



Agenda Item No. 3

To: Transportation Committee/Committee of the Whole  
Meeting of March 26, 2009

From: Alan R. Zahradnik, Director of Planning  
Celia G. Kupersmith, General Manager

Subject: **STATUS REPORT ON THE CENTRAL AND SOUTHERN MARIN  
TRANSIT STUDY**

### **Recommendation**

There is no recommendation associated with this informational report.

### **Summary**

The purpose of this staff report is to provide the Transportation Committee with the status of a planning study effort of the Transportation Authority of Marin (TAM) to identify possible improvements to Golden Gate Transit-operated bus services in south and central Marin County.

While several studies have been made related to transportation planning in the Sonoma-Marín Highway 101 Corridor and, in particular, re-establishing passenger rail service in Marin County, less attention has been given to transit needs in southern Marin County. TAM is lead agency for a \$300,000 study to identify desirable improvements to local and regional bus transit services and facilities in central and southern Marin County. The District and Marin Transit are partners in the study, each contributing \$25,000. The subject study began during fall 2008 and will be completed in late spring 2009. Staffs from the three agencies are providing direction to a consultant team under contract to TAM. A technical advisory committee includes staff from Caltrans and cities within the study area.

Two interim technical work products have been completed by the consultant team: (1) a description and evaluation of existing conditions, and (2) a list of possible improvements. The project team presented its findings to TAM Executive Committee and Marin Transit Board at their meetings on March 16 and is holding a public workshop later today prior to the TAM Board Meeting. A copy of the consultant's detailed presentation is attached to this report.

To summarize, the consultant finds that existing levels of GGT local and regional bus services are appropriate for the south and central Marin area. Road and signal improvements to give "priority" to transit vehicles are identified to reduce bus travel time on major arterials and along Highway 101. Increasing the distance between bus stops on "express" service routes is also

suggested as a means to reduce travel time. Focusing investment in bus service access improvements and passenger amenities at key “multi-modal green” bus stations is also identified. The District's Planning staff is in general agreement with the consultant’s findings. If these preliminary findings are acceptable to stakeholders, the consultant will further refine the identified improvements and complete the study in May 2009.

**Fiscal Impact**

There is no fiscal impact to the District at this time since all capital improvements identified in the study are still conceptual and subject to further development. Future funding sources have not been specifically identified. Operational improvements identified in the study are also conceptual and generally have the potential for cost savings.

Attachment: PowerPoint Presentation:        *Central & Southern Marin Traffic Study, Task 3:  
Draft Improvements*

# Central and Southern Marin Transit Study

## Task 3: Draft Improvements



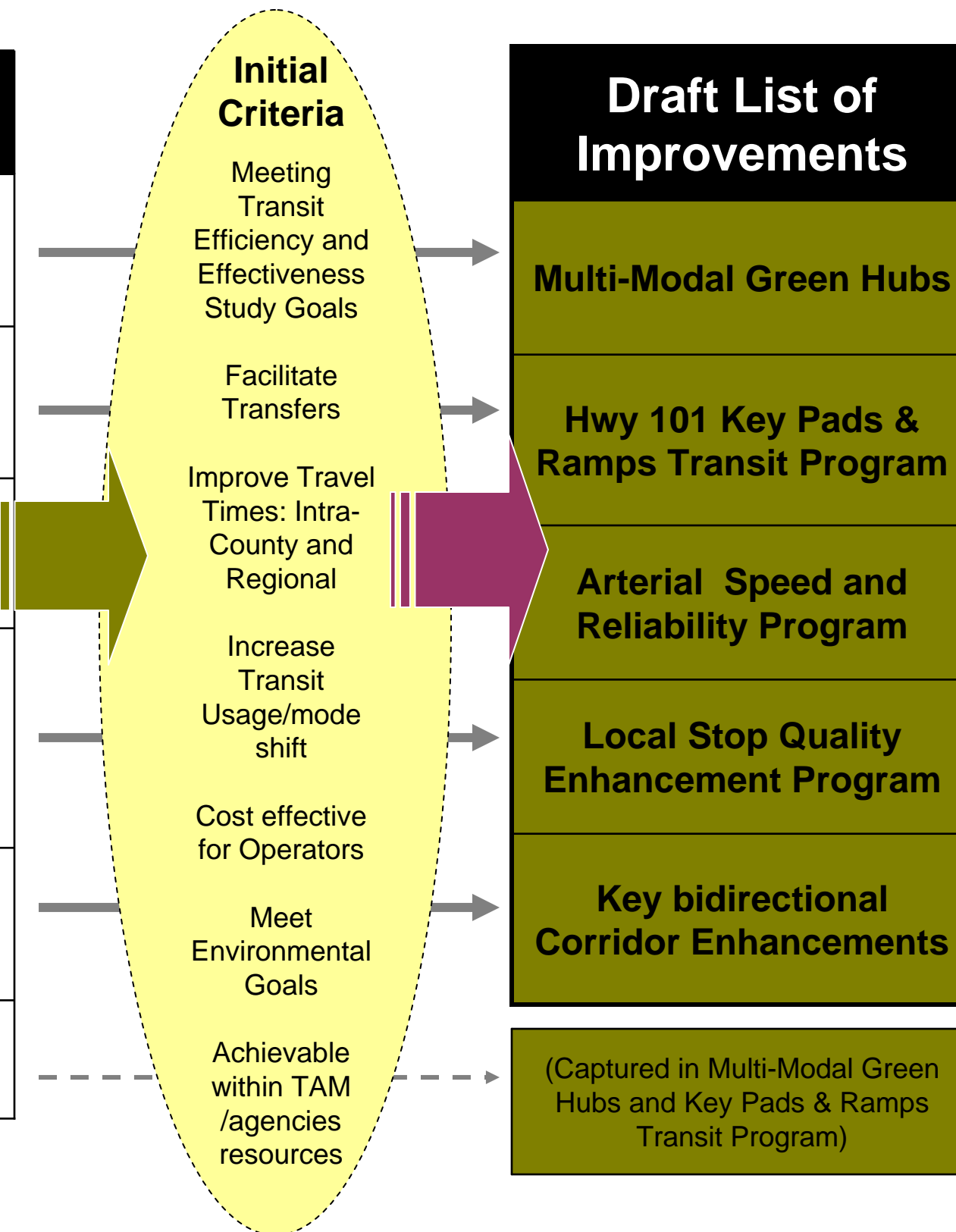
Central and Southern Marin Transit Study

