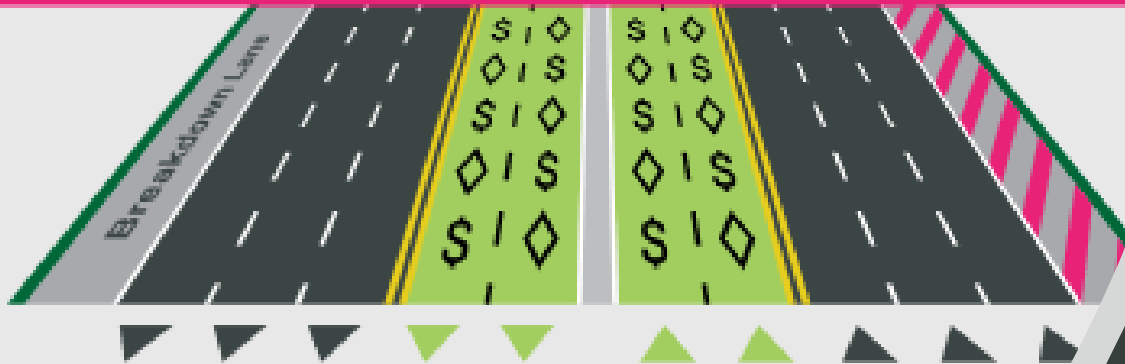


- All Vehicles, No Tolls (# of lanes varies)
- HOV3+: Free | HOV2: Free | SOV: \$

Examples:  Virginia;  Los Angeles, CA

STANDARD EXPRESS LANES + FLEXIBLE BREAKDOWN LANE



- All Vehicles, No Tolls (# of lanes varies)
- HOV3+: Free | HOV2: Free | SOV: \$
- Breakdown Lane Converted to Peak Period

Examples:  Washington;  Colorado

STANDARD EXPRESS LANES + REVERSIBLE



Pricing Strategy Implementation Project Presentations

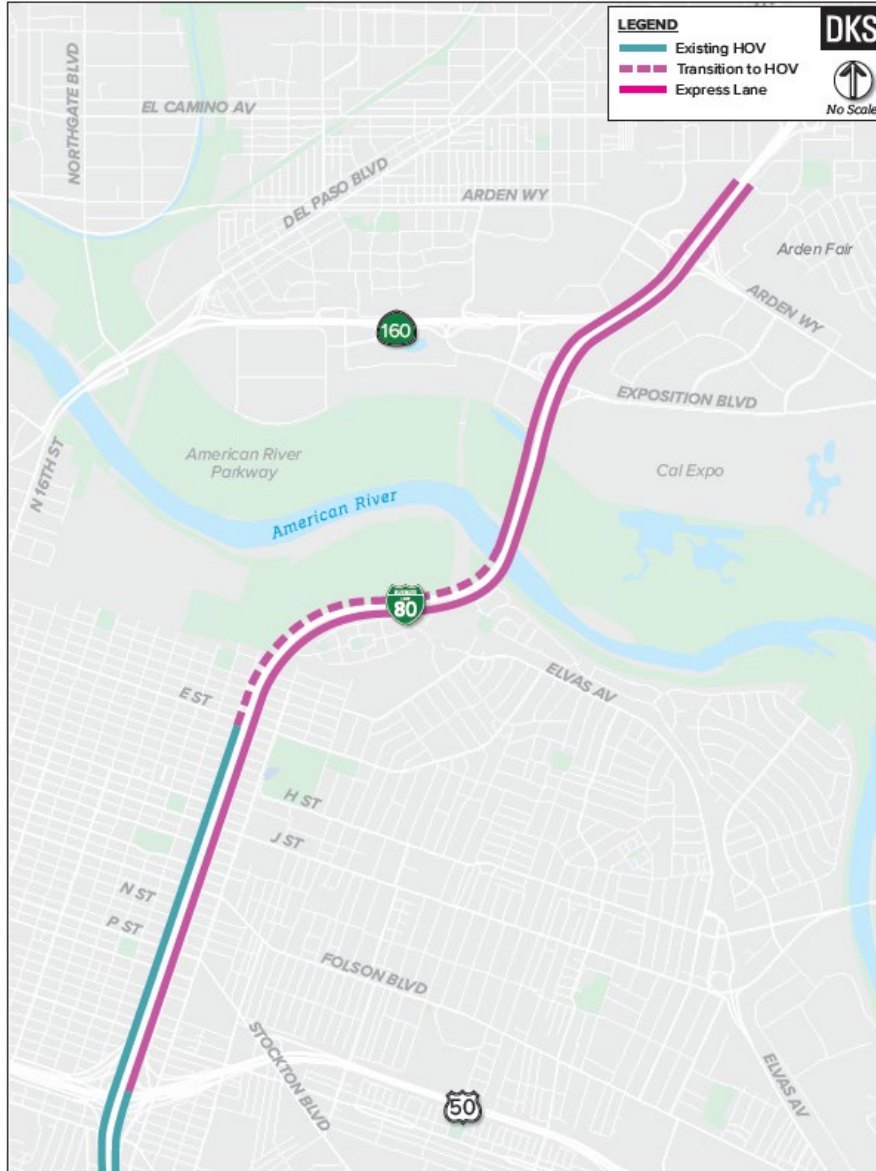
SR 51 Corridor Improvement



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SR 51 Corridor Improvement Project



