



Ramp Metering Overview and Informational Presentation

January 2019

Presentation

- Background information about the Freeway Performance Initiative including ramp metering
- Case Study
- Ramp Metering in Marin – Phase 1 Scope & Schedule
- Outreach Efforts



Highway 101 Marin County Traffic – PM Commute Congestion



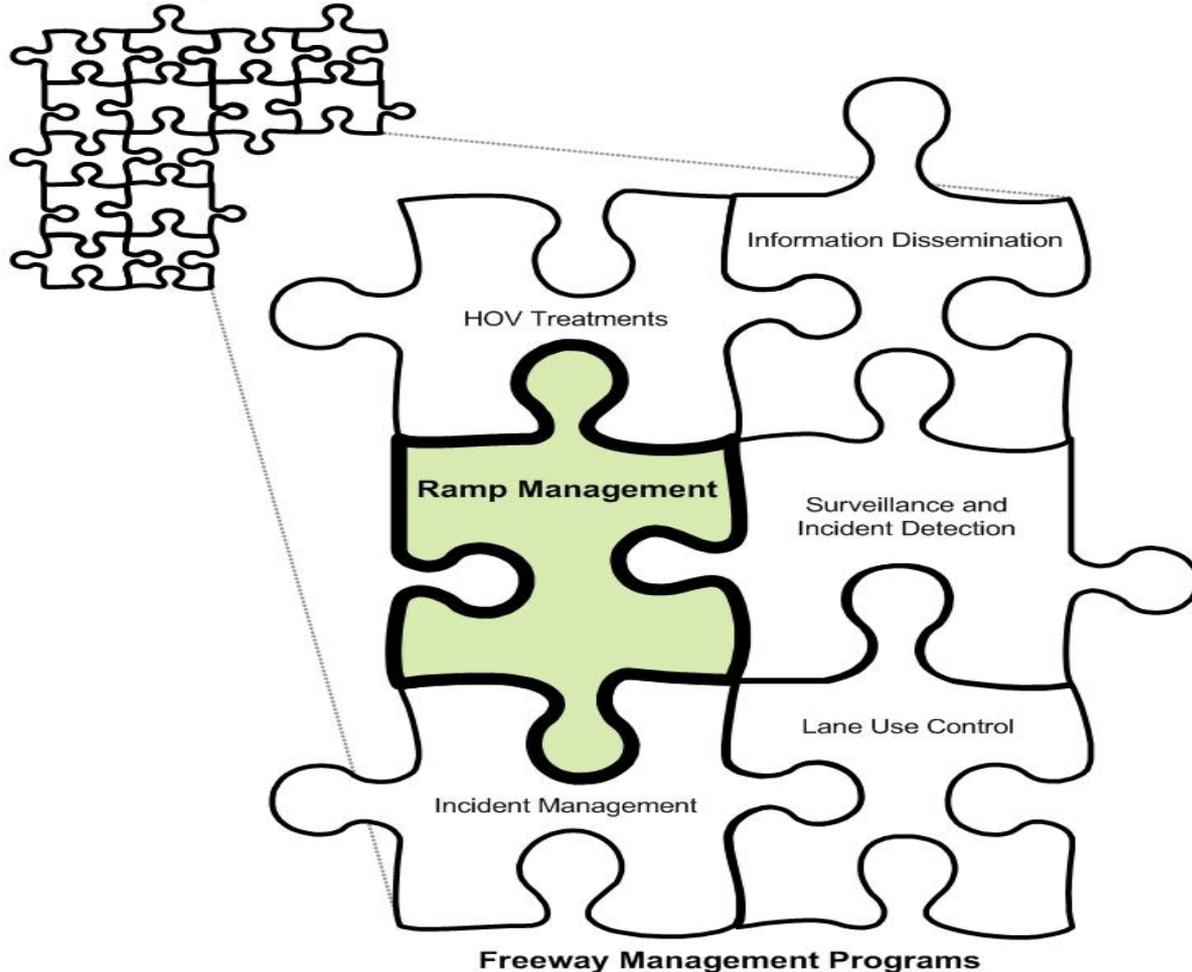
Philosophy to Improve Mobility has Shifted

“Our efforts to satisfy public demand for improved travel have shifted from a philosophy of providing additional capacity to one of improving the operations of our existing transportation infrastructure”



Metering is Only One Piece of the Puzzle to Manage Congestion

Surface Transportation Program



Freeway Management Programs

Traffic Operation Systems (TOS)

TOS elements, such as traffic monitoring stations, closed circuit television cameras (CCTV), and changeable message signs (CMS) are used to improve mobility.

