstorff Avenue improvement. Council agreed to further investigation of this alternative Rengstorff Avenue project, which realigns the freeway on- and off-ramps to provide better operations, particularly for the Charleston transit corridor, and additional capacity through improved gateway throughput.

On December 8, 2020, Council approved adding a feasibility study of congestion pricing to the scope of work for the Circulation Study. Congestion pricing was identified in the 2017 NBPP as a potential tool to better manage traffic.

On March 23, 2021, Council approved a NBPP nonresidential Bonus Floor Area Ratio (FAR) requalification request of 1.3 million square feet from Google. This was accompanied by review of the Google Preliminary North Bayshore Master Plan for office, housing, open space, and other uses located on over 122 acres of their property within and outside the Gateway area. Google submitted a formal Master Plan application in September 2021.

On June 8, 2021, Council received a report on the Circulation Study and approved an updated list of NBPP Priority Transportation Improvements (Figure 1 and Table 1). In approving this revised list, the City Council provided its intent that the list was to be a living document that would be reviewed periodically and revised as needed. Council also approved revisions related to the gateway trip cap policies and the NBPP pedestrian and bicycle element at the June 8 meeting.

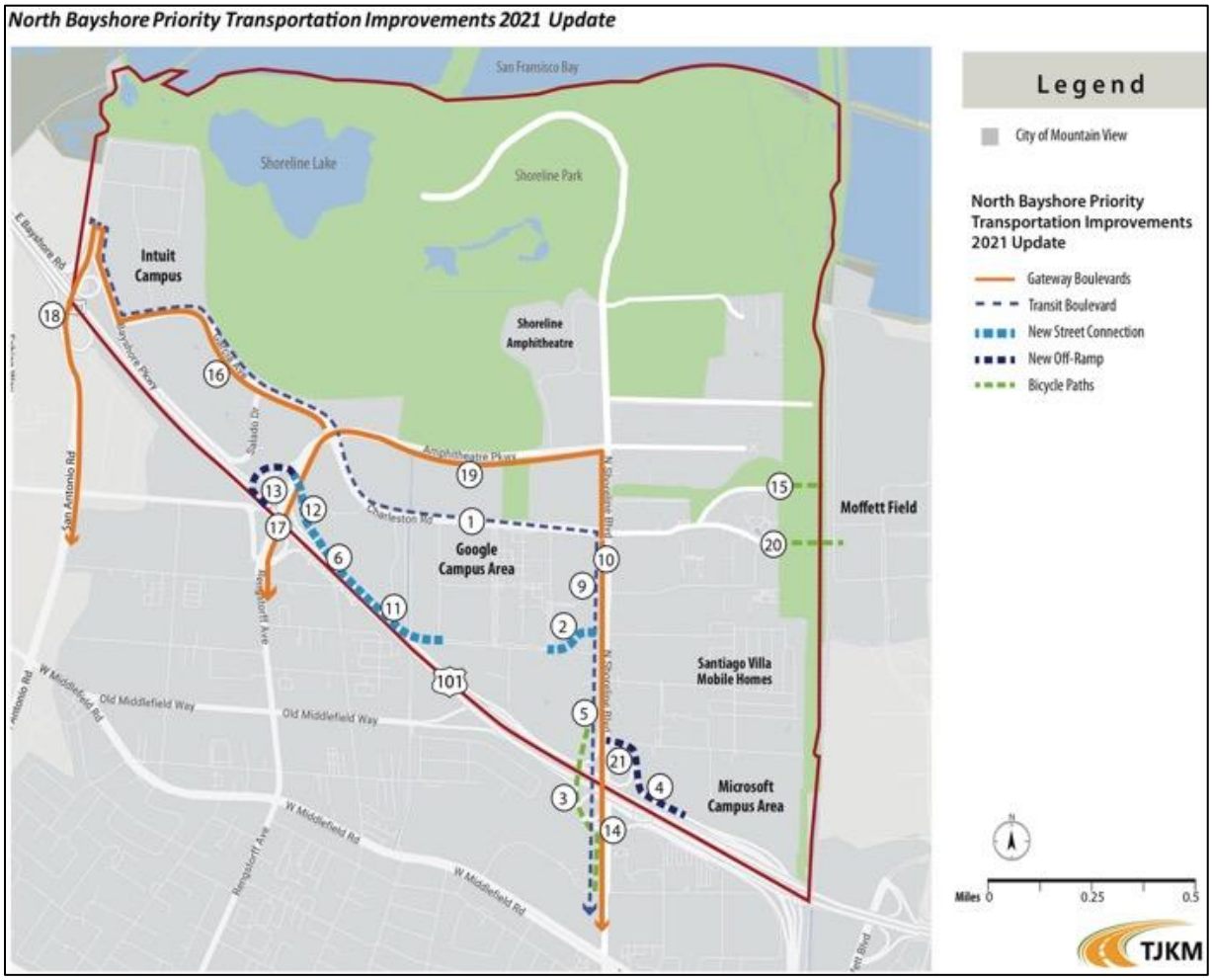

Figure 1: North Bayshore Priority Transportation Improvements (June 2021)