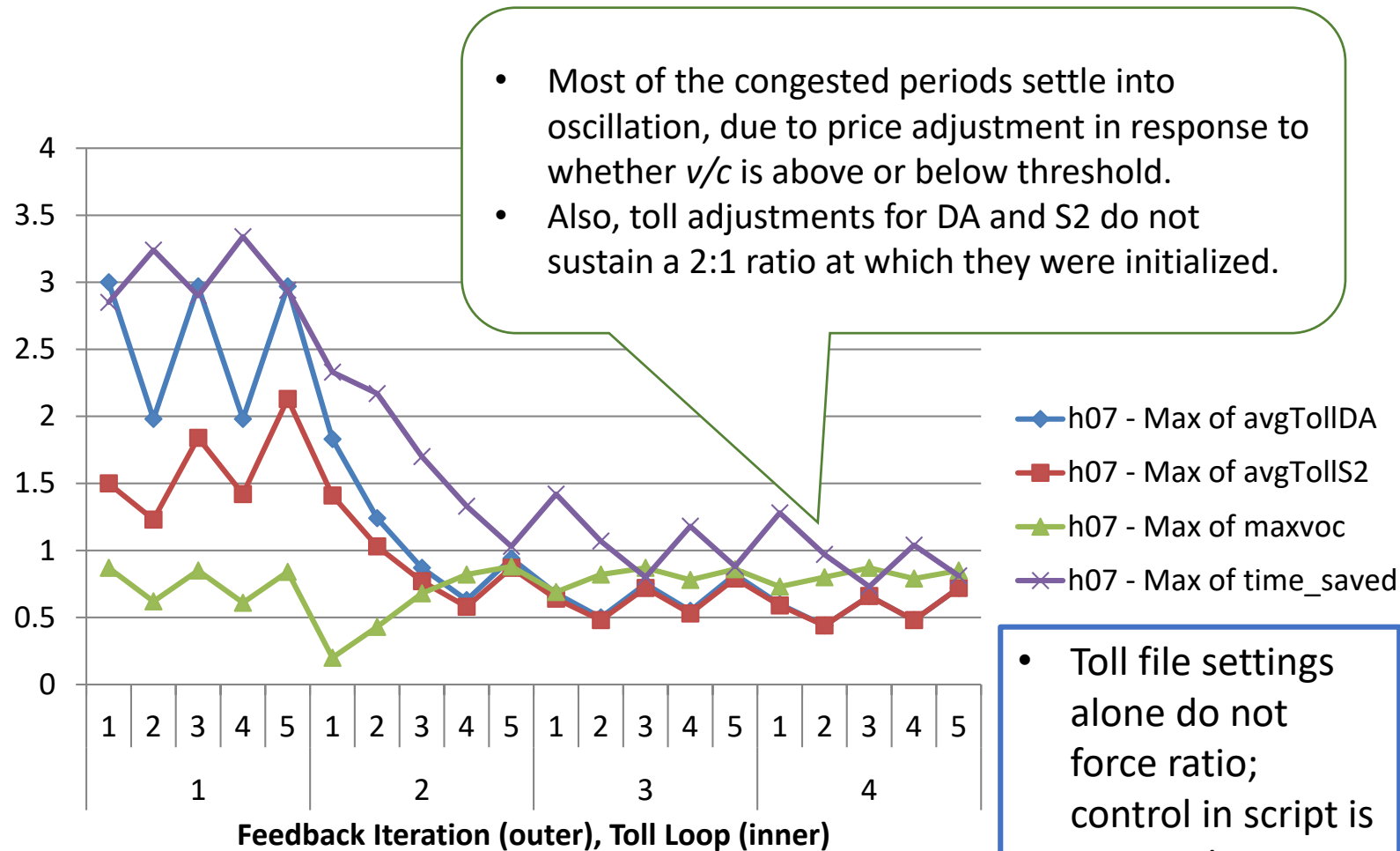
- **Extends - J St. to Arden Way**
- **Managed Lane Alternatives (HOV & HOT lanes)**
- **Auxiliary Lane between E St. and Exposition Blvd.**
- **SACSIM Pricing Module for Toll Alternatives**
- **Additional Validation Checks**

Test of Tolls along SR 51 Corridor

- From US 50 to near Arden Way
 - > Segment 5 = Northbound
 - > Segment 6 = Southbound
- Managed lanes
 - > One median-side lane each direction
 - > Continuous access
 - > Tolling in each of 3 AM hours and 3 PM hours
- Solve price aiming for $v/c \approx 0.825$

Test 1: Testing a HOT Alternative

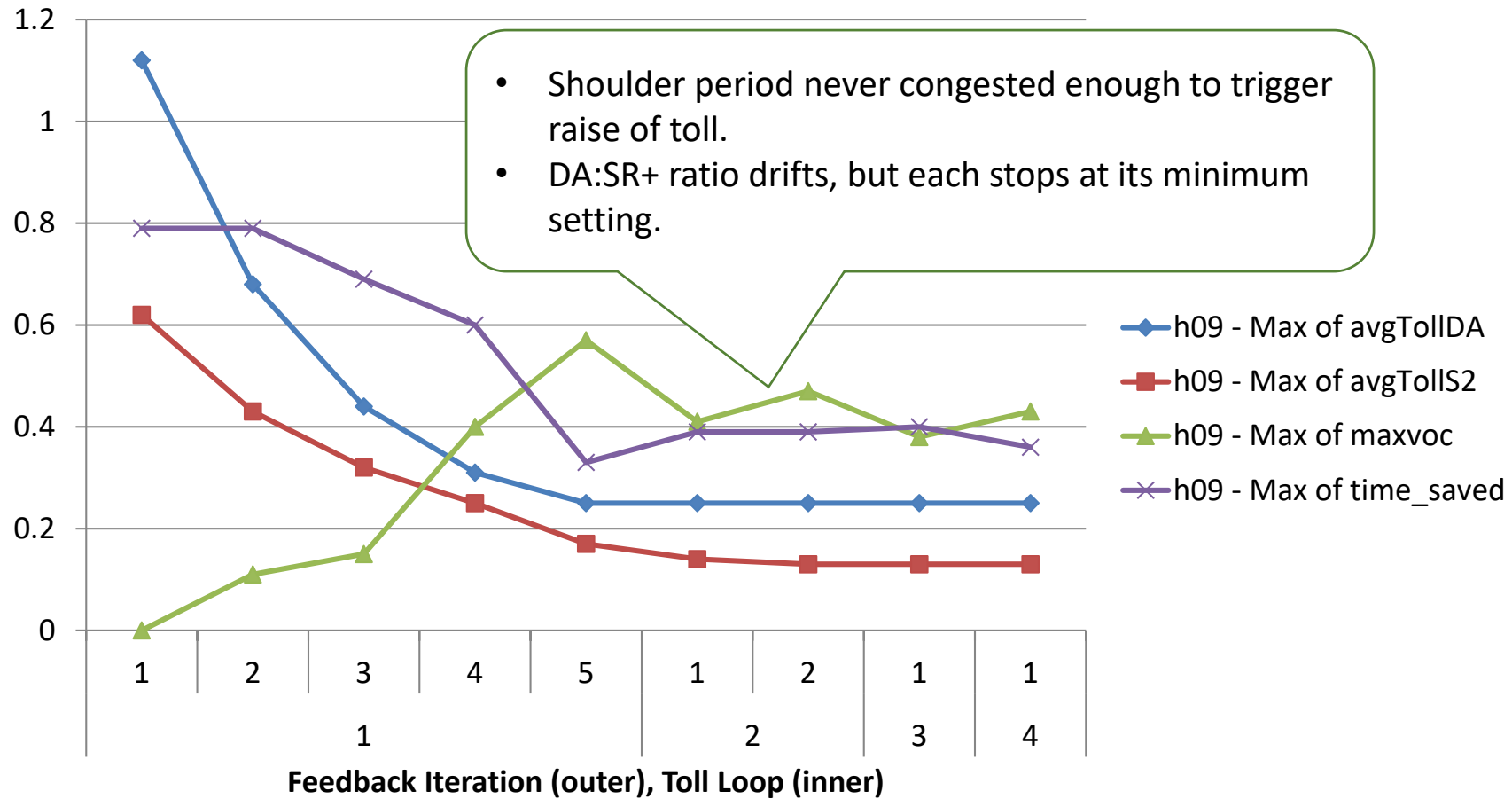
- Set Ratio of Tolls DA:S2+ to 2:1
- Northbound h07 period shown (h08,h16,h17, both directions are similar)



- Toll file settings alone do not force ratio; control in script is required.
- More unknowns than equations.