March 2009



HDR

Improvement Concepts Reviewed with TAC 1/21/09	Analysis Conclusions
<b>Expanded Park and Ride capacity</b>	Shortfall of 300 spaces min. identified + 200 Kiss & Ride; no clear desire to expand capacity simply to satisfy current overflow; managed solution needed based on non-auto modes; park & ride opportunities on arterials within cities very limited
<b>Bus Pad Access Improvements on Hwy 101</b>	Access improvements essential to improving attractiveness / effectiveness. Limited \$ means grade improvements preferred over ped grade seps and provide more effective spread of investment in Cen/So. Marin
<b>Arterial Corridor Transit Signal Priority (TSP)/Capacity Improvements</b>	Desirable to pursue at key locations identified by transit operators as generating delay and On Time Performance (OTP) reliability
<b>Local Stop Established Minimum Facilities Improvements</b>	Establish a hierarchy of local bus stops along key east/west corridors: 1. Limited stop express bus stops - minimum 2 mile spacing 2. Local bus stops - approximately 1/2 mile spacing Transfers between local and limited stop express occur along corridor at limited stop express bus stops
<b>Out of Direction Travel Needs</b>	Reverse Travel Corridor Enhancements needed in Sausalito-Mill Valley (although streetcar not likely to provide effective solution); E/Dtn San Rafael-San Anselmo corridor; connections to SMART NB
<b>Major Transit Transfer Hub (new/expanded)</b>	Service levels and transfers likely to be broadly at current levels in 5-10 years. No new "Super-hub" required; (the Ferry Terminals + SRTC are the major regional hubs)



## Process for Developing List of Improvements

Central and Southern Marin Transit Study

March 2009

Draft List of Improvements	Key Transit Investment Components	Purpose
<b>Multi-Modal Green Hubs</b>	<b>Guaranteed Secure Bike Parking</b>	Expands bike access mode share to transit/discourage through auto trips
	<b>Additional Short Stay Pickup Capacity</b>	Enables Transit to serve growing half day commute market
	<b>Added Drop-off Capacity</b>	Minimizes/capture current overflow parking
	<b>Expanded Bus-Bus Transfer Capacity</b>	Accommodates additional local-regional and local-local transfers
	<b>Neighborhood Shuttle/shared ride service transfer capacity</b>	Improves penetration of non-fixed route served neighborhoods
	<b>Guaranteed Transit Parking Management Program</b>	Eliminates surface street overflow parking; generates local revenue through managing existing capacity; incentivize ridesharing
	<b>Security, Lighting, Shelter, Facilities Package</b>	Creates a secure, attractive environment for transfers close the "perception gap" between current transit experience and auto alternative.; poss. solar powered
<b>Hwy 101 Key Pads &amp; Ramps Transit Program</b>	<b>At Grade signal controlled pedestrian activated ramp crossings</b>	Establishes safe access environment for Bus Pad users incl. disabled riders;
	<b>Ramp Transit Signal Priority (TSP)</b>	Provides enhanced freeway transit access to mixed flow lanes improved travel time/reliability in congested conditions
	<b>Bus Pad Access Reconfiguration</b>	At select locations, facilitates direct freeway access and at-grade connections with local service, while minimizing local arterial street impacts
<b>Arterial Speed and Reliability Program</b>	<b>Transit Signal Priority (TSP)</b>	Improves arterial transit running times and reduces intersection delay; enables headway-based frequencies on congested corridors
	<b>Roadway/Intersection Reconfiguration</b>	Improves capacity for transit and other users
<b>Local Stop Enhancement Program</b>	<b>Investment in Facilities for Priority Limited Stop Express Bus Stops</b>	Establishes standard level of enhanced facilities for most heavily used express and local stops (shelter, lighting, access and select elements of Multimodal Strategic Green Hubs
	<b>Bus stop prioritization investment program</b>	Establishes an annualized capital investment plan to guide bus stop enhancement strategy  Bus stop hierarchy improves transit running time along corridors.
<b>Key bidirectional Corridor Enhancement Opportunities</b>	<b>Muir-Sausalito-Mill Valley Welcome Service</b>	On Friday-Sunday basis, provides frequent transit connection for visitors arriving by ferry to Sausalito Dtn/Bridgeway and with Muir Woods service; extends frequent reliable tourist travel to Dtn Mill Valley; offers local riders enhanced level of service from Mill Valley to Manzanita and Sausalito
	<b>Canal-Dtn San Rafael-San Anselmo Rapid Service</b>	Establishes rapid bus priority corridor service (as first stage BRT) using headway-based service with SRTC/SMART connections to meet bi-directional all day needs between Canal district, Dtn San Rafael, San Anselmo and major So. Marin activity destinations
	<b>Larkspur-area Hub Connections</b>	Establishes transfer facilities and shuttles to meet unique travel/transfer needs between SMART, GG Ferry terminal and MCTD local service