Table 1: North Bayshore Priority Transportation Improvements - June 2021 Update

ID No. on Map	Project	Est. Cost ($ millions)*
5-Year Projects		
1	Charleston Transit Boulevard (Phases 2/3)	43.3
2	Plymouth/Space Park Connection	59.5
3	U.S. 101 at Shoreline Bicycle/Pedestrian Bridge	30.3
4	U.S. 101 Shoreline Off-Ramp Realignment	31.4
5	Shoreline Corridor Bus Lane—Middlefield to Pear	22.1
6	Frontage Road from Landings Drive to Permanente Creek	3.6
7	Transit Center Upgrades, including Grade Separation *(not on map)*	5.0
8	Congestion Pricing Implementation *(not on map)* (New)	5.0
10-Year Projects		
9	Shoreline Corridor Cycle Track (North of Plymouth)	19.9
10	Bus Lane Extension from Plymouth/Space Park to Charleston (New)	4.9
11	Frontage Road Extension—Permanente Creek to Plymouth	50.1
12	Rengstorff to Landings Drive (new connection) (New)	50.2
13	U.S. 101/Rengstorff Ramp Realignment (New)	22.0**
14	Bus Lane Enhancements (New)	5.5
15	Stevens Creek Trail Connections (New)	1.1
20-Year Projects		
16	Garcia-CRAG to Bayshore/San Antonio Protected Bikeways	4.9
17	Rengstorff-CRAG across U.S. 101 to Leghorn Protected Bikeways and Sidewalk (requires bridge replacement)	20.0**
18	San Antonio-Bayshore to U.S. 101 Protected Bikeways and Sidewalk (requires bridge replacement)	20.0**
19	Amphitheatre-Shoreline to CRAG—Cycle Track and Widen to Four Lanes	10.3
20	Stevens Creek Bicycle/Pedestrian Bridge at Charleston (New)	36.6
21	La Avenida Bicycle/Pedestrian over Shoreline (New)	40.9

* Cost is escalated to year of construction.
** Matching funds for Federal or State grant funding.

ANALYSIS

The Circulation Study, identified as an implementation strategy in the NBPP, focused on the gateway traffic impacts of various strategies to reduce SOV trips, including policies to further reduce vehicle trips and meet TDM goals as well as potential additional infrastructure. The Circulation Study analyzed the full development of the NBPP and did not specifically address incremental development phases.

A primary focus of the Circulation Study was to identify and evaluate additional strategies needed to maintain compliance with the NBPP gateway trip cap policies. New strategies are needed since, with the increased number of jobs and residents in the NBPP, the current policy to achieve a 45% SOV rate was determined to be insufficient to meet the gateway trip cap target. Potential strategies explored and discussed in the Circulation Study include:

- Updated Priority Transportation Improvements to support increased use of non-SOV modes, improve traffic operations, and add limited gateway capacity;

- Review of gateway trip cap policies and development of potential revisions, including an update of estimated gateway capacity;

- Analysis of reduced SOV strategies including traffic simulations;

- Review of NBPP modal strategies (active transportation, transit, transportation demand management) that support SOV reductions and development of potential improvement strategies; and

- Feasibility of congestion pricing as a potential tool to help reduce gateway vehicle traffic.

The Circulation Study also considered that COVID-19 has created some uncertainty regarding future travel patterns and the potential post-COVID characteristics of peak vehicle traffic for the North Bayshore gateways. While remote work and greater commute travel flexibility may benefit peak-period trip cap compliance, sustained reduced use of transit and carpooling may result in greater SOV rates. The actual impacts on travel patterns may not be known for several years. Where practical and prudent, the Circulation Study has recommended phasing in or deferring some strategies and improvements, while monitoring the postpandemic travel conditions with a final recommendation that the Circulation Study be updated in three to five years.

The Draft Final Circulation Study Report is provided in Attachment 1. As noted in the Background section of this Council report, some elements of the Circulation Study were presented to Council in May 2020 and June 2021 for review and approval. This Council report discusses and makes recommendations for the following remaining elements:

- Gateway Trip Cap Strategy
- Congestion Pricing
- Modal Strategies

Gateway Trip Cap Strategy

The gateway trip cap, established in the 2014 NBPP, is the most important policy for managing the number of vehicles in North Bayshore. Other complementary strategies, such as the SOV rate targets, are designed to ensure that vehicle trips remain below the trip cap as the NBPP is fully implemented.

The process for measuring compliance with the trip cap has been adjusted several times since 2014. Currently, including the Council action taken on June 8, 2021, compliance is measured twice a year in the peak direction of traffic (i.e., inbound in the morning, outbound in the afternoon). Monitoring reports cover both the a.m. and p.m. peak hour and the three-hour peak period for all three gateways. However, currently only the peak hour at each individual gateway is measured for compliance.

New office projects must demonstrate and commit to strategies that will maintain compliance with the trip cap. Residential projects are exempted from having to demonstrate compliance with the trip cap. The most recent pre-COVID monitoring (February 2020) showed that peak traffic was at or above capacity on Shoreline Boulevard in the morning and on Rengstorff Avenue in the afternoon.

Trip Cap Policies and Recommended Revisions

The Circulation Study placed a primary focus on the gateway trip cap policies and potential compliance since that policy is the most effective way to manage vehicle trips in North Bayshore. Analysis of the trip cap included the potential for planned or future transportation infrastructure projects to impact gateway capacity.