Test 1: Testing a HOT Alternative

- Set Ratio of Tolls DA:S2+ to 2:1
- Northbound h09 period shown (h15, both directions are similar)

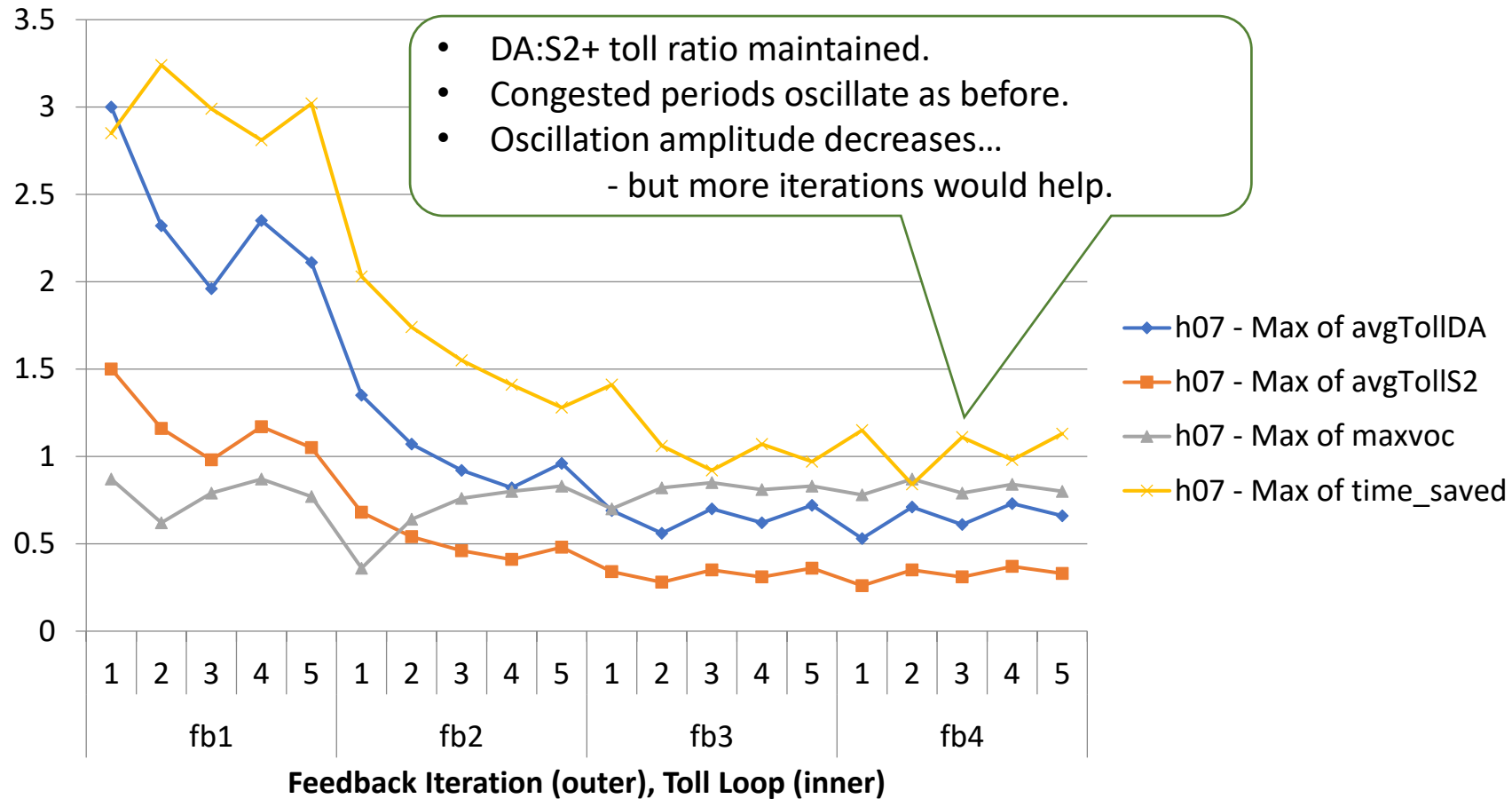


Test 2 for HOT Alternatives

- S2 and S3+ tolls computed at 2:1 ratio from DA toll
- Dampening step size for toll-loops changed
 - > was fixed $1/2$,
 - > changed to $1/2, 1/3, 1/4...$ (starting over for each feedback loop)

Test 2: Testing a HOT Alternative

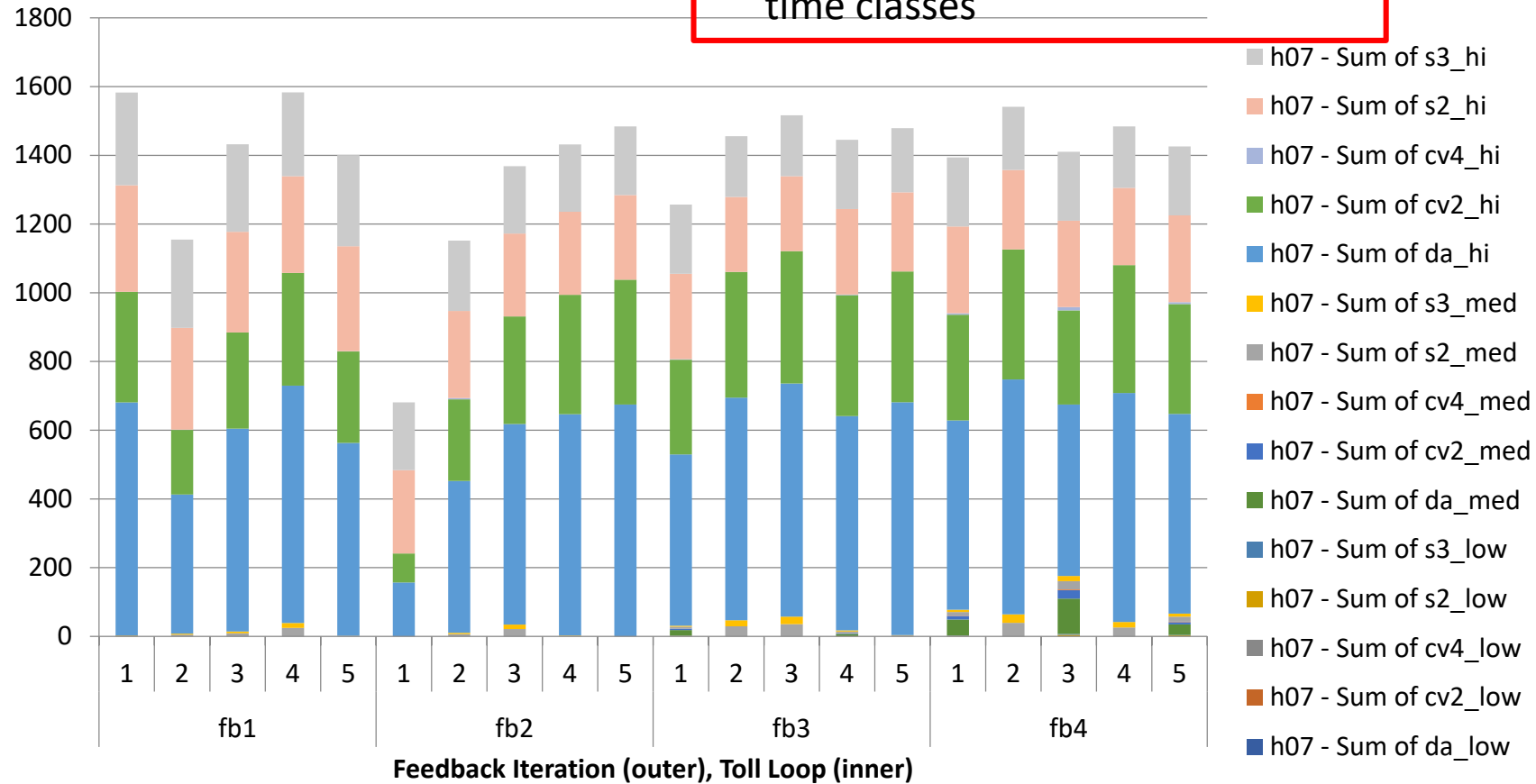
- Set Ratio of Tolls DA:S2+ to 2:1
- Northbound h07 period shown (h08,h16,h17, both directions are similar)



