

# San Mateo 101 Corridor Strategies:

## An Innovative Partnership in the Making

June 25, 2015

# This is **NOT** 1976 Santa Monica

## 'LOSS OF CREDIBILITY'

### **Diamond Lanes Stir Dissension in Caltrans**

LA Times 7/20/76

## **A Total Flop**

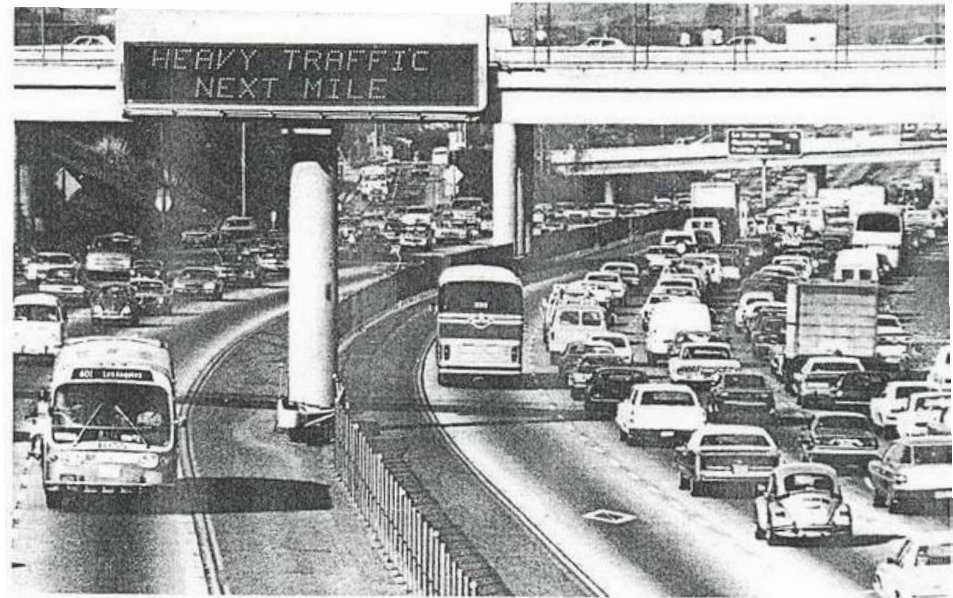
The time has come to chuck the Diamond Lanes. This experiment on the Santa Monica Freeway doesn't work. It has not achieved its purpose. All evidence points to the conclusion that it never will.

LA Times 6/11/76

## **Bus-Car Pool Lanes Popular in S.F. Area**

Experiments Generate No Controversy Like That of Southland Diamond Lanes

LA Times 8/23/76



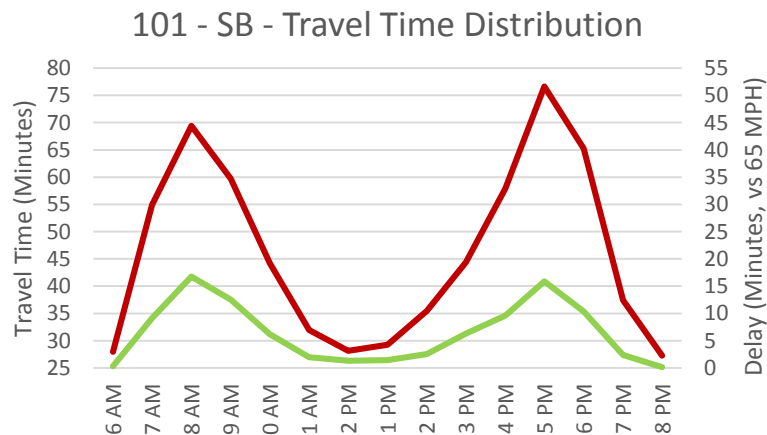
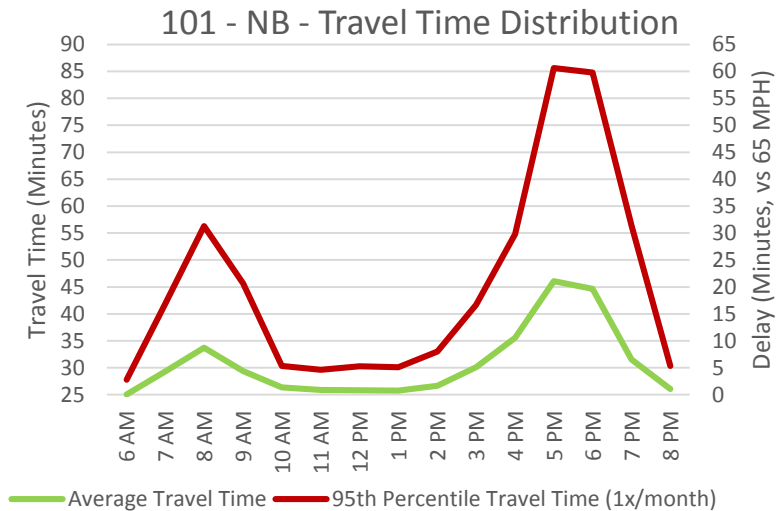
The far left lane is reserved for buses and car-pool vehicles during Diamond Lane Express Plan test on Los Angeles' Santa Monica Freeway in March 1976.