# Draft List of Improvements

## Central and Southern Marin Transit Study

March 2009



Draft List of Improvements	Key Transit Investment Components	Jurisdiction	Ave. Capital Cost per location (\$000s)	Capital Cost of Improvement (\$000s)	Subtotalled Key Improvements (\$000s)
Multi-Modal Green Hubs	Guaranteed Secure Bike Parking	Cities/TAM	\$20	\$340	
	Additional Short Stay Pickup Capacity	Cities	\$25	\$425	
	Added Drop-off Capacity	Cities	\$20	\$340	
	Expanded Bus-Bus Transfer Capacity	Cities	\$150	\$1,200	
	Neighborhood Shuttle/shared ride service transfer capacity	Cities/MCTD/GGT	\$25	\$425	
	Guaranteed Transit Parking Management Program	Cities/TAM	\$85	\$680	
	Security, Lighting, Shelter, Facilities Package	Cities/MCTD/GGT	\$50	\$850	<b>\$4,260</b>
Hwy 101 Key Pads & Ramps Transit Program	At Grade signal controlled pedestrian activated ramp crossings	Caltrans/Cities/Co.	\$75	\$750	
	Ramp Transit Signal Priority (TSP)	Caltrans/Cities/Co.	\$100	\$600	
	Bus Pad Access Reconfiguration	Caltrans/Cities/Co.	\$1,200	\$4,800	<b>\$6,150</b>
Arterial Speed and Reliability Program	Transit Signal Priority (TSP)	Cities/MCTD/GGT	\$300	\$3,900	
	Roadway/Intersection Reconfiguration	Cities/Co.	\$500	\$6,000	<b>\$9,900</b>
Local Stop Enhancement Program	Investment in Facilities for Priority Limited Stop Express Bus Stops	MCTD/GGT/Cities	\$45	\$720	
	Bus stop prioritization investment program		TBD	TBD	<b>\$720</b>
Key bidirectional Corridor Enhancement Opportunities	Muir-Sausalito-Mill Valley Welcome Service	Cities/Co.	\$1,400	\$1,400	
	Canal-Dtn San Rafael-San Anselmo Rapid Service	Cities/MCTD	\$2,800	\$2,800	
	Larkspur-area Hub Connections	City/GGF/SMART/Caltrans	TBD	TBD	<b>\$4,200</b>
TOTAL				<b>\$25,230</b>	

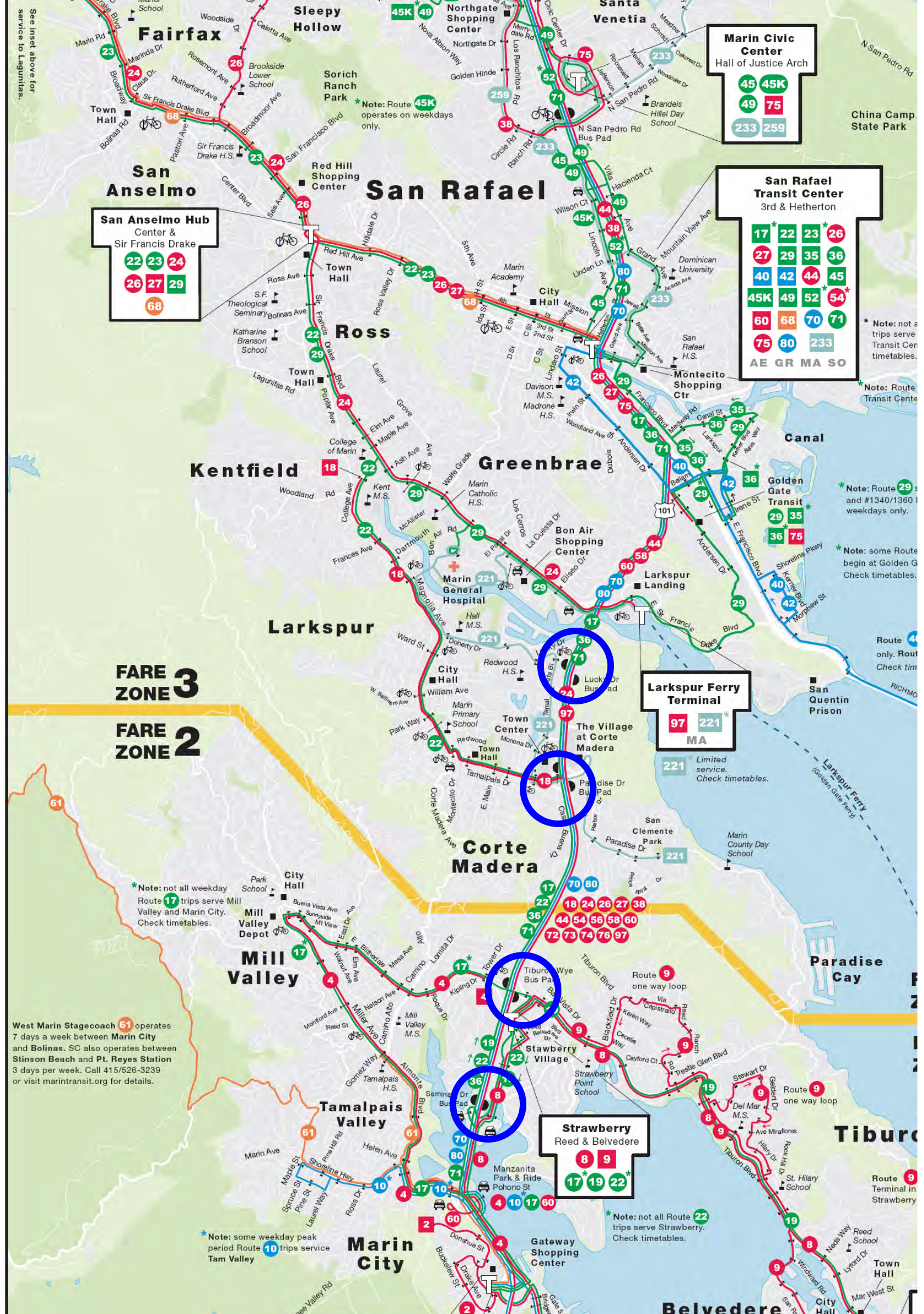
## Transit Improvements: Estimated Costs