To consider revisions to trip cap policies, it is useful to consider how traffic operates. On any given roadway, as peak vehicle demand approaches the capacity of the roadway, vehicles will back up, and travel times will extend. The actual traffic volume will not

substantially exceed capacity, but, over time, drivers may change their travel to avoid the resulting delays. Those changes could include traveling at a different time, using a different route, or taking a different mode.

The following recommended changes to the trip cap policy address several issues defining the trip cap and measuring compliance:

1. Trip cap monitoring—The twice-yearly gateway monitoring program should continue in order to track post-COVID traffic and compliance trends. The monitoring should measure peak period trips in both directions at each gateway as well as mode-share trends.

2. Trip cap definition and compliance—Two changes are recommended in addition to the previously approved recommendation to monitor compliance based on the one-way peak direction:

    a. Compliance should be measured by comparing actual trips with the gateway capacity for the three-hour peak period as opposed to just the peak hour.

    b. Compliance should be measured by combining the Shoreline Boulevard and Rengstorff Avenue gateways. The San Antonio Road gateway should continue to be measured separately.

    These two adjustments allow the trip cap to more closely reflect actual travel patterns and provide additional compliance flexibility.

3. Trip cap enforcement—Currently, if the cap is reached on two successive monitoring periods, North Bayshore development is considered out of compliance and penalties, such as a restriction on commercial building permits, may be implemented. As commercial and housing development in North Bayshore are linked, a restriction on issuing commercial building permits could lead to unintended consequences of delaying or preventing achievement of the housing and complete neighborhoods vision of the NBPP.

    Staff recommends an alternative approach that focuses more on the TDM effectiveness of approved projects. In particular, if an employer is seeking a building permit, the policy should require higher levels of TDM for all the applicant's employees in North Bayshore, and higher financial penalties should be applied for not achieving the required compliance. This would be more effective in encouraging SOV compliance and provide funding for other modal strategies by the Mountain View Transportation Management Association (MTMA) or others.

4. Gateway capacities—Since the gateway capacities were first established in 2014, there have been no substantial changes to North Bayshore gateway streets. However, several projects will be completed in the near future that will add capacity and may also modify the current capacity (e.g., the U.S. 101 Shoreline Ramp Realignment). The NBPP states that the City Council may adjust the trip cap in the future to respond to changes in conditions, such as the completion of new infrastructure projects.

   The Circulation Study conducted an independent assessment of current gateway capacity estimates and developed future estimated capacities associated with the Priority Transportation Improvements. Based on the results of this assessment (Attachment 2), capacity adjustments for the Shoreline Boulevard and Rengstorff Avenue gateways are recommended as the transportation improvements are completed (see Tables 2 and 3). No changes are proposed for the San Antonio Road gateway at this time. This assessment also recommended the revisions discussed above to use the peak period and combine the Shoreline Boulevard and Rengstorff Avenue gateways for gateway trip cap compliance.

   The gateway capacities for future infrastructure can be used for the transportation analysis of development proposals. Their use for compliance would only occur when the infrastructure projects are completed.

Table 2: Recommended a.m. Gateway Capacity

Trip Cap Factor & Adjustments	AM Inbound Vehicle Trips					
	Shoreline		Rengstorff		Shoreline + Rengstorff	
	Peak Hour	Peak Period	Peak Hour	Peak Period	Peak Hour	Peak Period
Current Trip Cap (2014)	2,490	6,720	2,960	7,990	5,450	14,710
Recommended Trip Cap (Peak Period Adjustment = 3X Peak Hour)	No change	7,470	No change	8,880	No change	16,350
Shoreline Bus Lane + NB RT at Pear Ave + Plymouth/Space Park Realignment (+100 peak hr.; +300 peak period)	2,590	7,770			5,550	16,650
Shoreline/US 101 NB Off-Ramp Realignment (+620 peak hr.; +1,860 peak period)	3,210	9,630			6,170	18,510
CRAG Intersection Turn Lanes (No Change)			2,960	8,880	6,170	18,510
Rengstorff/US 101 NB Ramp Realignment at Landings Frontage Road (+740 peak hr.; +2,220 peak period)			3,700	11,100	6,910	20,730
All Improvements Combined	3,210	9,630	3,700	11,100	6,910	20,730

Source: Gateway Trip Cap Study for the North Bayshore Area, Hexagon Transportation Consultants

Table 3: Recommended p.m. Gateway Capacity

Trip Cap Factor & Adjustments	PM Outbound Vehicle Trips					
	Shoreline		Rengstorff		Shoreline + Rengstorff	
	Peak Hour	Peak Period	Peak Hour	Peak Period	Peak Hour	Peak Period
Current Trip Cap (2014)	2,730	7,380	2,090	5,630	4,820	13,010
Recommended Trip Cap (Peak Period Adjustment = 3X Peak Hour) (+290 for Rengstorff in peak hour)	No change	8,190	2,380	7,140	5,110	15,330
Shoreline Bus Lane + NB RT at Pear Ave + Plymouth/Space Park Realignment (No Change)	2,730	8,190			5,110	15,330
Shoreline/US 101 NB Off-Ramp Realignment (+290 peak hr.; +870 peak period)	3,020	9,060			5,400	16,200
CRAG Intersection Turn Lanes (+360 peak hr.; +1,080 peak period)			2,740	8,220	5,760	17,280
Rengstorff/US 101 NB Ramp Realignment at Landings Frontage Road (+340 peak hr.; +1,020 peak period)			3,080	9,240	6,100	18,300
All Improvements Combined	3,020	9,060	3,080	9,240	6,100	18,300