## Many innovative strategies available today in Silicon Valley

- Private employer shuttles
- Privately operated transit (RidePal)
- Rideshare technologies (Lyft, Uber, Carma)
- Parking pricing & management
- Dynamic tolling to fill capacity
- Real time information
- Smartphones / Internet / GPS

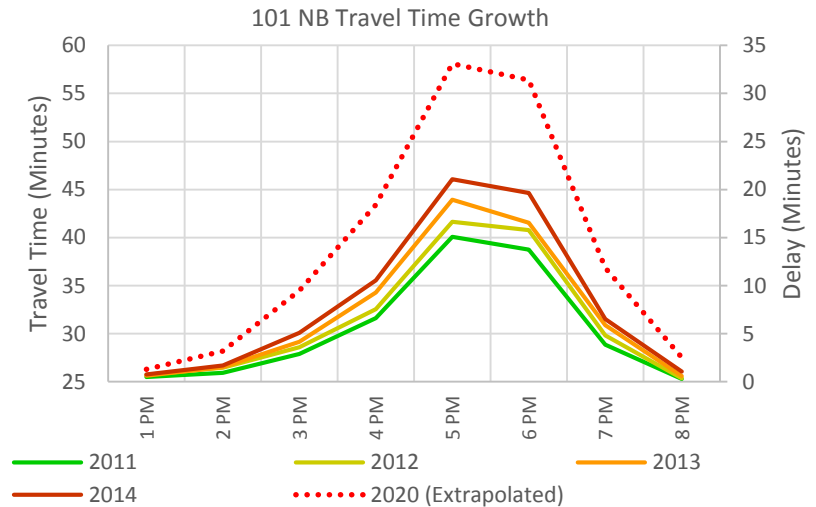
# US-101 Congested & Getting Worse

## Frequent & Variable Congestion



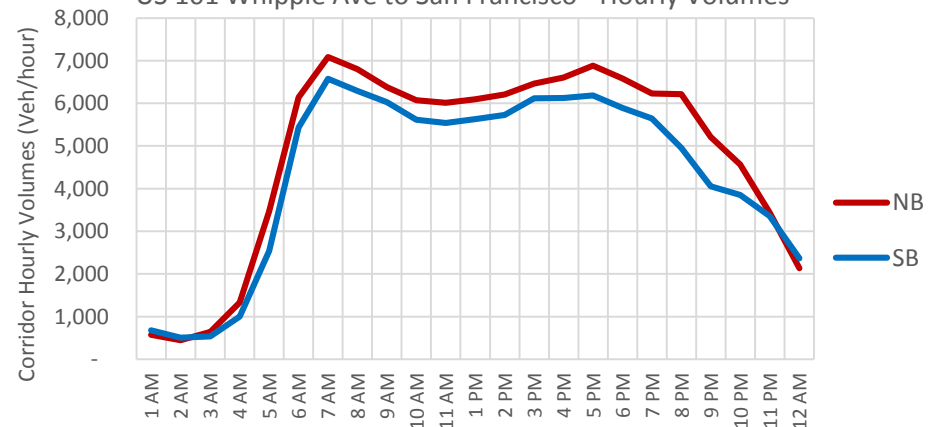
## Growing Every Year

Silicon Valley companies rapidly expanding,  
building new campuses → traffic will get worse