- Traffic Monitoring Stations – Used to monitor traffic flow and detect incidents.
- CCTV– Used to identify/verify incidents & aid in response activities.
- CMS – Are used to provide critical real-time traffic advisories to the motorist.



Ramp Metering Goals

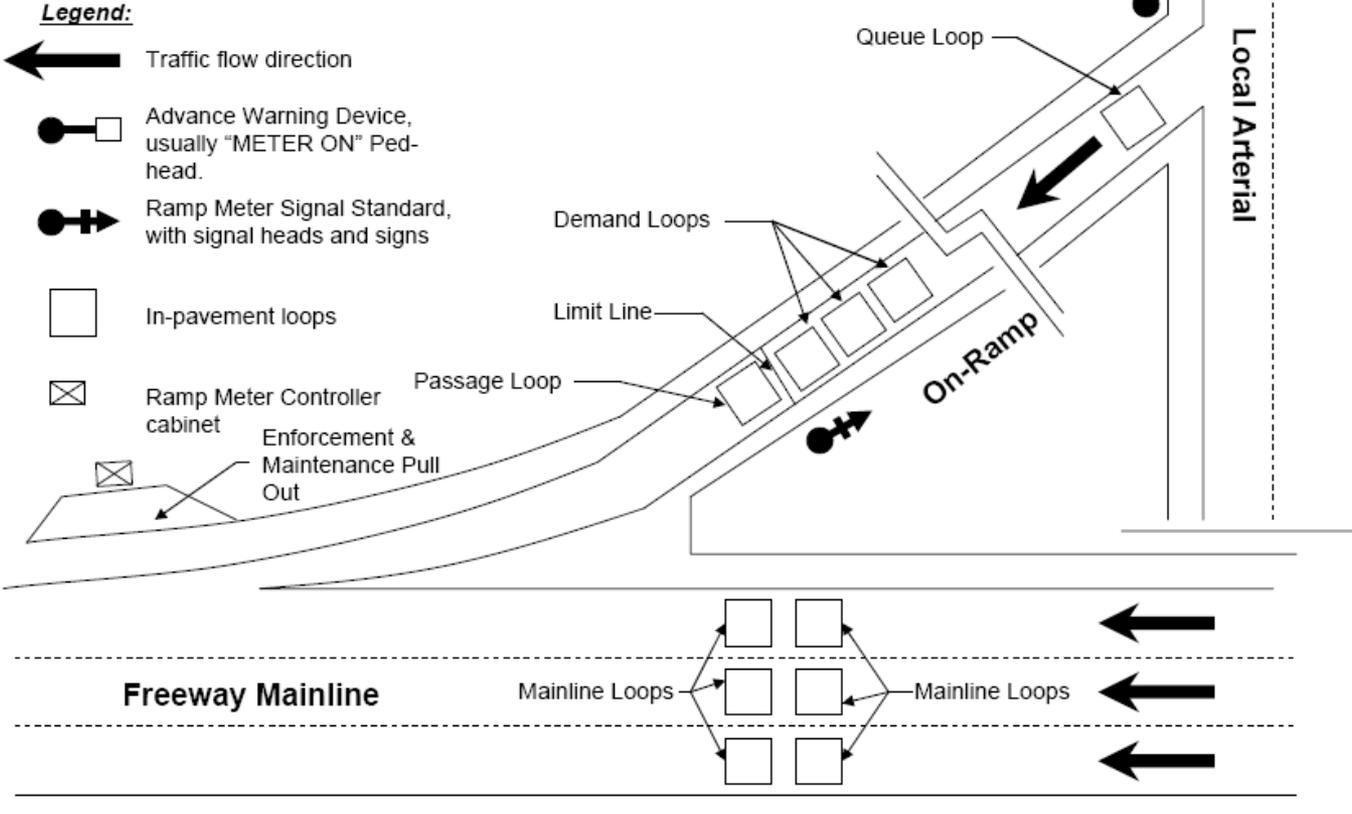
- Reduces total travel delay
- Provides consistent travel times
- Provides HOV Incentives with HOV Bypass Lanes.
- Breaks up Platoons of Vehicles, Making Merging Safer
- Improves Vehicle Throughput
- Reduces Emissions