Source: Gateway Trip Cap Study for the North Bayshore Area, Hexagon Transportation Consultants

5. Revising language related to specific operations of the gateways in the NBPP – The NBPP is a land use policy document for the future vision of development and infrastructure in the North Bayshore area. However, it contains details regarding operational analysis of the gateway related to trip capacity that may be revised and adjusted based on change in travel behavior or as new infrastructure is built, which necessitate revisions to the NBPP. Staff recommends revising the NBPP to remove the operational details and specifics while leaving in the key policy language related to reducing SOV and increasing other modes of travel.

If Council agrees with the above recommendations, staff can move forward with implementing the policy in future studies. The specific revisions to the NBPP to implement these recommended changes can be brought for Council consideration in 2022.

Strategies for Trip Cap Compliance with New Development

Previously, the analysis of trip cap compliance for proposed new office developments added estimated new vehicle trips to existing trips, comparing those trips to the gateway capacity. Currently, however, there is uncertainty about the potential post-COVID characteristics of peak vehicle traffic. As a result, it is difficult to provide a definitive analysis and recommendations regarding strategies for achieving the gateway trip cap. Instead, the Circulation Study has identified several factors and options that may determine the needed strategies, including:

- Remote work impacts—Currently, office space occupancy is still low (estimated at 25% in the Bay Area and probably lower in North Bayshore), but companies are anticipating a return to work in early 2022. What is unknown is how that return translates to peak vehicle demand. Factors in play include:

  - The continuing or permanent impact of remote work—How will office space be used on a daily basis (e.g., dedicated versus "hot" desks, where employees can use any available work station)?

  - Commute travel—How much flexibility will companies allow in terms of commute travel? Previously, nearly all commutes occurred in the peak periods. How many trips will shift to off-peak hours or just a few days a week?

  - Office space impacts—It can be expected that new office space will be fully utilized, potentially by using hybrid remote work models to increase the number of employees who will work in the new office space. Will remote work mean that new space may be phased over a longer time period?

  - Transit and carpool use—Will COVID-19 result in more SOV commutes, potentially offsetting other benefits of remote work?

  While remote work and greater commute travel flexibility may benefit peak-period trip cap compliance, actual impacts may not be known for several years and cannot be assumed at this time. Ongoing gateway monitoring will help determine the benefit, if any.

- SOV reductions—The NBPP SOV target of 45% for new office projects does not appear to sufficiently reduce vehicle trips to meet the trip cap. This is due, in part, to the added residential, retail, and entertainment trips expected in the peak period, especially the p.m. peak. However, new North Bayshore residents could help further

reduce the gateway SOV rate to the extent that they also work in North Bayshore and primarily walk or bike to work.

Staff recommends a strategy to require a lower SOV rate in the range of 35% to 40% for both existing and future employees on any new development. The lower rate could partially rely on a substantial number of internalized trips using active transportation once housing is fully developed. A reduced SOV requirement would ensure that their TDM program helps with compliance toward trip targets regardless of the level of internalization.

The lower SOV rate would be required through updated TDM requirements for the development. The transportation analysis of individual developments should determine any strategies, in addition to the lower SOV rate, that are needed to help achieve compliance with the trip cap.

- Gateway operational and capacity improvements—Implementation of the Priority Transportation Improvements provide multiple benefits towards trip cap compliance. Some projects help achieve greater transit and active transportation use. Others add gateway capacity and/or provide operational benefits that help utilize the available capacity.

  The most impactful project is the Rengstorff Connector project, which combines several individual Priority Transportation Improvements to provide an alternative connecting route from Rengstorff Avenue along Landings Drive connecting to Plymouth Street (see Figure 2). The VISSIM simulation analysis indicated potential value in improving operations along the Rengstorff Avenue gateway by reducing bottlenecks and leveraging the already planned frontage road. Other benefits of this project include:

  - Diversion of vehicle traffic from the Charleston Transit Boulevard, improving conditions for both transit operations and the bicycle and pedestrian use of the Charleston Transit Boulevard.

  - Elimination of a merging problem on Rengstorff Avenue at the northbound U.S. 101 off-ramp that constricts traffic flow and impedes the ability of the Rengstorff Avenue/Charleston Road intersection to operate at full capacity.

  - Improved safety for bicycles and pedestrians by reducing conflicts with high-speed on- and off-ramp traffic along Rengstorff Avenue.

- Enhancement of throughput on the Rengstorff Gateway without widening Rengstorff Avenue, helping with compliance of the gateway trip cap.

The cost for the full project from the U.S. 101 ramp realignment to the crossing of Permanente Creek will exceed $100 million and will require substantial right-of-way acquisition and Caltrans support; it is also around 10 years away. The project could be delivered in phases with a focus first on the U.S. 101 ramp realignment and new roadway connection from Rengstorff Avenue to the new Landings Drive frontage road, which will be upgraded as part of the Landings office development. This segment would improve active transportation conditions along Rengstorff Avenue, improve gateway throughput, and divert some traffic off of the Charleston Corridor.