## Flat traffic profile → Midday will get congested too

US 101 Whipple Ave to San Francisco - Hourly Volumes



# Caltrain At Capacity & Demand Growing

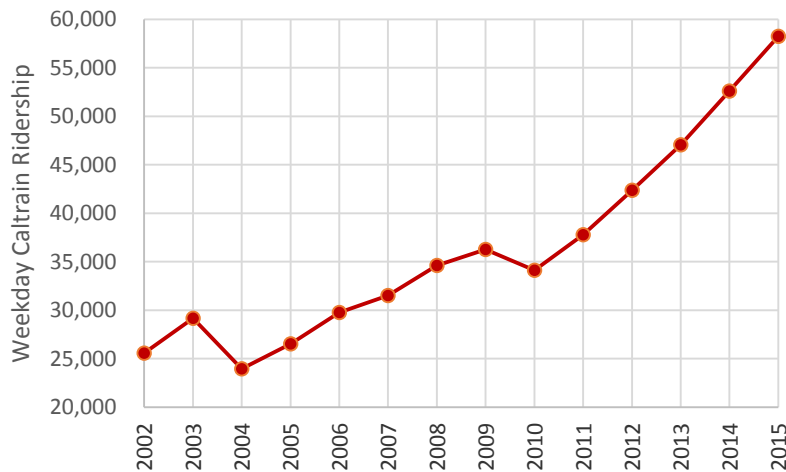
## San Mateo residents bear the burden

### Caltrain Exceeding Capacity

Trains most crowded in San Mateo

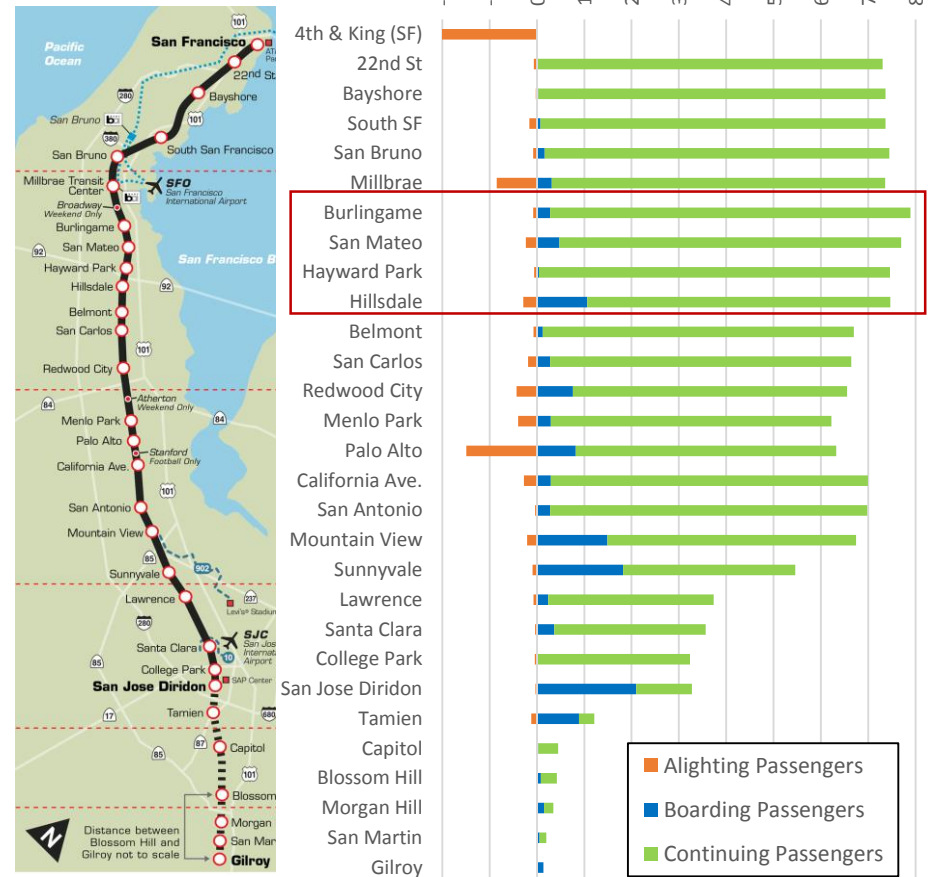
Average Weekday		2009	2015	% Change
Ridership	Daily	36,232	58,245	61%
	Traditional Peak	-	29,143	
	Reverse Peak	-	18,842	
Service	Daily Trains	98	92	-6%
Max Load (Feb)	5 Fullest Trains Each	85%	124%	46%
Max Load (High Season)	Direction	-	145%	

### Ridership has grown over 10% annually since 2010



### Caltrain fullest in San Mateo segments

AM - Feb 2014

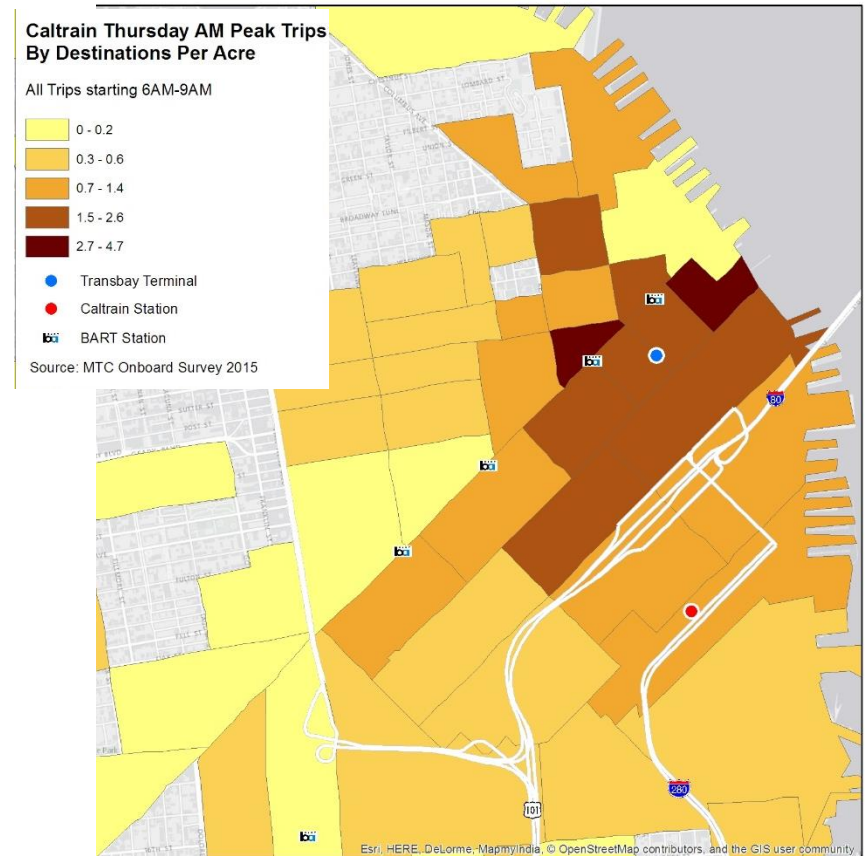
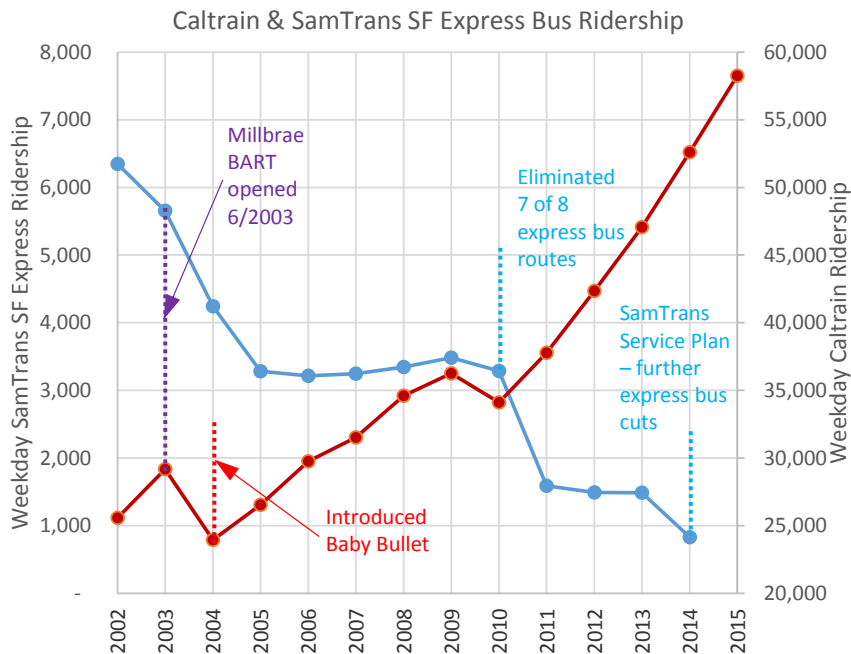