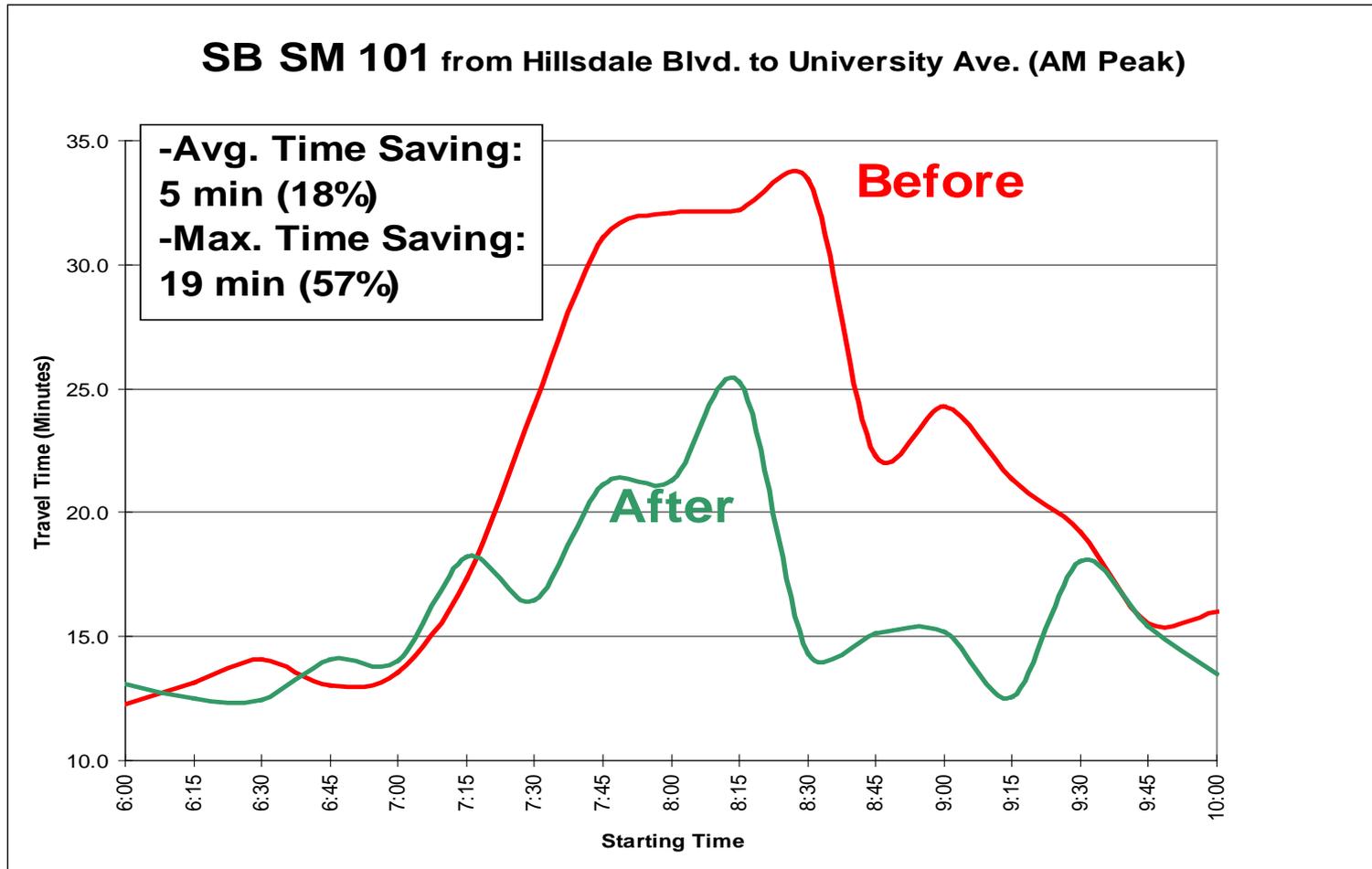
How Ramp Metering Works – Through the Use of Technology

Ramp Metering Hardware Example

(Typical One Lane On-Ramp)



Case Study – AM Time Savings (approx. 10 mile)



Marin County's Ramp Metering Program

Roles

- Caltrans – Implementing Agency, Owner and Operator
- TAM – Supporter, Facilitator, Develop FAQ's, Outreach
- County/Cities – Participate/ Advisor in Ramp Metering TAC