Prior to pursuing this project, however, the U.S. 101 ramp realignment segment must first be studied as part of a VTA-led U.S. 101/San Antonio/Rengstorff interchange project. VTA is expected to start the Caltrans Project Approval and Environmental Document (PAED) process for this interchange project using Measure B funds in 2022. The PAED process will take two years. This gives the City time to review post-COVID conditions and better understand the project requirements and costs prior to making a final decision to proceed with design and construction of this project.

- Congestion pricing—This is another potential tool that is discussed below. Congestion pricing involves charging for gateway access and could potentially help reduce vehicle trips in order to meet the trip cap.

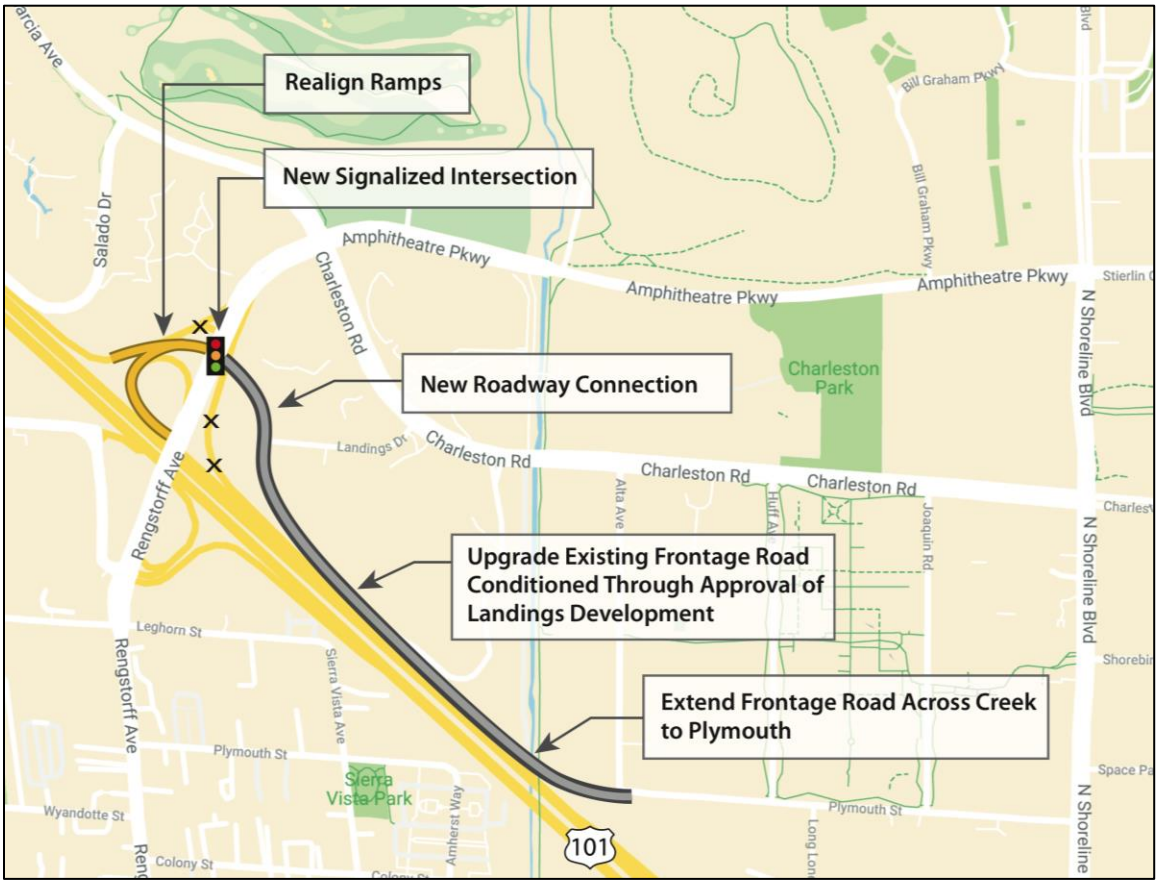

Figure 2: Rengstorff Connector Project

Trip Cap Analysis

While it may take several years to determine the right combination of the above strategies, the Circulation Study evaluated a representative scenario to better understand the potential trade-offs. This analysis was based on the estimated gateway demand and capacity with the full development of the NBPP. The analysis focused primarily on the Shoreline Boulevard and Rengstorff Avenue gateways since there were limited changes at the San Antonio Road gateway.

Key assumptions for this scenario included:

- A reduced 35% SOV target for existing Google offices and a 35% SOV target for all new office development in North Bayshore;
- All Priority Transportation Improvements completed; and
- A return to pre-COVID traffic conditions.

Details of this analysis are shown in the attached Circulation Study report. Key conclusions include:

- With these assumptions, vehicle trips are expected to be in compliance with the trip cap in the a.m. peak period. However, trips may exceed the cap in the p.m. peak period, particularly on Shoreline Boulevard.

- The Rengstorff Avenue gateway performs adequately with the Rengstorff Connector project but would be over capacity without that project.