Test 2: Composition of Managed Lanes Users

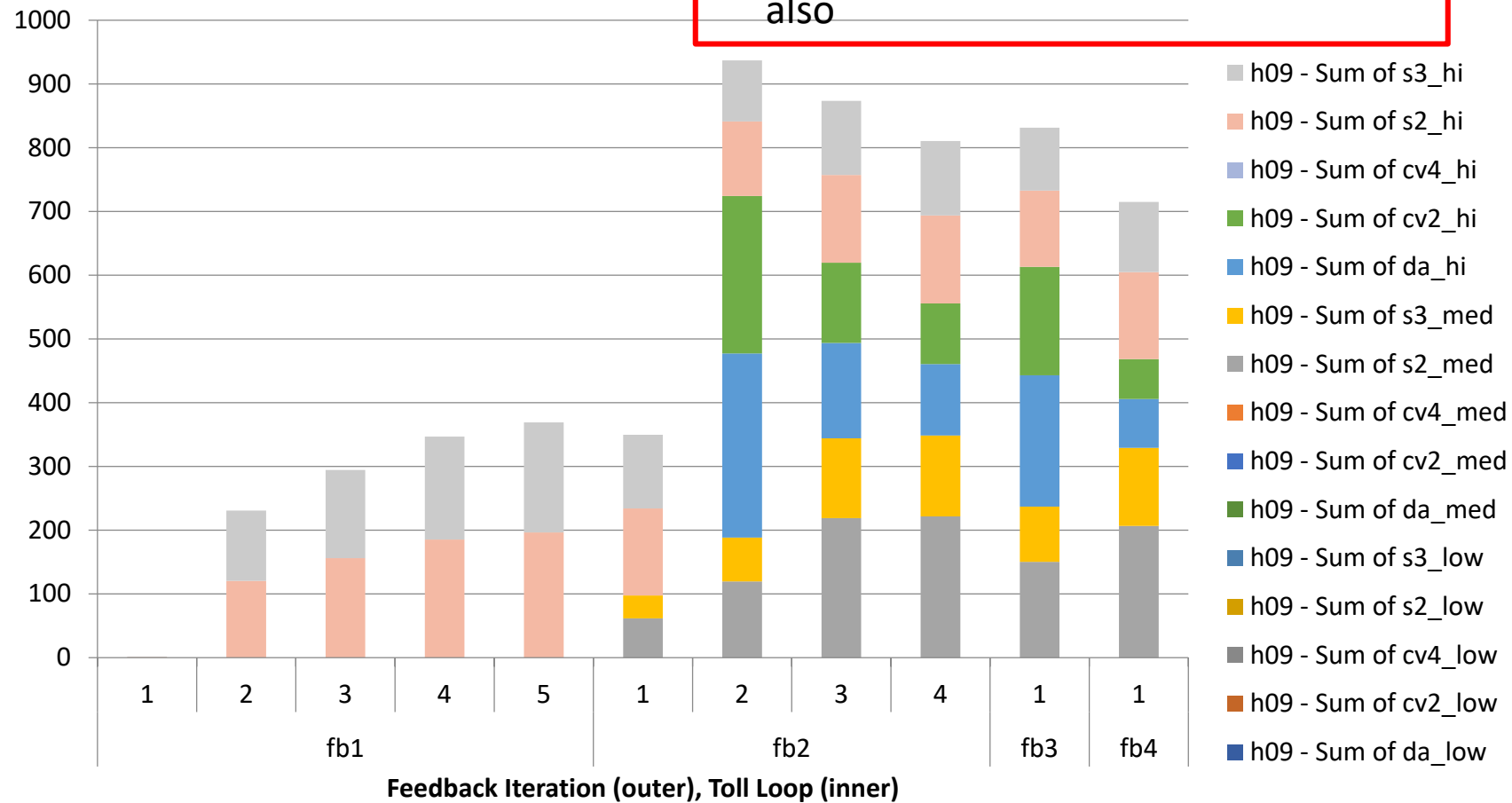
Northbound h07

- Almost all users are high value-of-time classes



Test 2: Composition of Managed Lanes Users

Northbound h09



THANK YOU

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Placer-Sacramento Gateway Plan SACSIM19 Implementation

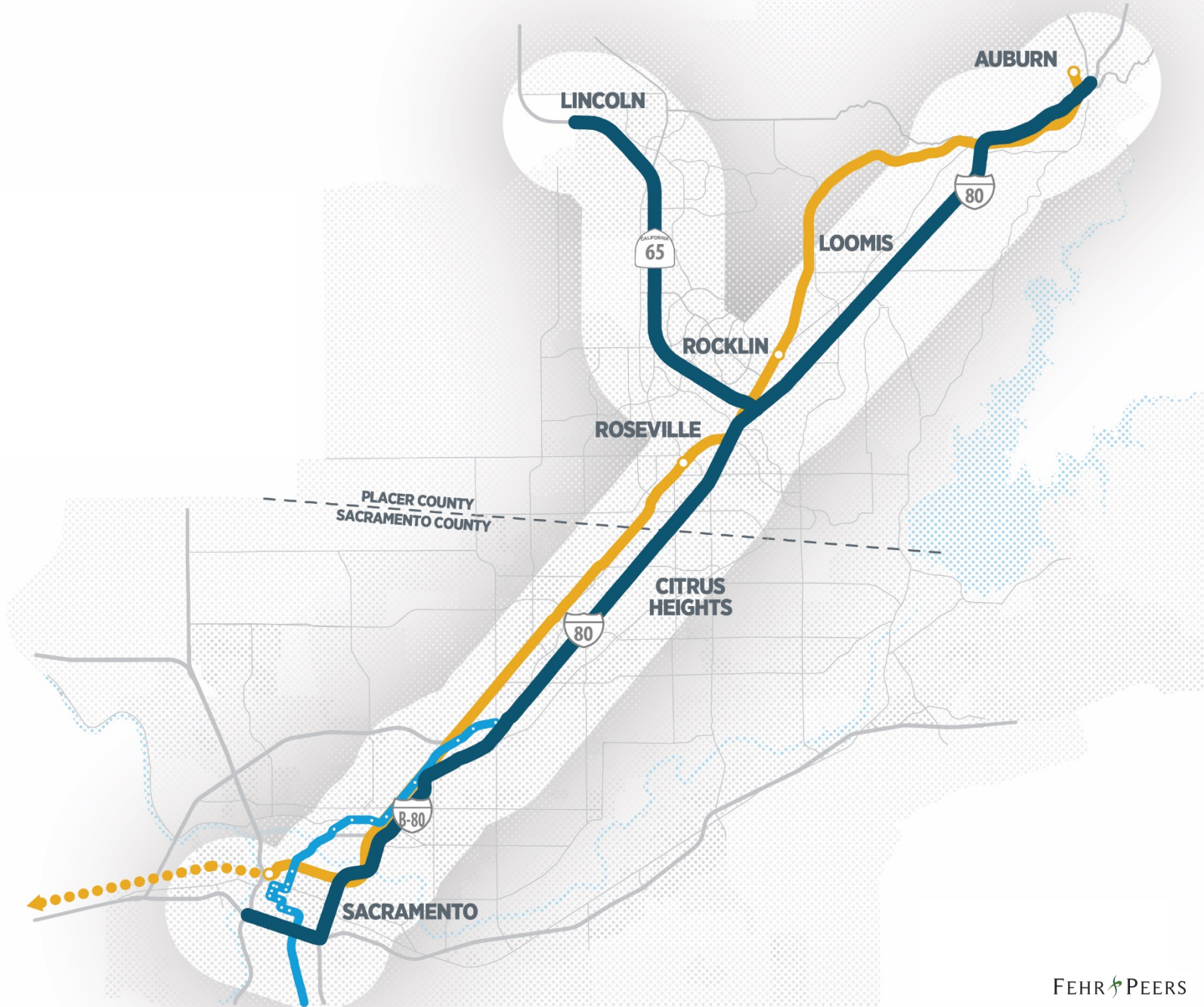
Presented by
Adrita Islam
Fehr & Peers
February, 2020