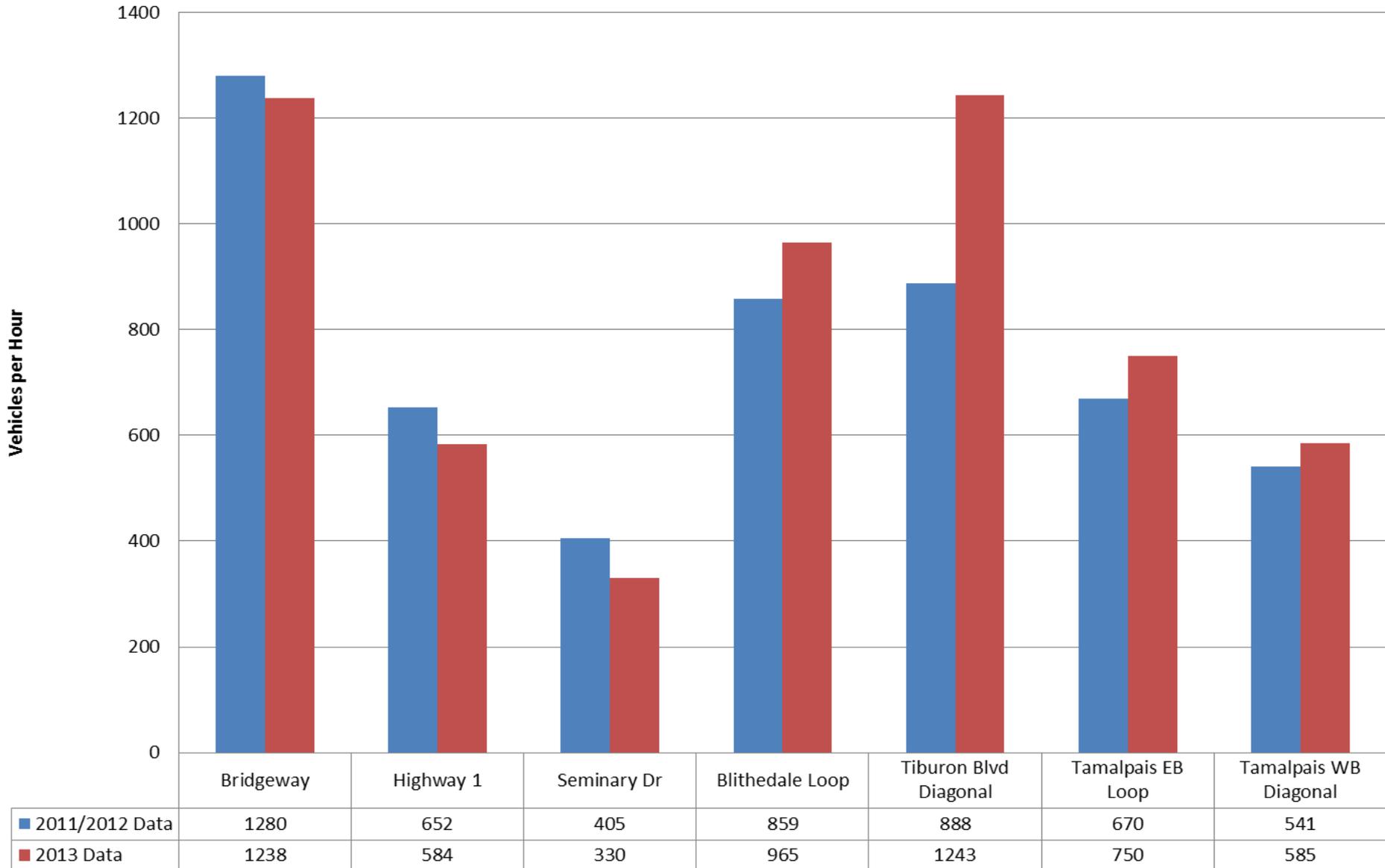
Marin County's Ramp Metering Program

- Formed a Ramp Metering Technical Advisory Committee (RMTAC)
 - RMTAC Membership: Cities, Towns, County, Marin Transit, Golden Gate Transit, and Caltrans
- RMTAC extensively involved prior to activation to ensure no impact on local streets and roads
- Identified Northbound Highway 101 as Phase 1 Project