### Central and Southern Marin Transit Study

March 2009

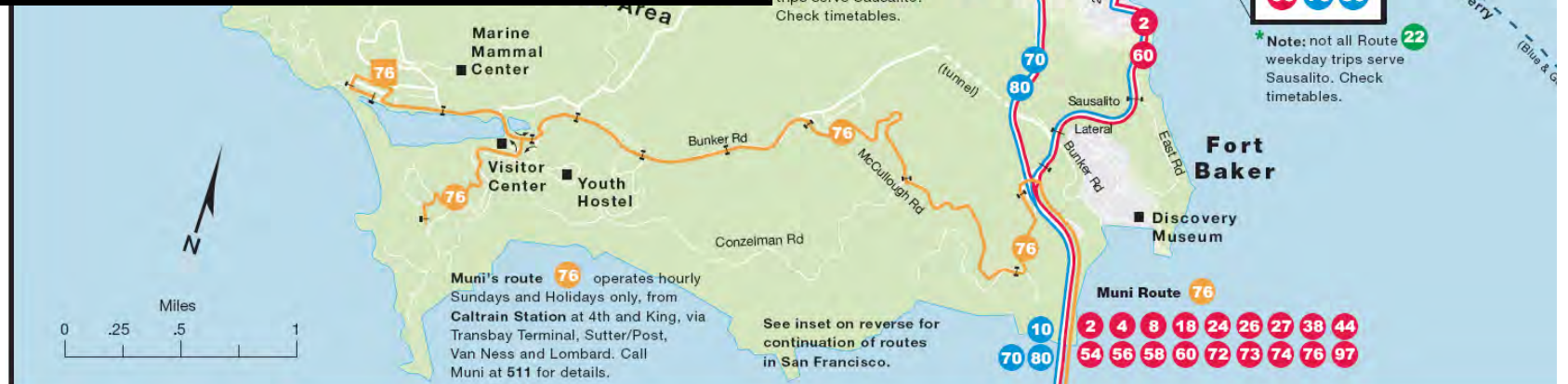






### Marin Hwy 101 Transit Signal Priority Analysis of On-Ramps

Milepost	Direction	Location	Average Daily Volume (2007)	Ramp TSP Appropriateness
1.71	SB	Spencer Ave/Monte Mar	800	No -- Low volume of traffic
1.83	NB	Spencer Ave/Monte Mar	1800	No -- Low volume of traffic
4.75	NB	Seminary/Frontage	4950	Maybe
4.75	SB	Seminary/Strawberry	7200	Maybe
5.66	NB	Blithedale/131 EB Loop	13200	Yes
5.73	SB	Blithedale/131 WB Loop	5200	Yes
7.33	NB	Tamalpais Drive EB Loop	8200	Yes
7.4	SB	Tamalpais Drive WB Loop	4550	Yes
8.18	SB	Fifer/Nellan	4350	Maybe (Greenbrae Interchange project)
8.45	NB	Industrial/Paradise	10600	Maybe (Greenbrae Interchange project)