OUTLINE



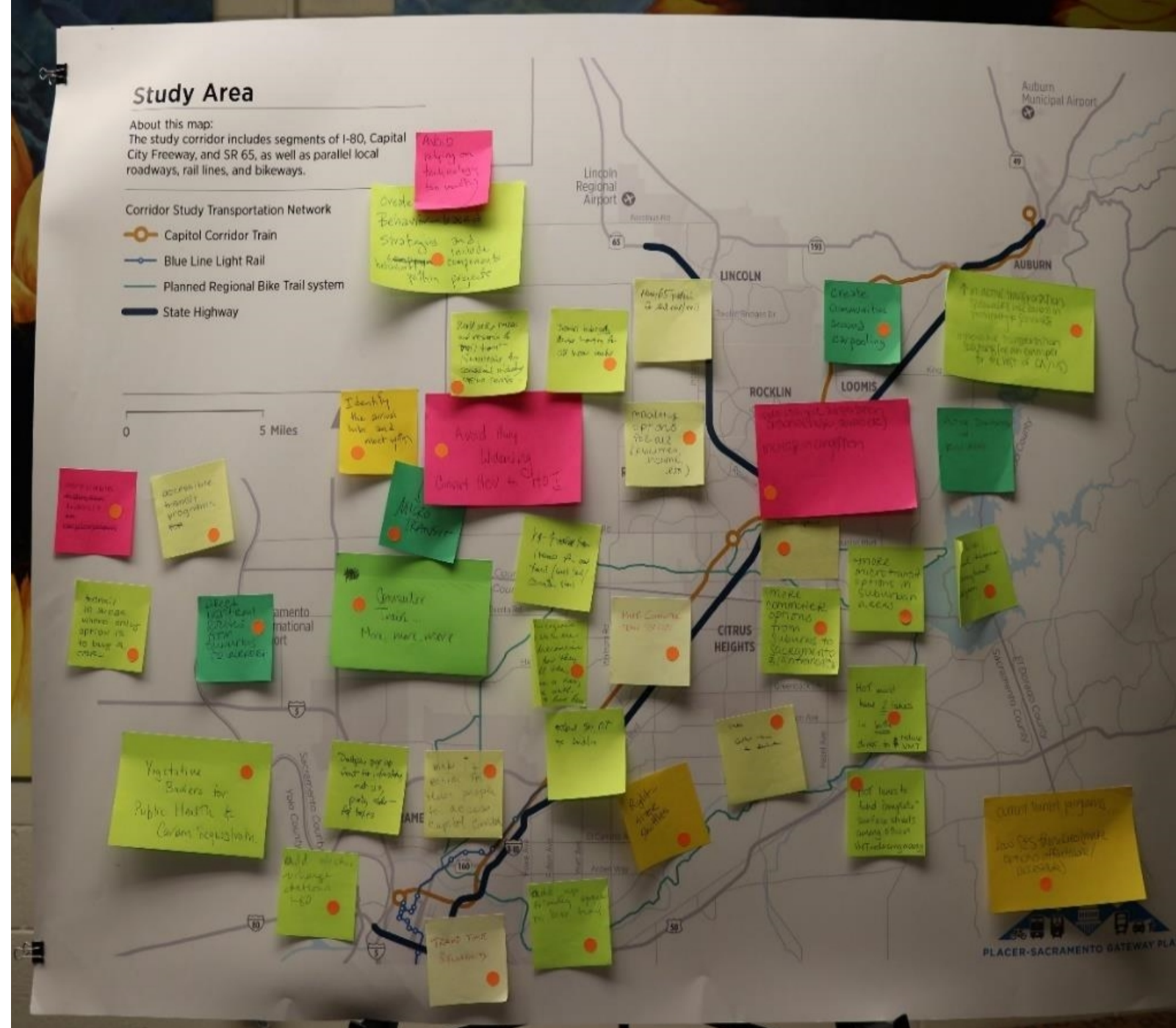
STUDY CORRIDOR

- State Highway
- Capitol Corridor Rail
- SacRT Blue Line Light Rail
- Two-Mile Corridor Buffer