# SamTrans SF Express Service Cut

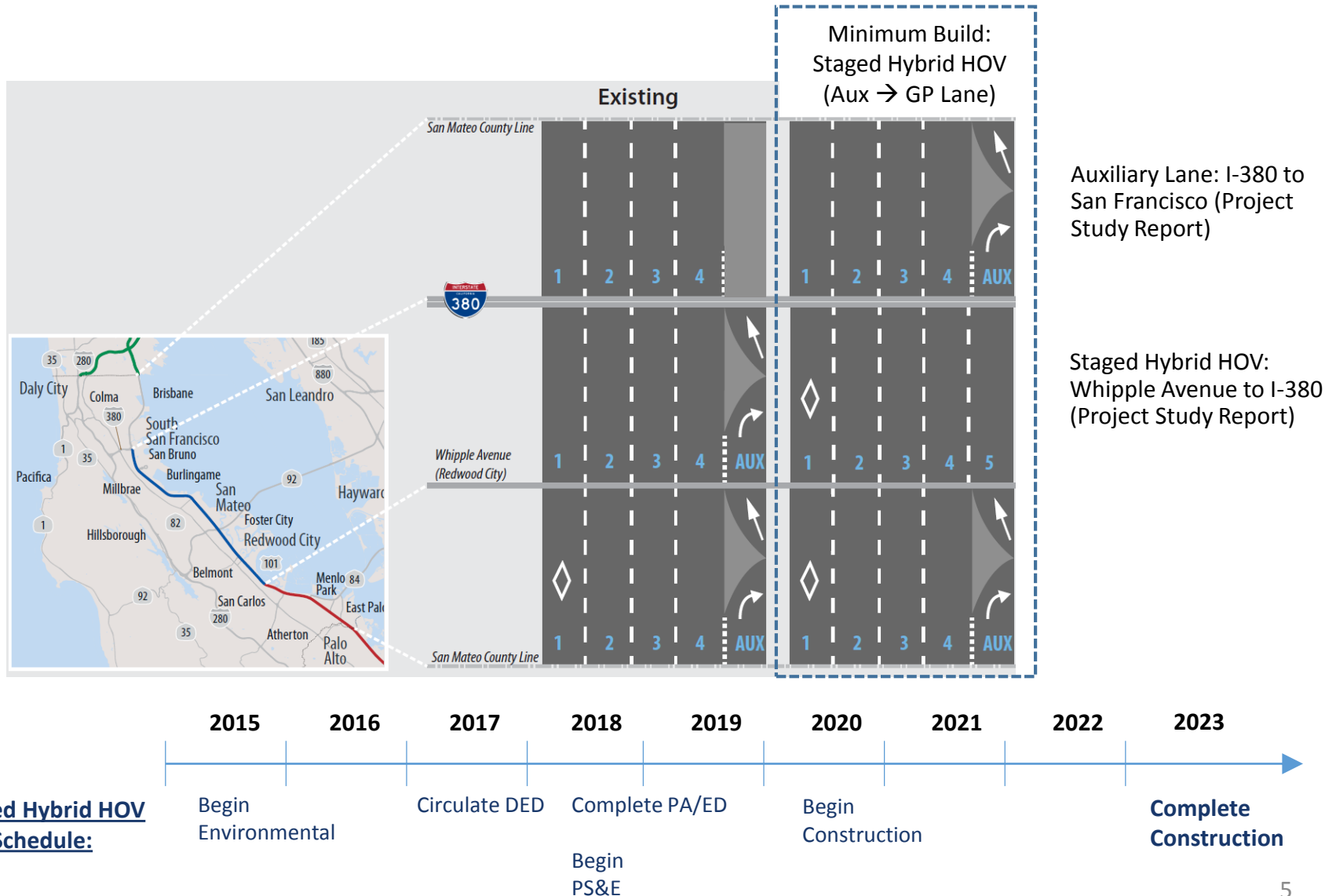
SamTrans express bus ridership dropped because of service cuts, not lack of demand.