# Ramp TSP and Bus Pad Reconfiguration

## Existing Condition

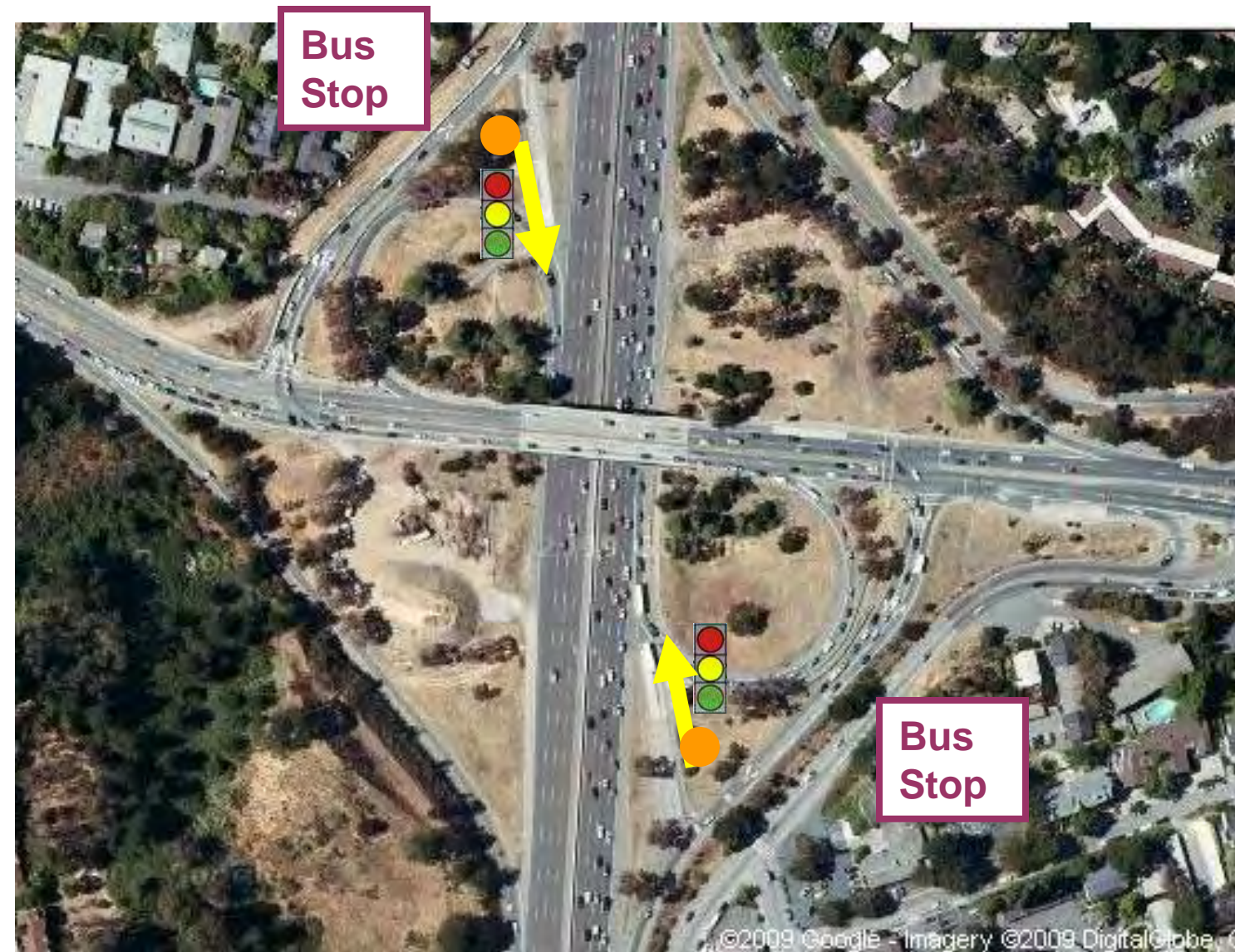
- Stops between off-ramp and loop on-ramps
- Riders must cross on-ramp traffic and negotiate steep slopes
- Buses pull into exit ramp
- Buses must wait for on-ramp traffic gap