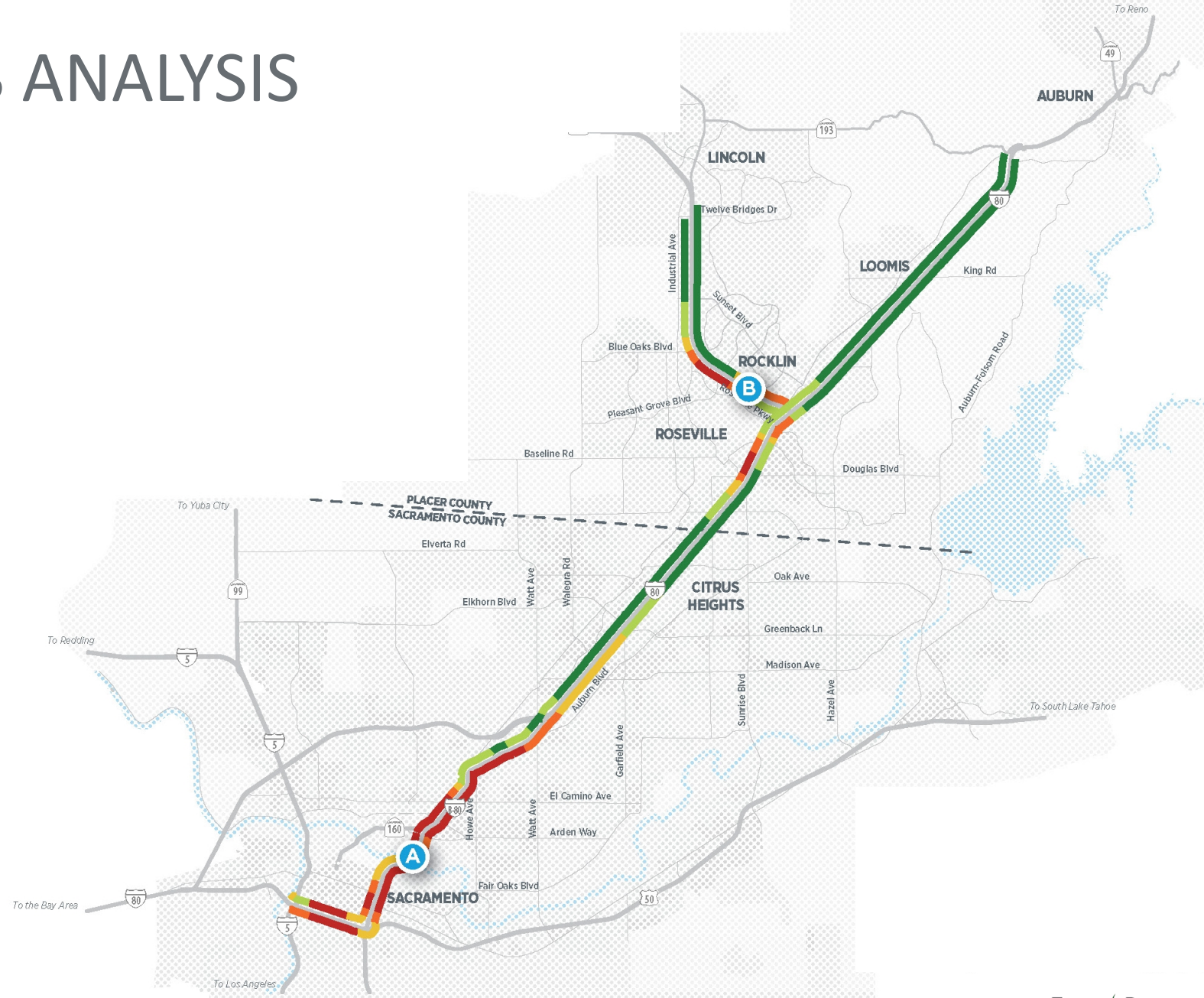
WHO IS INVOLVED?

- Strategy Team
- Project Development Team
- Stakeholders, Community, And Users



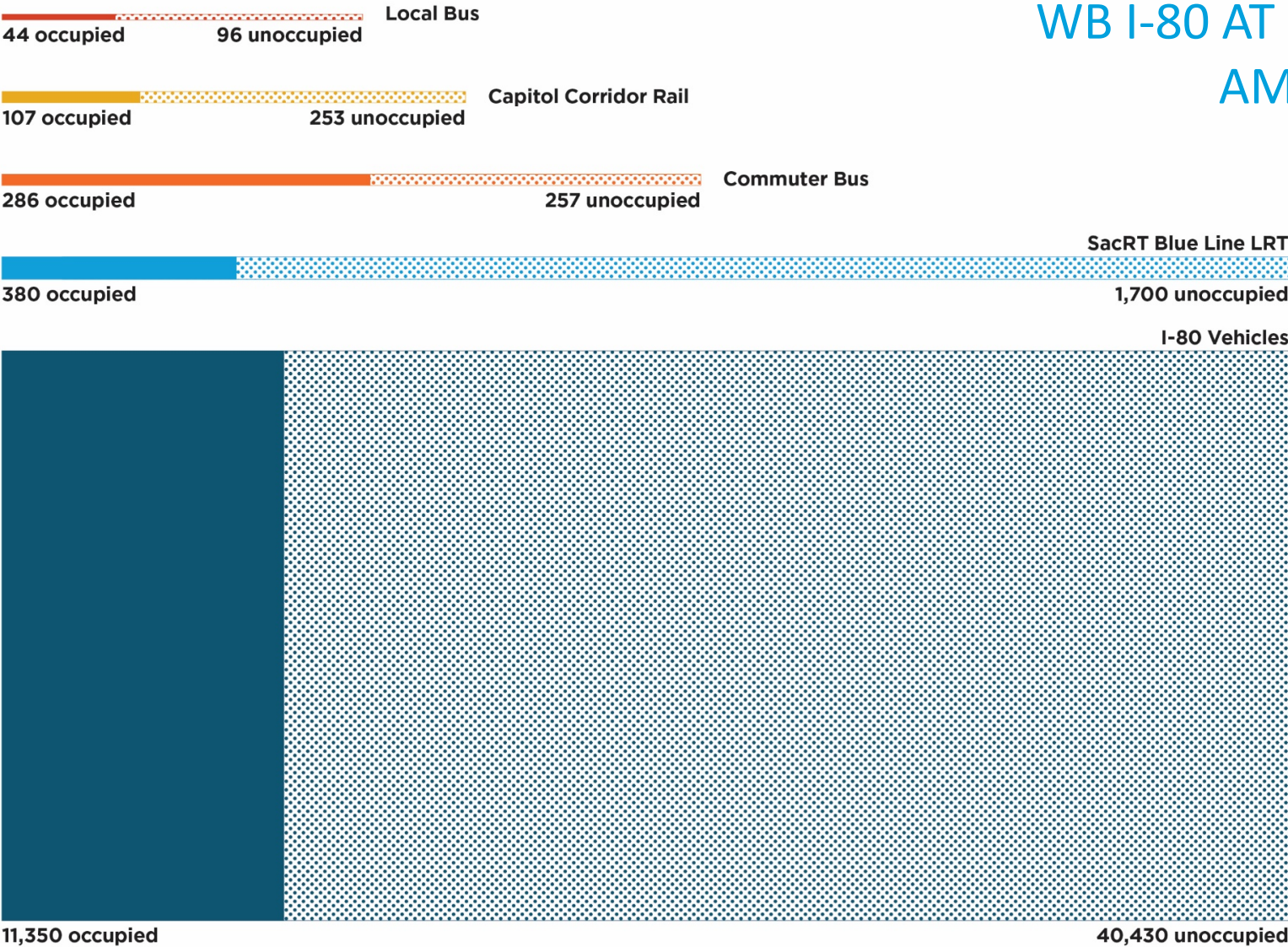
EXISTING CONDITIONS ANALYSIS

- Greater than 60 mph
- 51 mph to 60 mph
- 41 mph to 50 mph
- 31 mph to 40 mph
- Less than 30 mph



EXISTING CONDITIONS ANALYSIS

WB I-80 AT BUSINESS 80
AM PEAK HOUR



EXISTING CONDITIONS ANALYSIS

Can corridor travelers easily complete these trips using these options?	Private Vehicle	Capitol Corridor Rail	Light Rail	Bus	Walking	Bicycling
						
Peak hour commute from South Placer (Roseville, Rocklin, etc.) to Sacramento	Yes	Yes	No	Yes	No	No
Peak hour commute from Sacramento to South Placer	Yes	No	No	Yes	No	No
Midday travel between (both directions) South Placer and Sacramento	Yes	No	No	No	No	No
Evening travel between South Placer and Sacramento	Yes	No	No	No	No	No
Weekend travel between South Placer and Sacramento	Yes	No	No	No	No	No
Weekend Capitol Corridor service is limited to one round trip per day. Light rail and off-peak bus travel is possible, but requires multiple connections.						