- Additional operational improvements are needed to support demand on southbound Shoreline Boulevard in the afternoon. Alternatively, other demand management strategies may be needed.

- Peak-hour vehicle trips at all gateways (including San Antonio Road) would increase to about 8,000 trips in the a.m. (a 26% increase) and about 7,500 in the p.m. (a 42% increase).

In summary, the results of this Circulation Study analysis indicate that an SOV rate as low as 35% may be needed for all new commercial development in North Bayshore supplemented by Priority Transportation Improvements and other strategies to be in compliance with the gateway trip cap, assuming a return to pre-COVID traffic conditions. As noted earlier, staff recommends a strategy to require a lower SOV rate in the range of 35% to 40% for both existing and future employees on any new development, providing flexibility to consider changing post-COVID travel patterns. The appropriate combination of strategies, in addition to the SOV rate requirement, should be determined in the review and approval of individual projects.

Congestion Pricing Feasibility Study

The NBPP includes a provision for considering congestion pricing as a tool for managing the gateway trip cap. The following section from the NBPP Mobility Element describes congestion pricing and considerations for potential implementation:

- Congestion pricing involves charging motorists a user fee to drive in specific, congested areas during periods of peak demand to help eliminate or reduce related delays to acceptable levels. The net revenues generated can be used to fund transportation improvements to support shifts in travel behavior, such as transit service, roadway improvements, and bicycle and pedestrian projects. The congestion pricing system can be designed to exempt certain people or vehicles as

necessary. For example, license plate recognition can exempt North Bayshore residents or visitors to Shoreline at Mountain View.

- If the North Bayshore employer TDM program requirement and trip cap do 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. Before implementing congestion pricing, further study and community outreach will be required.

The Circulation Study studied the feasibility of congestion pricing as a potential tool for managing vehicle traffic entering and exiting North Bayshore. This feasibility study (Attachment 3) explored the potential design of this tool and explored its benefits and impacts. The study process included:

- Goals—The Circulation Study identified a balance of several goals for congestion pricing to succeed. These include congestion reduction, economic development, equity, and health and the environment.

- Pricing—The congestion pricing feasibility study modeled different pricing levels and their resulting potential for trip reduction. A key assumption was that a system in Mountain View would, to the extent possible, integrate with existing Bay Area Toll Authority (BATA) infrastructure to minimize City administrative requirements.

- Outreach—Before and after the technical evaluation, the study team conducted stakeholder interviews with North Bayshore employers and others who could be impacted by congestion pricing. The scenarios evaluated in the feasibility study were informed by these conversations and designed to be potentially successful while attempting to minimize adverse impacts identified by stakeholders.

- Scenarios—After an initial screening, four scenarios were selected for more detailed evaluation (Figure 3). These scenarios were based on a cordon pricing approach, with variations in pricing direction, time of day, and the inclusion of focused discounts (cordon pricing generally refers to a demarcated boundary "cordoning off" the specific congested pricing zone). All scenarios assumed exemptions for North Bayshore residents and transit vehicles. The evaluation also tested the sensitivity of factors, such as the success in lowering the baseline SOV rate and travel behavior elasticity.

	Scenario 1	Scenario 2	Scenario 3	Scenario 4
Pricing type	Cordon pricing			
Pricing direction	Inbound	Inbound	Peak directional (inbound in AM, outbound in PM)	Peak directional (inbound in AM, outbound in PM)
Pricing parameters	**AM peak only** (8:00 - 11:00 AM)		**Peak periods only** (8:00 - 11:00 AM and 4:00 - 7:00 PM)	
Day of week	Weekdays			
Discounts	None	- Low-income drivers (50% discount) - HOV 2+ (carpool, 100% discount) - HOV 3+ (TNC, 100% discount)	None	- Low-income drivers (50% discount) - HOV 2+ (carpool, 100% discount) - HOV 3+ (TNC, 100% discount)
Exempt vehicles	Vehicles registered to pricing zone residents, public and private transit vehicles, emergency vehicles.			

Figure 3: Congestion Pricing Scenarios

Conclusions Regarding a Potentially Suitable Program

The scenario evaluation identified a potentially suitable congestion pricing program that may best balance the identified goals. The program includes:

- Pricing only inbound a.m. trips between 8:00 a.m. and 11:00 a.m. on weekdays. Restricting the pricing to the morning peak period would target the hours with the greatest percentage of office commuters and, at least partially, mitigate impacts to noncommute trips.

- Fully exempt residents and transit vehicles.

- Further study of possible discounts (e.g., carpools, low-income drivers). A definitive conclusion about discounts was not made since more information is needed regarding the number of eligible trips and how they would be affected by pricing. There are also administrative challenges related to integration of a Mountain View system with Bay Area Express Lanes and questions about enforcement roles and responsibilities.

- A per-trip charge in the range of $5 to $13 to keep trips below the trip cap.

- A likely SOV trip rate reduction of 2% to 5%.

The technical evaluation, along with stakeholder discussions, identified several issues, concerns, and challenges that should be considered, including:

- Some employer concerns (Microsoft and Intuit, particularly) that pricing will be an obstacle to attracting employees. North Bayshore is home to primary Silicon Valley offices for those firms.

- The impact on lower-income service workers, especially at major companies.

- The impact on event attendees at the Computer History Museum and users of Shoreline at Mountain View.