# Ramp TSP and Bus Pad Reconfiguration

## Option 1: Ramp TSP

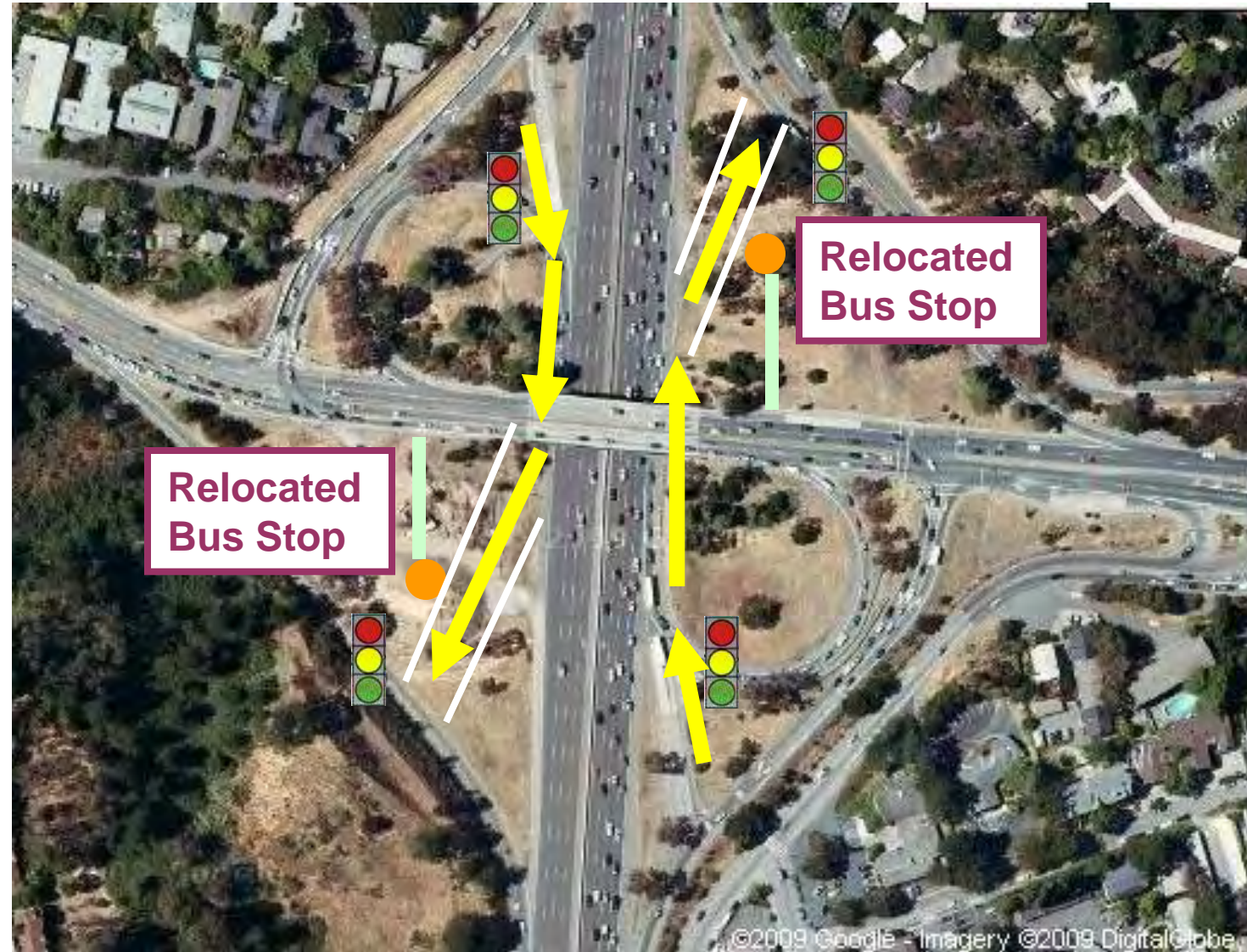
- Stops between off-ramp and loop on-ramps
- Riders may have pedestrian call for on-ramp traffic and negotiate steep slopes
- Buses pull into exit ramp
- Buses only wait few seconds for on-ramp traffic gap



## Ramp TSP and Bus Pad Reconfiguration

# Option 2: Ramp TSP + Stop Relocation

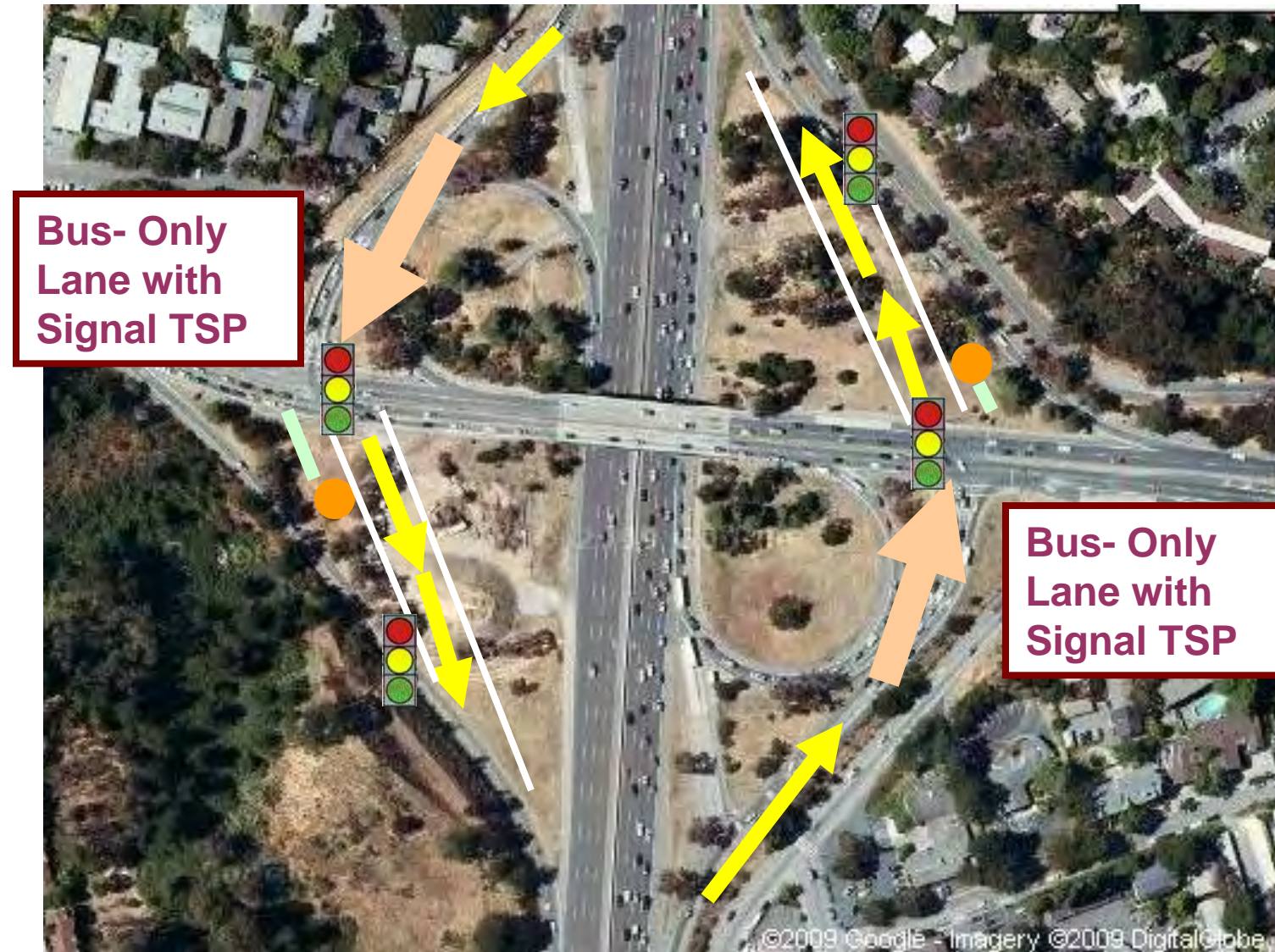
- Stops between off-ramp and loop on-ramps
- Riders may have pedestrian call for on-ramp traffic and negotiate steep slopes
- Buses pull into exit ramp
- Buses only wait few seconds for on-ramp traffic gap
- Improves for local-regional bus service transfers