Comparison of 2011/2012 to 2013 Ramp Data

Vehicles merging on to Highway 101 during afternoon peak hour



US 101 Northbound Preliminary Ramp Metering Assessment Study

1. Bridgeway / Gate 6
2. Highway 1/Pohono
3. Redwood Highway / Seminary
4. Blithedale Loop
5. Tiburon Diagonal
6. Tamalpais Loop
7. Tamalpais Diagonal
8. Sir Francis Drake Blvd

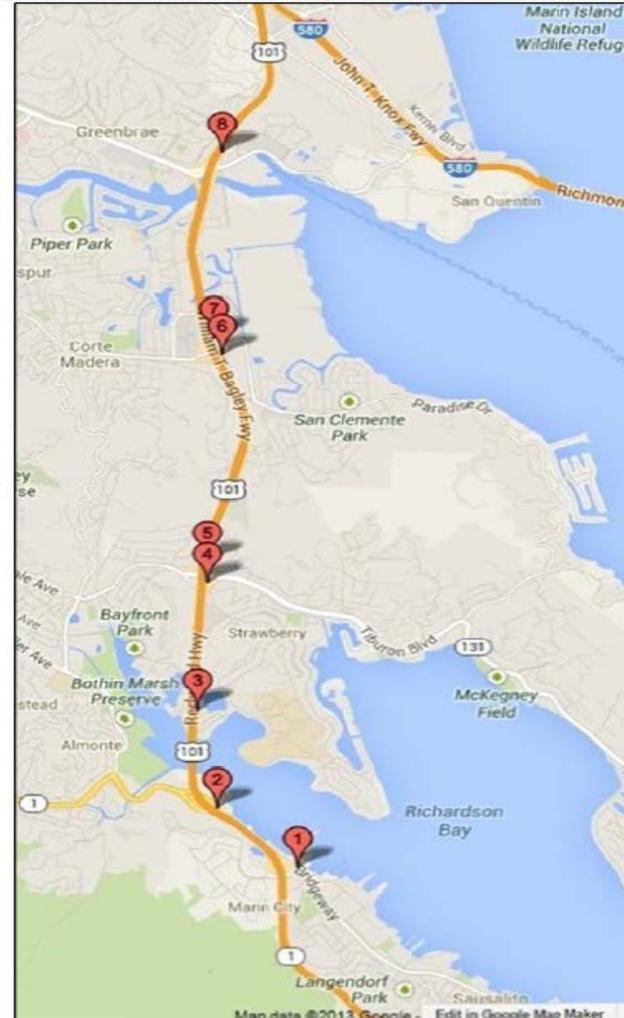
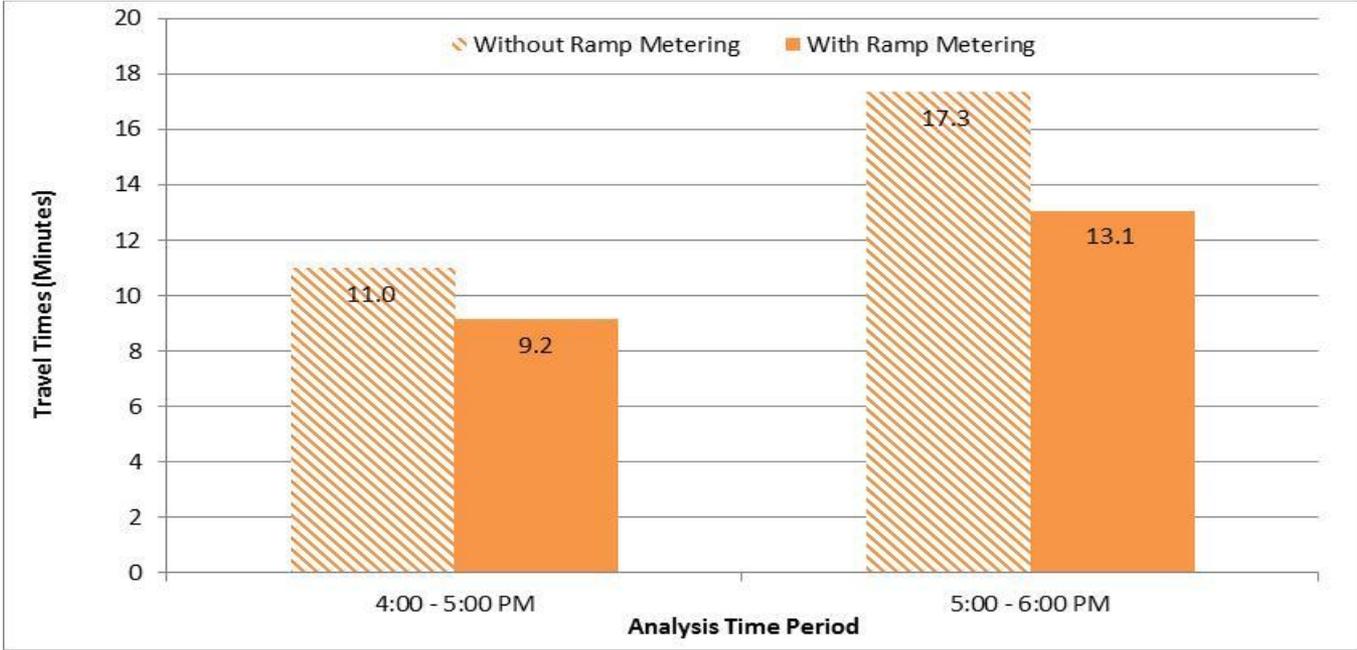