- The effect on hiring restaurant and retail workers, many of whom likely need to arrive when pricing is in effect.

- Potential challenges leasing future service and retail spaces (e.g., grocery stores and pharmacies) to support the residential population.

- Impacts on construction workers.

Costs and Financing Opportunities

Capital costs to implement congestion pricing at the three gateways are estimated at $30 million. These costs include physical infrastructure for roadside detection as well as administrative provisions, likely through a contract with the BATA or Santa Clara Valley Transportation Authority (VTA). Because congestion pricing provides a revenue stream, it may be possible to finance the capital costs.

Operating costs for administering the program, processing payments, and enforcement are estimated at $7 million annually. A greater number of discounts and exemptions would likely increase costs due to increased processing costs. Expected revenue would be at least $12 million and could be substantially higher.

As a result, the evaluation estimated congestion pricing would break even in three to eight years, at which point cumulative net revenue would have exceeded capital[1] and operating costs, and be available to fund other programs, potentially directed at mode-shift programs or equity strategies. Funding these types of programs could also occur at program outset, although this possibility would depend on the financing approach used.

[1] Financing costs were not included in this analysis.

Implementation Issues/Next Steps

Congestion pricing for an area (as opposed to typical bridge and highway tolling) has yet to be implemented in the United States. At this time, New York City is the closest to implementing such as a system. The cities of San Francisco, Seattle, Portland, and others are exploring areawide congestion pricing systems but are still in study phases. There remain many implementation issues related to regulatory approvals, addressing equity, administration, enforcement, etc., that are still are under study by these other cities.

While congestion pricing in North Bayshore appears to be feasible, its value may depend on other factors, such as post-COVID traffic conditions, the pace of new development, the success of further SOV reduction efforts, and progress on Priority Transportation Improvements. In addition, there could be advantages in learning from the experiences of other cities before proceeding.

As a result of the feasibility study, it is recommended that further development of a North Bayshore congestion pricing program be deferred as the following tasks are pursued:

- Expand the gateway monitoring and surveys to better understand potential program impacts on peak-hour and peak-period trips that are not serving major employers.

- Closely track experiences with congestion pricing in the Bay Area and elsewhere to better understand the tool's effectiveness, potential equity programs, and challenges.

- Monitor gateway trip cap compliance and SOV reduction progress as new development occurs and postpandemic travel patterns emerge to determine when or if additional planning for congestion pricing should occur. The timeline for implementation of congestion pricing is four to six years to get legal approval, develop administrative agreements, and construct physical structures.

Modal Strategies

A key strategy for achieving the NBPP transportation goals is to greatly enhance alternative modes, including public transit, active transportation, and other TDM programs. The NBPP has strong facilities and programs, particularly for cyclists and pedestrians who are envisioned to take most of the internal commute and other trips. The Circulation Study reviewed the NBPP modal strategies and recommended additional actions that would help the lower proposed SOV rate. These include the pedestrian and bicycle recommendations approved by Council on June 8, 2021.

Transit Strategies

A high level of transit use is essential for achieving NBPP goals. While private company-operated shuttles have been successful in reducing peak-period vehicle use, more publicly available transit service will be needed to support the planned North Bayshore population and to help further reduce commute vehicle trips. Transit is also a critical element for achieving low automobile ownership since not all trip destinations will be located in North Bayshore.

Currently, the only public transit service available is VTA Line 40, operating all day, every 30 minutes, and the MTMA's MVgo shuttles, which operate in peak hours only. This level of service does not provide North Bayshore with a high-quality transit corridor, which requires 15-minute service from 7:00 a.m. to 10:00 a.m. and 4:00 p.m. to 7:00 p.m., as well as 20-minute frequency the rest of the day.

North Bayshore would benefit from the designation as a transit-rich area. According to State legislation, this is defined as the area within one-half mile of a high-quality bus corridor. While not sufficient today, higher-frequency service would allow essentially all of North Bayshore to become a transit-rich area and qualify for additional grant funding programs that can help enhance the vision for North Bayshore.

Expanded transit service, such as more frequent VTA service and expanded MTMA service, will be particularly important for serving the planned residential community, which is planned for low levels of parking and automobile utilization. Additional dedicated funding will likely be needed to support expanded service.

Recommended transit strategies include:

- Integrate and expand the MVgo and Mountain View Community Shuttle services, including an all-day frequent downtown connection.

- Work with VTA to increase Line 40 service frequency.

- Explore a potential VTA/MTMA connection to the NASA/Bayshore light rail station.

- Advocate for express/limited stop-light rail service from the BART Milpitas station.

- Work with the Metropolitan Transportation Commission (MTC) on a potential future regional bus program and with VTA on development of the State Route 85 corridor transit service.

TDM Strategies

TDM programs, administered by individual employers along with the MTMA, are an essential component for NBPP efforts to lower the SOV rate. They include complementary programs supporting other modal strategies. The NBPP developed TDM Guidelines for both office and residential projects that have been required for already approved projects. However, future projections for vehicle demand, including impacts of the Google Master Plan, will require updates to the current guidelines. The Circulation Study consultant team reviewed these guidelines and provided proposed updates (Attachment 4). Key recommendations for revising the TDM Guidelines include:

- Require new office developments to meet a lower SOV rate that will encompass increased internal trips and stronger TDM programs.