## Ramp TSP and Bus Pad Reconfiguration

### Option 3: Off-Ramp TSP + Stop Relocation

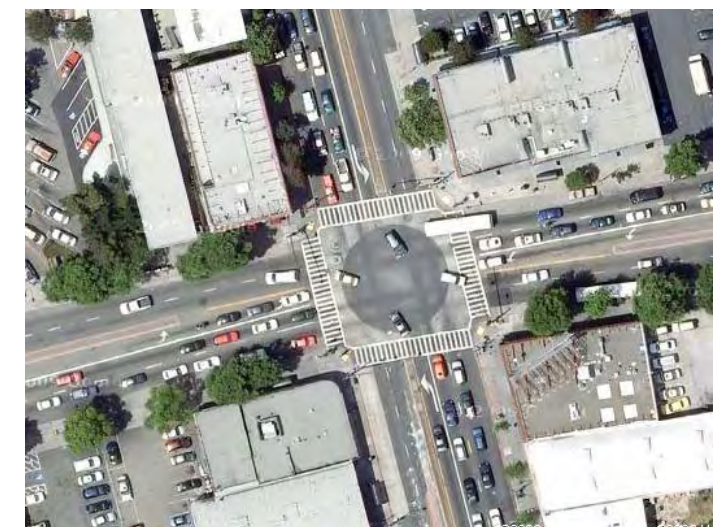
- Stops adjacent to arterial stops
- Riders cross no ramp traffic to reach stop
- Buses pull into exit ramp, receive priority for continuing onto loop on-ramp, and pull into new bus only ramp
- Buses only wait few seconds for on-ramp traffic gap



## Arterial Speed and Reliability Program

# Suburban Arterial TSP Is One of Several Strategies to Enhance Bus Operations

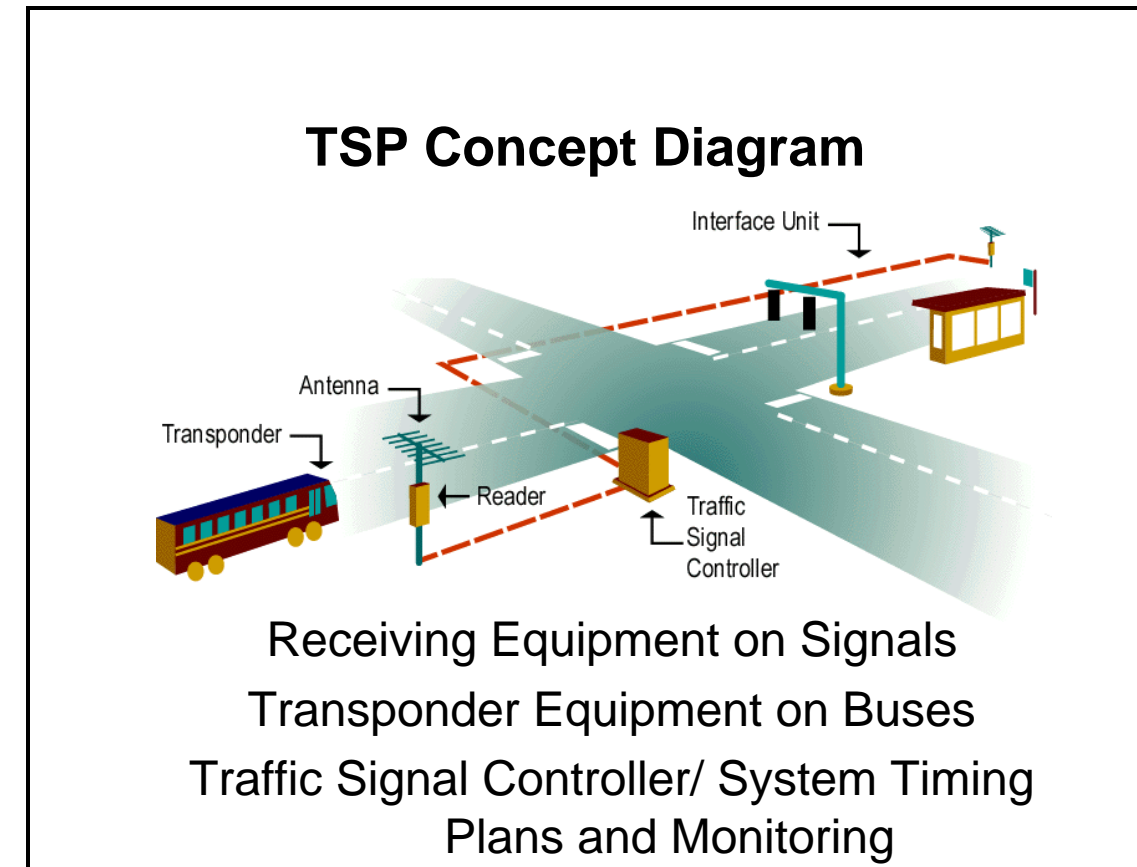
- Lengthening substandard bus stops to get buses around queued traffic
- Limit need for bus to pull in /out of travel lane (e.g., bus bulb, boarding island)
- Stop spacing changes
- Traffic engineering signing and striping (concrete or red “bus stop” markings, turn pockets, red curbs, etc)
- Signal retiming to minimize bus delays (passive transit signal priority)
- **Active transit signal priority (TSP)**