- Effectively no SF or SC commute bus service
- Odd compared to rest of Bay Area & SF commuter corridors

4<sup>th</sup> & King St. not the ultimate destination for many commuters

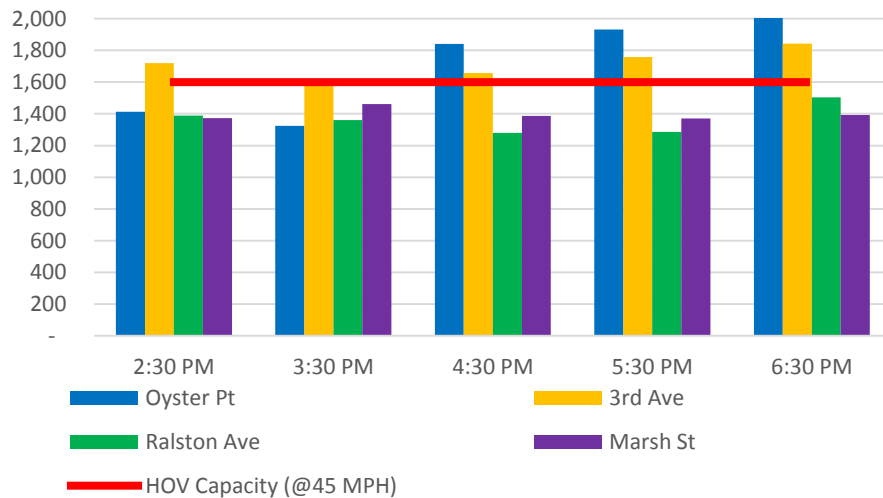


# Staged Hybrid HOV



# HOV2+ Is Not an Option

US-101 HOV2+ Eligible Traffic - NB  
(Passenger Car Equivalents,  
Assumes 4% of SOV are Clean Air Vehicles)



**HOV/HOT lane capacity  $\approx$  1600 Vehicles/Hour to keep it flowing above 45 MPH**

Not accounted for:

- Traffic growth: new campuses for Apple, Facebook, Google, LinkedIn, etc.
- Violations
- HOV/HOT will encourage more eligible vehicles (motorcycles, carpools, buses, vanpools, CAVs)
- VTA 101 express lanes 2+2  $\rightarrow$  Will feed even more HOT traffic into San Mateo US 101

## Limited Benefits

- Provides minimal GP congestion relief and will only last temporarily
- Does not provide any time savings to buses and HOVs as HOV lane will be oversubscribed

## Hybrid HOV not enough

- HOV2+ would be degraded 1<sup>st</sup> day
- Doesn't connect to SF or SCL counties
- Doesn't work with SCL express lanes (2+2 HOT  $\rightarrow$  1+1 HOV)
- Would need to be HOV3+  $\rightarrow$  Empty HOV Lane  $\rightarrow$  Need to be HOT 3+

## Too long to deliver

- 8+ years too long for the public and employers

**Need to consider alternative options**



# Options on the Table

	Options	Ballpark Cost	Schedule	Notes
1	Paint HOV2+	25 M	2018	HOV degraded at opening & GP worse than existing
2	Paint HOV3+ (Option 1 & Increase Occupancy to 3+)	25 M	2018	HOV lane perceived as "empty" GP severely degraded
3	Toll HOV 3+ (Option 2 & Add Tolling)	140 M	2018	Fills HOT lane GP congestion worse than existing levels
4	Transit & TDM (Without HOV/T)	TBD	Now - 2018	Increase HOV traffic but still degraded Reduces GP congestion but still worse than existing Moves same/more people with fewer vehicles

Santa Monica  
Freeway 1976



**Applied individually each of the options would fail on their own**  
**But applying all 4 makes the project feasible**

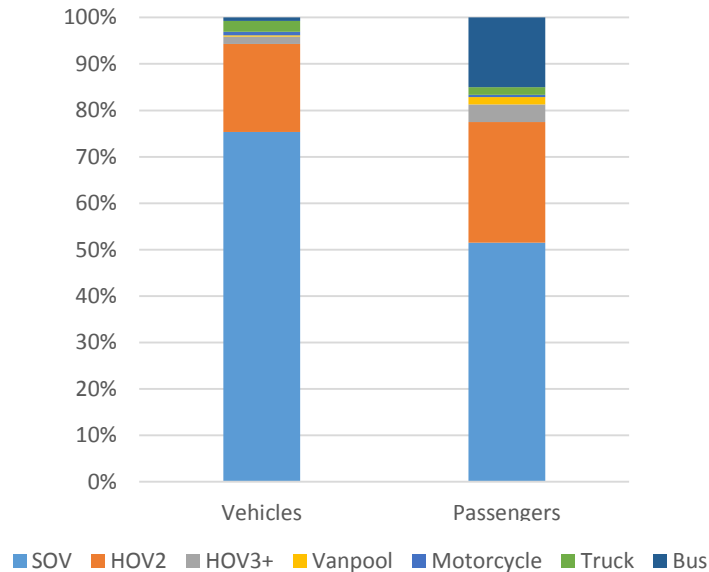


# Significant Existing HOV & Private Transit

1 Bus Capacity  
= 50+ Passengers  
= 40 Cars

Existing US 101 PM Traffic Data  
(NB + SB)