- Address management of district parking, requiring new monitoring methods.

- Require annual employee surveys to track progress on SOV targets.

- Strengthen the role and supporting resources for the MTMA in order to implement districtwide TDM programs.

- Develop new enforcement mechanisms and penalties that will help ensure that TDM programs are effective and SOV targets are achieved.

Summary of Recommendations

Listed below is a compilation of the Circulation Study recommendations that were discussed in this Council report. These recommendations are in addition to the recommendations approved by the City Council on June 8, 2021 related to the NBPP Priority Transportation Improvements and pedestrian and bicycle plans:

1. In addition to the previously approved recommendation to monitor compliance based on the one-way peak direction, modify gateway trip cap policies to revise the time period and locations for compliance and update gateway capacity estimates as follows:

    a. Continue the twice-yearly gateway monitoring program in order to track post-COVID traffic and compliance trends. The monitoring should measure peak period trips in both directions at each gateway as well as mode-share trends.

b. Expand the monitoring as new growth occurs to better understand characteristics of peak traffic, use of non-SOV modes, and trip characteristics of new residents.

c. Measure compliance by comparing actual trips with the gateway capacity for the three-hour peak period as opposed to just the peak hour.

d. Measure compliance by combining the Shoreline Boulevard and Rengstorff Avenue gateways. The San Antonio Road gateway should continue to be measured separately.

e. Adjust the Shoreline Boulevard and Rengstorff Avenue gateway capacities as the new infrastructure projects are completed as shown in Tables 2 and 3.

2. Develop new financial-based penalties for noncompliance with individual project vehicle trip caps and/or the gateway trip cap.

3. Establish a lower SOV rate in the range of 35% to 40% for both existing and future employees on any new development. The transportation analysis of individual developments should determine any strategies, in addition to the lower SOV rate, that are needed to help achieve compliance with the trip cap.

4. In the near term, complete the design and construction of the Priority Transportation Projects already in process as quickly as possible. For the major Priority Transportation Improvements not yet started, advance the planning and initial design phases through the Capital Improvement Program (CIP) to prepare them to move into construction when needed.

5. Proceed with the next planning phase for the Rengstorff Connector project, including the Caltrans Project Approval and Environmental Documentation (PAED) process for the Rengstorff Avenue interchange component (recently funded through the VTA Measure B program). Planning work will take approximately two years, during which time the City can review post-COVID conditions and better understand the project requirements and costs prior to making a final decision to proceed with design and construction of this project.

6. Plan and advocate for expanded public transit service so that North Bayshore is designated as a transit-rich area and work with VTA and the MTMA on strategies for service expansion.

7. Defer a decision on a congestion pricing program while monitoring other Bay Area tolling activities, gathering information about potential impacts, and establishing traffic thresholds or other factors that could support future implementation.

8. Update the NBPP to reflect approved Circulation Study recommendations, including:

   - Priority Transportation Improvements;
   - Gateway trip cap policies;
   - Bicycle and pedestrian policies and plans;
   - Implementation policies, including issuance of building permits and financial penalties for TDM noncompliance;
   - TDM requirements for development; and
   - Revise language regarding trip caps and compliance to retain the broad policies and remove specifics of monitoring and operations.

9. Update the Circulation Study in three to five years to review transportation strategies and confirm specific gateway trip cap policies.

FISCAL IMPACT

North Bayshore Circulation Feasibility Study, Project 19-54, is funded with $1,462,000 from the Shoreline Regional Park Community Fund. The recommended actions have no fiscal impact on the study budget.

Some of the recommendations in the Circulation Study report will require funding and staffing resources. These include implementing the Priority Transportation Improvements, continuing the gateway monitoring, revising the NBPP, advocating and planning for increased transit, and updating the Circulation Study in five years. Funding requests for these projects and initiatives will be considered by Council as part of the CIP and annual budget process.

CONCLUSION

The Circulation Study has provided updated direction on the transportation strategies needed to support the development plans called for in the NBPP. Circulation Study

recommendations include approval of a revised Priority Transportation Improvement list, updates to the pedestrian and bicycle elements, and modifications to gateway trip cap policies. The Circulation Study also recommends revisions to the NBPP and additional implementation strategies for monitoring transportation and development over the next few years. Upon Council approval of the recommendations, staff will begin to implement the updated policies to review development and implement infrastructure projects in the North Bayshore. Additionally, staff will bring back revisions to the NBPP to reflect the approved revisions in 2022.

ALTERNATIVES

1. Modify or do not approve the North Bayshore Circulation Study.

2. Provide other direction.

PUBLIC NOTICING

In addition to the City's standard agenda posting requirements, notices were distributed to the persons who have signed up on the project website for updates and information, previous business and/or community meeting participants, and other interested parties.

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DSC/EP/6/CAM
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Attachments:
1. Final Draft North Bayshore Circulation Study
2. Gateway Trip Cap Study for the North Bayshore Area, Hexagon Transportation Consultants
3. North Bayshore Congestion Pricing Feasibility Study, Nelson\Nygaard Consulting Associates (Executive Summary and Final Report)
4. North Bayshore TDM Guidelines Peer Review, Alta Planning and Design