PERFORMANCE METRICS



Accessibility

PERFORMANCE MEASURE

- The PSGP would increase accessibility to reliable transit service.

PEOPLE WITHIN 1/2 MILE OF RELIABLE TRANSIT



Efficient Land Use

PERFORMANCE MEASURES

- The PSGP would increase regional and corridor VMT and VMT per capita, but reduce VMT in local neighborhoods.
- The PSGP would increase bus and rail service to Downtown Sacramento, particularly from South Placer County communities.



Economic Development

PERFORMANCE MEASURES

- The PSGP would reduce peak hour truck travel times between South Placer County and Downtown Sacramento by 5 percent.
- The PSGP would increase travel choices to tourist and recreational destinations by increasing transit options (e.g., Capitol Corridor) and by reducing peak period corridor delay, which allows for more trip-making flexibility.
- The PSGP includes the Capitol Corridor Third Track Project, which will preserve current Union Pacific Railroad freight operations and reliability for the benefit of goods movement through the region.
- Similar to the weekday benefits to corridor delays and speeds, the PSGP would improve peak weekend travel times.



Air Quality

PERFORMANCE MEASURE

- The PSGP would decrease emissions in the SACOG region, despite a small increase on the corridor.



Safety

PERFORMANCE MEASURE

- The PSGP could reduce the risk for collisions by reducing congestion and, in turn, the potential for congestion-related collisions. The PSGP could also reduce the risk for bicycle- and pedestrian-involved collisions by improving active transportation facilities, especially near freeways.

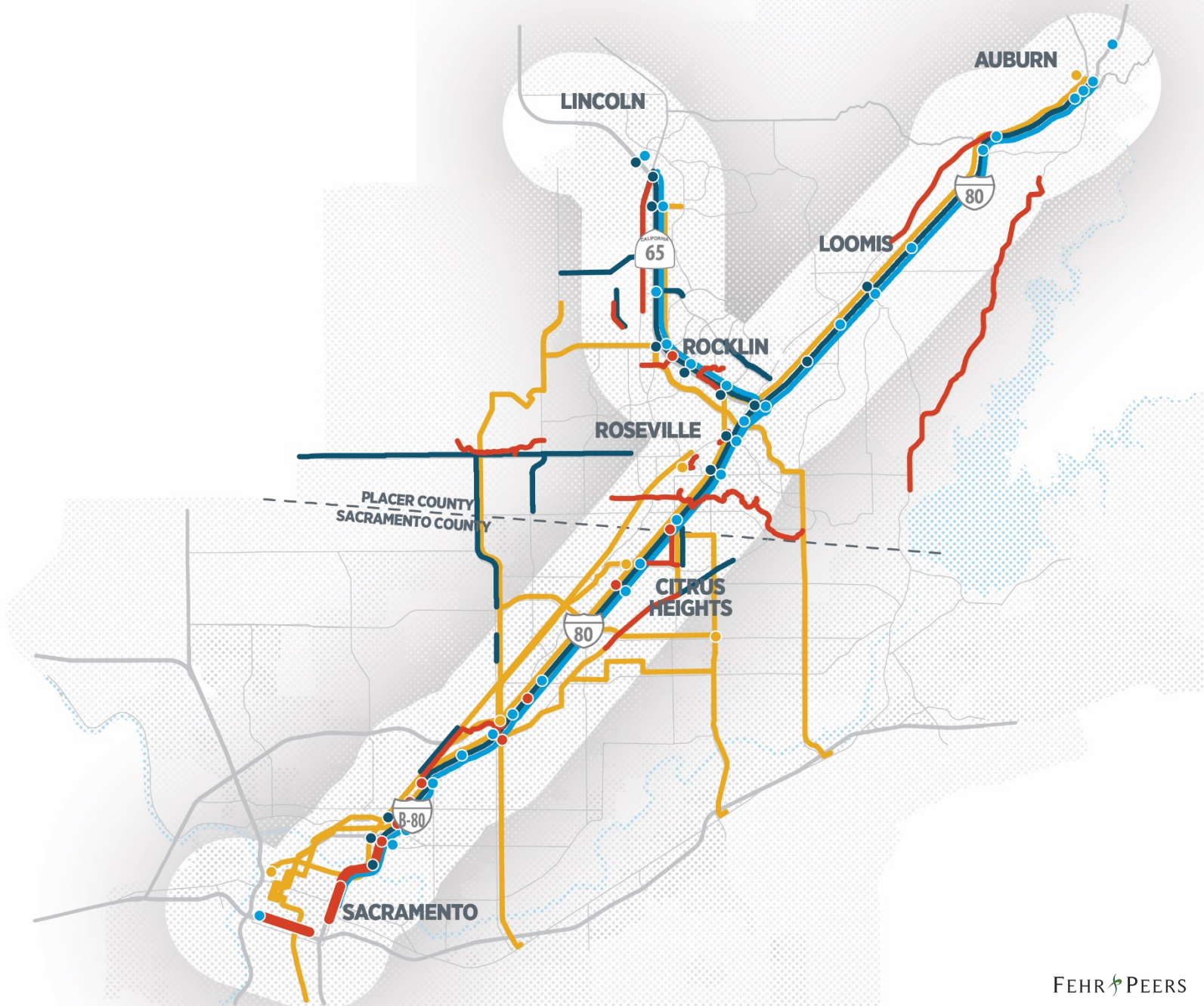
CANDIDATE PROJECTS

Roadway Project

Transportation Systems Management Project

Transit Project

Bicycle/Pedestrian Project



ANALYSIS TOOL

SACSIM19 2020 MTP/SC

- Existing Conditions – the 2016 model
- Existing plus project conditions / PSGP Conditions