Figure 1: Study Area Showing Ramp Locations

Travel Time Savings



Analysis Time Period	Without Ramp Metering	With Ramp Metering	Difference	
	Minutes	Minutes	Minutes	Percent
4:00 – 5:00 PM	11.0	9.2	-1.8	-16%
5:00 – 6:00 PM	17.3	13.1	-4.2	-24%

US 101 Northbound Ramps

NB MRN-101 Ramp Metering

Blithedale Ave / Tiburon Blvd Diagonal

FREQ Origin/on-ramp #5



— On-ramp storage upstream of limit line

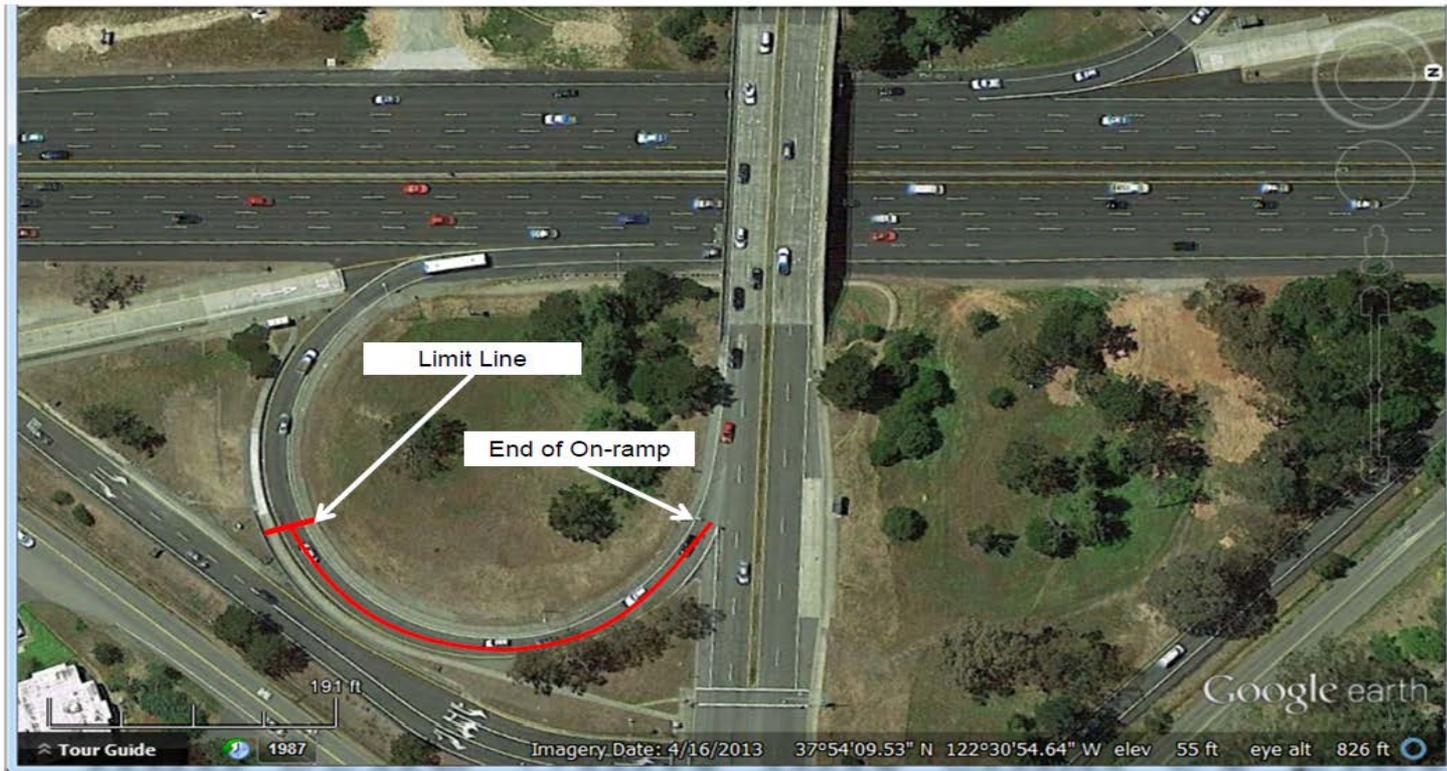
Based on Widening Plan with HOV bypass on-ramp
 22 vehicles (660 ft) to end of on-ramp
 44 vehicles (1,320 ft) total storage (2-lane on-ramp)