# Arterial Speed and Reliability Program

## Typical Active TSP Techniques

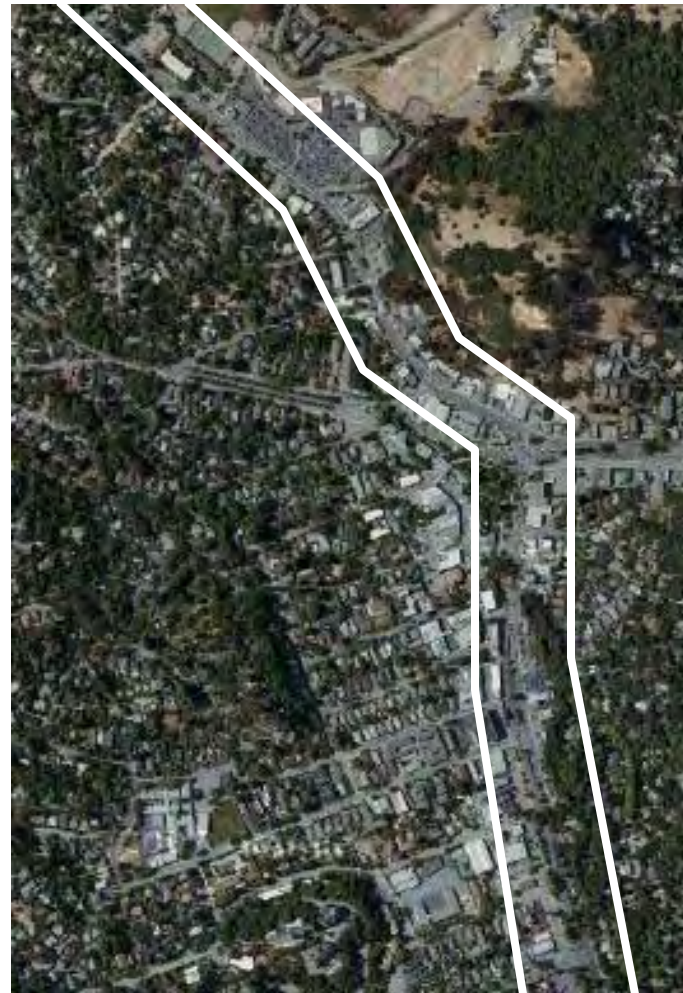
- Green Extension: Hold signal phase green until bus passes
- Early Red: Change signal phase quicker for buses (such as swap left-turn/through movement phases when buses are present)
- TSP options mostly require far-side stops to be most effective
- Benefits greater for multi-phase intersections
- Can work for all buses, or limited to express buses or buses running late



# Arterial Speed and Reliability Program

## Sir Francis Drake Transit Signal Priority – San Anselmo Portion

- San Francisco Road to Bolinas Avenue
- Existing interconnect
- Coordination with San Anselmo required
- Likely Techniques
  - Green Extension
  - Early Red Phases



## Sir Francis Drake Transit Signal Priority – County (Middle) Portion

- College Avenue to Eliseo Drive/ Barry Way
- Existing interconnect
- Coordination with Marin County required
- EMTRAC pre-emption already installed for emergency vehicles
- Likely Techniques
  - Green Extension
  - Early Red Phases



# Arterial Speed and Reliability Program

## Optimizing Bus Stop Spacing

### Benefits

- Reduced bus running time along corridors
- Improves general traffic flow along corridors
- Reduces traffic congestion along corridors

### Helps identify stop investment consistent with current Spacing Guidelines

- ¼ mile to ½ mile for local stops
- 1 mile to 2 mile for limited stop express

### Actual Spacing Dependent on:

- Demographics
- Density
- Pedestrian access
- Topography
- Land uses



# Next Steps

- Workshop (6:00pm) March 26<sup>th</sup> 2009
- TAM Board (7:00pm) March 26<sup>th</sup> 2009
- Refined Improvements/Draft Final April 2009

# Discussion

Questions?