Share by Classification & Occupancy

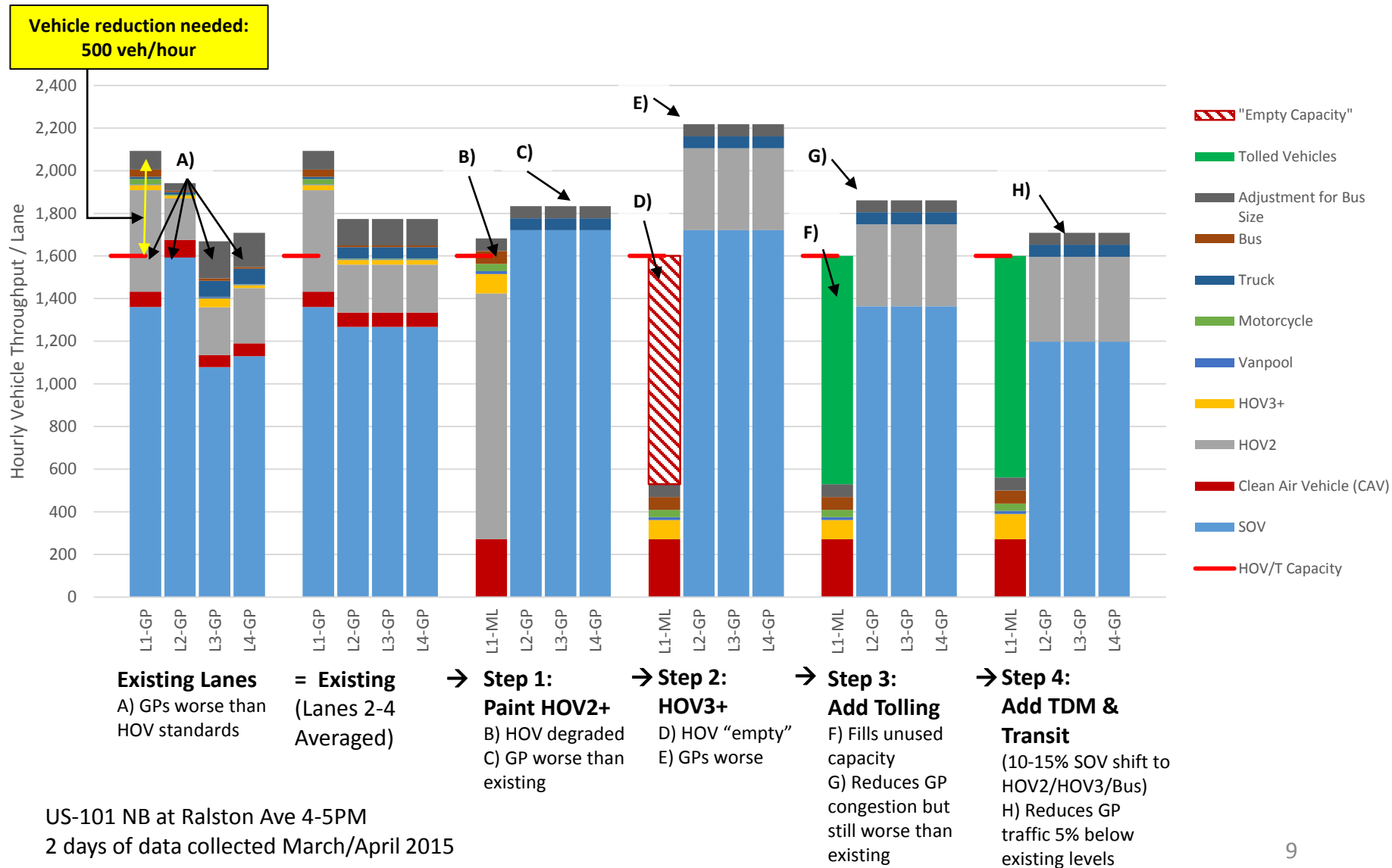


Assumed ridership: bus = 30 passengers, vanpool = 8 passengers



- SOVs are 75% of vehicles but only 52% of the passengers in the corridor
- Buses are less than 1% of the vehicles but are estimated to carry 15% of the passengers
- HOV3+ eligible vehicles (HOV3+, vanpool, bus) make up less than 3 % of the traffic and an estimated 20% of passengers

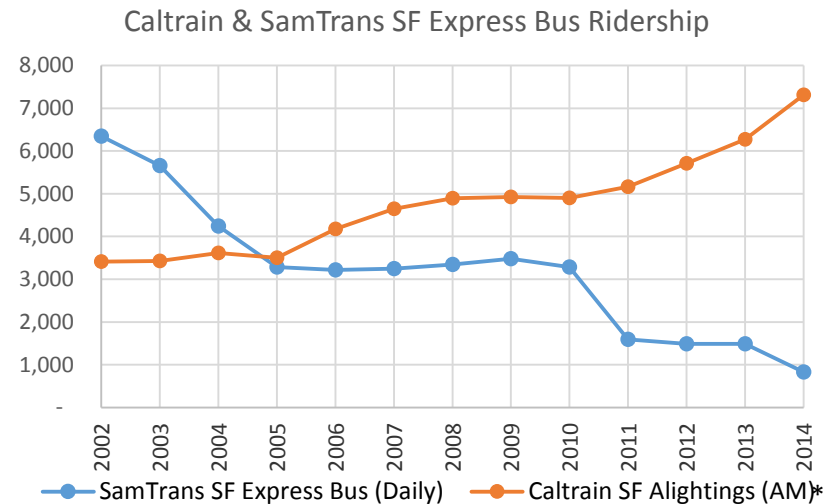
# Applying All 4 Options = Feasible Project