US 101 Northbound Ramps

NB MRN-101 Ramp Metering

Blithedale Ave / Tiburon Blvd Loop

FREQ Origin/on-ramp #4



— On-ramp storage upstream of limit line

Based on Ramp Metering Equipment Drawing
 11 vehicles (330 ft) to end of on-ramp
 22 vehicles (660 ft) total storage (2-lane on-ramp)

Phase 1 Implementation Schedule

Environmental Phase – Complete

Design Phase – Complete

Construction – Spring 2019

Ramp Metering Activation – Summer 2020



Phase 1 Outreach

- Caltrans webpage linked from TAM and local agencies, as appropriate
- Factsheets as the program progresses from construction to implementation
- Communication with stakeholders and local agencies for distribution



PROJECT FACT SHEET

EA #15161

EFIS Project ID: 0414000446

Description:
This project proposes to install Ramp Meters and Traffic Operations System (TOS) at various locations in the northbound direction along Route 101 from PM 0.0 to PM 9.0 in Marin County.

Scope:
Project scope includes installation and repair of ramp metering at 11 locations, of which three include ramp widening. TOS element includes installation of a Changeable Message Sign (CMS), salvage/removal of Wireless Magnetometer Vehicle Detection Sensors (WMVDS) and installation of inductance loops. Improvements also include widening of State Route 131 (Tiburon Blvd) from North Knoll Road to US 101 northbound on-ramp.

Environmental:
Env. Document Type — CE/CE
Permit — None

Right-of-Way:
TCE — 0
No. of Full Take — 0
No. of Partial Take — 0

Programmed Funding

Component	Budget (\$x1000)
PAED (Corridor)	\$4,600 ¹
PS&E	\$1,500 (\$1.4m ² &0.1m ¹)
Right-of-Way Support	\$50 ²
Construction Support	\$1,800 ²
Right-of-Way Capital	\$110 ²
Construction Capital	\$9,700 ²
TOTAL:	\$17,560

¹ - Congestion Mitigation and Air Quality Improvement program (CMAQ)
² - State Highway Operation and Protection Program (SHOPP)

NORTH REGION:
Marin 101 — PM 0.0/9.0



SCHEDULE:

Milestone	Baseline	Current
Project Approval & Env. Document (PA&ED)	05/07/14	05/07/14 (A)
R/W Certification	07/02/18	08/22/18 (A)
Final Design (RTL)	08/01/18	08/29/18 (A)
Advertise Contract	11/22/18	10/08/18 (A)
Award Contract	02/27/19	12/17/18 (A)
Accept Contract (CCA)	05/31/21	08/30/20 (T)

(A) Actual Date
 (T) Target Date

PROJECT NOTES:

- This project is Phase 1 of the Marin 101 Corridor Ramp Metering Project (EA #15160)
- Widening of State Route (SR) 131 (Tiburon Blvd) was added to the project to improve traffic flow on SR 131 and US 101 on-ramp.
- Caltrans will work with local partners and TAM to develop a ramp metering implementation plan.
- Ramp metering lights are anticipated to be activated in the Fall of 2020

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Design Manager: Roni Boukhalil (PH: 510-286-5694)
Chief, Office of Traffic Systems: Lester S. Lee (PH: 510-286-4528)



Ramp Metering Video





Questions