# How to achieve vehicle reduction:

## (1) SamTrans Express Bus - Reinstate & Expand

- Reinstate discontinued service in 0-2 years
  - Serve multiple downtown SF stops
  - Potential to run both directions
- Revamp & expand premium service at HOT opening
  - New premium buses
  - Supportive capital projects (stops, ramps, and park-ride)
- Express bus complements Caltrain
  - Caltrain + express bus should be viewed and used as a system
  - More and better options creates a more resilient and robust transit system
  - When one service is delayed riders will appreciate having an alternative



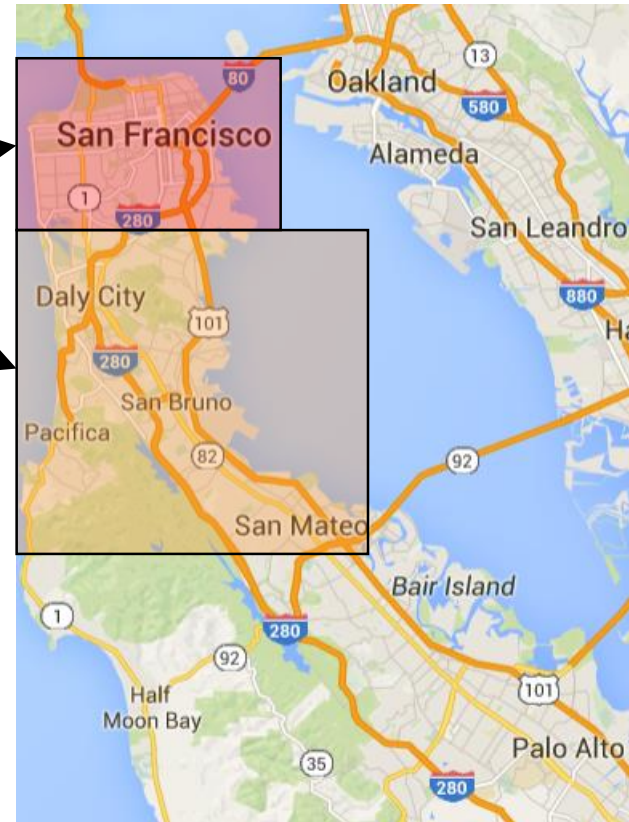
\* Origin of Caltrain SF Alightings in AM Peak:  
1/3 Boarded at stations in San Mateo County  
2/3 Boarded at stations in Santa Clara County

- **Transit & TDM strategies can be implemented within next 1-2 years**
- **Net toll revenue allocation to express bus & TDM is necessary**

# How to achieve vehicle reduction:

## (2) Expand Private Shuttles

- Private employer shuttles
  - Significant existing operations & ridership
  - SF residents well served by largest employers, limited expansion potential
  - Need to identify areas not as well served by current shuttle services (San Mateo County)
  - Encourage other smaller employers to create/expand shuttle services
- Privately operated public shuttles (RidePal)
  - Private services, which are nimble, flexible, and innovative can be used to fill service gaps and complement publicly operated trunk lines



**RidePal**<sup>TM</sup>

# How to achieve vehicle reduction:

## (3) Increase Carpools

- Currently no incentive to carpooling north of Whipple Rd.
- Many carpools will form naturally:
  - Express lanes will provide time savings and travel time reliability to eligible HOVs
  - Roundtrip gas ≈ \$7 (full operating cost is higher)
  - SF Financial District parking = \$30+/day, \$400+/month
- Technology can be used to facilitate quicker and wider adoption than on other corridors
  - 511 rideshare (important but less nimble than private companies)
  - Bay Area Council & employers can coordinate with private providers
  - SFO is a significant rideshare market



# How to achieve vehicle reduction:

## (4) Parking & First/Last Mile Service

- Improve ease of use and access to Caltrain/Express Bus/Carpool via:
  - Establish new park-ride lots to support SamTrans Express Bus and employer shuttles
    - Efficient management of existing parking
    - Parking real time info
    - Pricing to encourage use of all facilities
  - On-demand shuttle service targeted at commuters from low-density areas to access SamTrans/Caltrain/Shuttle stops
    - Bridj (Boston & DC) dynamically routes minibuses based on demand, the same concept could be applied focused on serving single Caltrain/SamTrans/Shuttle stops.
    - VTA is testing a dynamic transit service pilot program



# How Can Employers Contribute?

## Targeted reduction in SOV traffic:

1,000 vehicles/hour = 6,000 - 8,000 vehicles/day

## Vehicle reduction is achievable

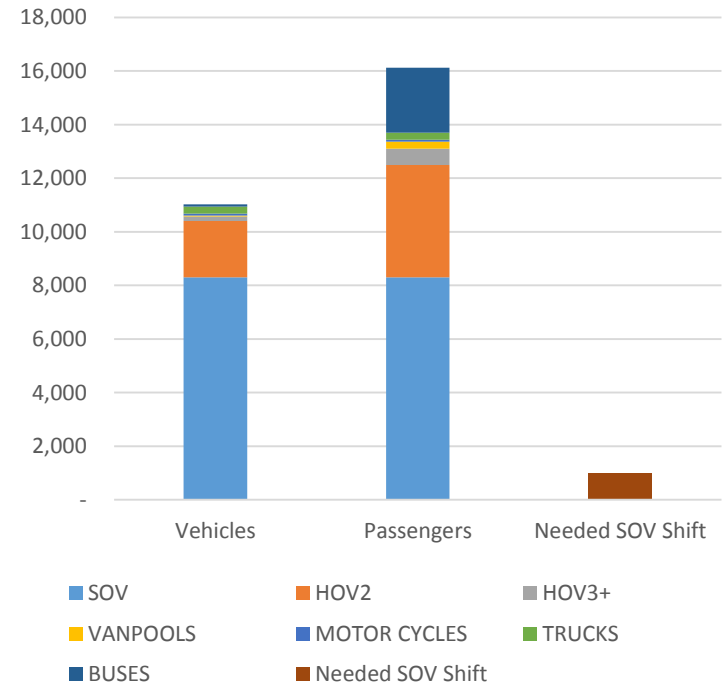
- Could be accomplished by shifting 10-12% of SOVs to HOV or transit
- 2010 SamTrans Express Bus Ridership = 40% of shift

## Potential employer strategies:

- Increase employer shuttle service & ridership
- Support expansion of private shuttles available to the public (RidePal)
- Facilitate formation of carpools
  - Own employees
  - Leverage Lyft/Uber
  - Park-ride lots & real-time information

Options aren't prescriptive, employers can choose any combination as long as they have the necessary impact

101 PM Hourly Volumes by Classification & Occupancy (NB+SB)





# What Passes the Litmus Test?

Congestion Relief									Meets Challenges:
Strategies		HOV/T Volumes	HOV/T Speeds	General Purpose Speeds	Bus & Carpool (Speeds & Effectiveness) (GP or HOV/T)	Network Connectivity	Schedule	Cost	1) Congestion Relief 2) Schedule 3) Cost
A	Staged Hybrid HOV + 380-SF Auxiliary Lane	Too high	Degraded	Slightly better, but only temporarily	Bus & carpool travel at GP speeds (not attractive)	Doesn't extend HOV to SF, doesn't connect well with VTA ELs	2023 8+ Years	Hybrid HOV: 120 M 380-SF Aux: 130 M Combined: 250 M	Fail 0/3
B	Change-A-Lane HOT 3+ + Transit + TDM	Fills HOT lane	45+ MPH	No worse, likely better	45+ MPH	Extends express lanes to SF, better connection to VTA	2018	140 M	Pass 3/3
A+B		Fills HOT lane	45+ MPH	Some improvement	45+ MPH	Extends express lanes to SF, better connection to VTA	2018 / 2023	390 M	Partial Pass 2/3

# Costs & Funding

Options		Ballpark Cost
A)	Staged Hybrid HOV + 380-SF Auxiliary Lane	250 M
B)	Change-A-Lane HOT 3+ + Transit + TDM	140 M
A + B		390 M

What county/regional/state funds can be brought to the project?

Where might private capital best be deployed to accelerate the project?

# How Can This Happen?

## Phasing Plan

- Reinststate SamTrans Express Bus
- Park-ride lots
- Employer Transportation Demand Mgt.
- Introduce Premium SamTrans Bus
- Transit Capital Projects
- Aggressive Transportation Demand Mgt.



### Change-A-Lane Target Schedule:

Environmental  
Legislation

Open HOT Lane  
Construction



### Staged Hybrid HOV PSR Schedule:

Begin  
Environmental

Circulate  
Draft Environ.  
Document

Complete Project  
Approval/Environ.  
Document

Begin  
Design/Engineering

Begin  
Construction

Open New  
GP Lane

Known & unknown risks may impact schedule

# Changing 101 to HOT in 2018: Perfect Opportunity

- Key is **practical and achievable** TDM & transit, the question is not whether it can work but what it would take to shift enough SOV to transit & carpool
- Demonstrated underserved demand for transit (SamTrans cut express bus routes & Caltrain is at capacity) → Express buses with HOT speeds/reliability will be very attractive to commuters
- No current benefit to carpooling → Some carpools will form naturally
- Uber/Lyft/RidePal → Can be leveraged to help and should be eager to look at underserved market
- Innovative business interests can help with nimble adjustments to TDM at opening
- High income/airport/business corridor → High willingness to pay for time savings & reliability → Net toll revenues can pay for transit/TDM

Changing a general purpose lane to HOT  
is not the only option but it is viable

# Champions for San Mateo US 101

“The Highway 101 corridor is the world’s leader on innovation, but our transportation system still looks a lot like it did decades ago.” – [Assemblyman Kevin Mullin \(February 2015\)](#)

“Silicon Valley is built for speed, but Highway 101 is moving at a slow crawl.” – [Jim Wunderman, President and CEO of Bay Area Council \(February 2015\)](#)

“A good express lane...converts existing highway lanes into express lanes, uses express lane revenues to fund more transportation options, has a strategy in place to ensure that everyone along the corridor benefits.”

– [TransForm \(April 2015\)](#)