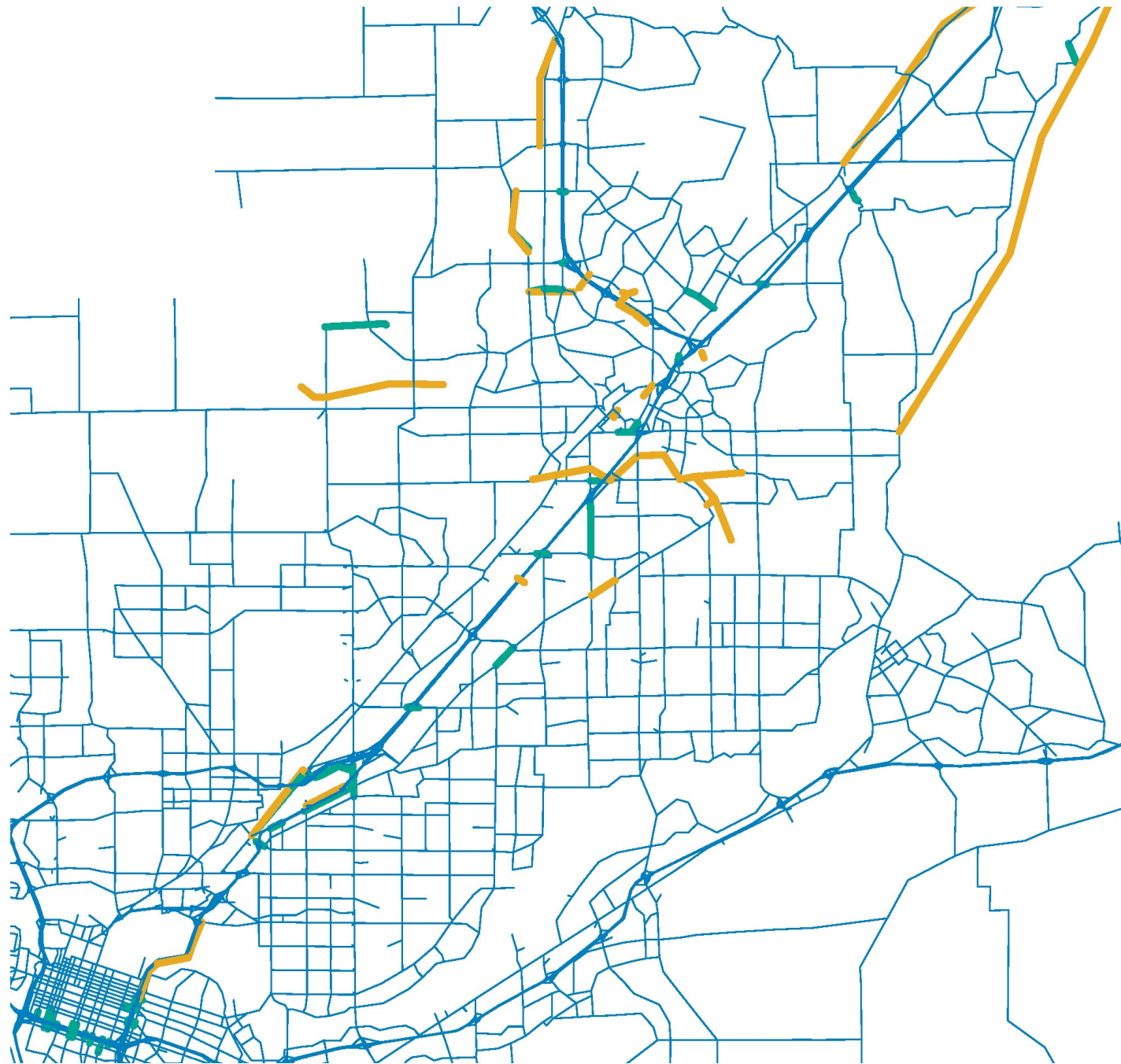
BICYCLE & PEDESTRIAN PROJECTS

- Off-Street Trail
- - - On-Street Bicycle Facility
- Freeway Crossing Enhancement
- Grid Improvements



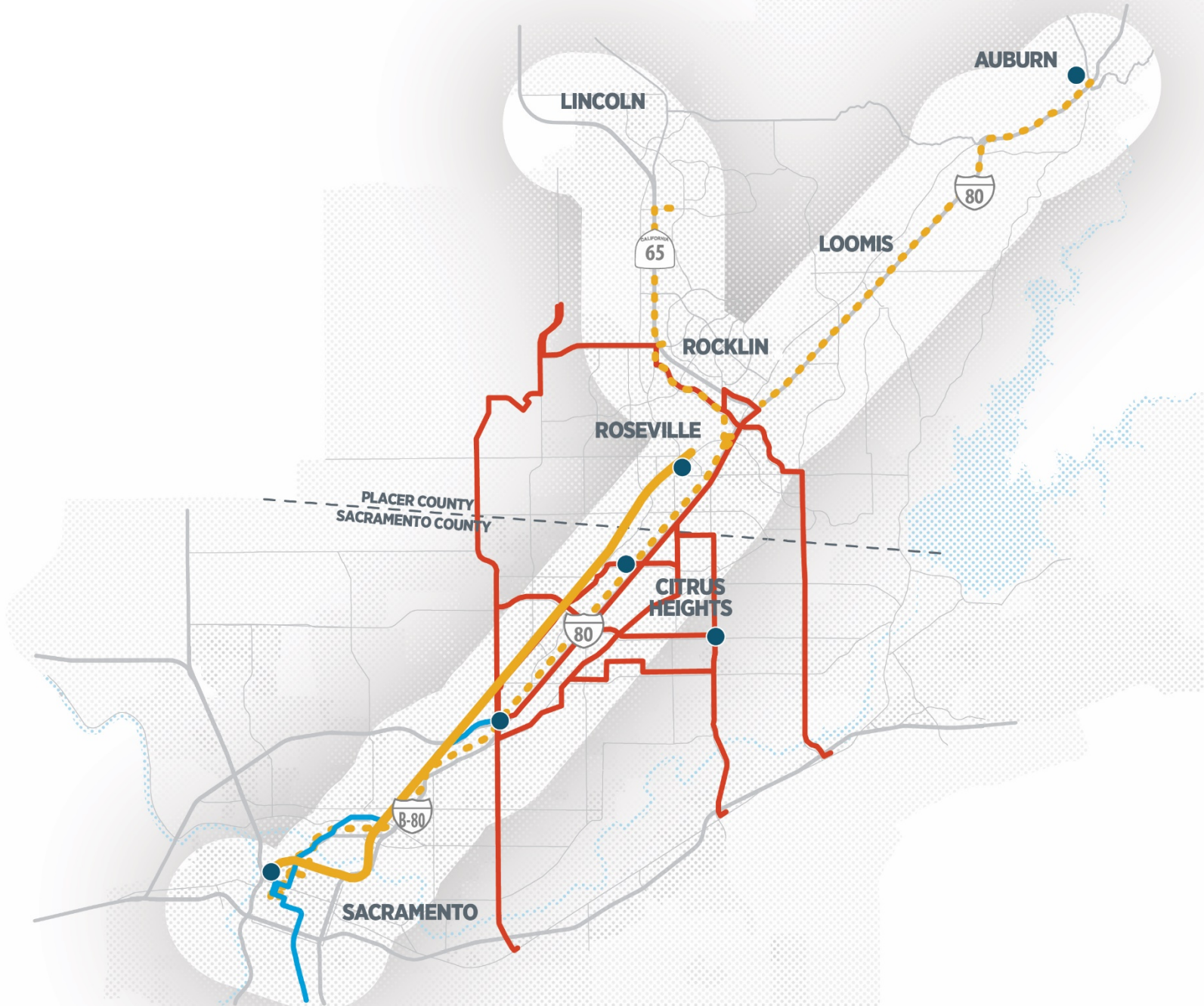
BICYCLE & PEDESTRIAN MODEL CODING

Bike paths, trails, and bike lanes
Bike crossing over the freeways



TRANSIT PROJECTS

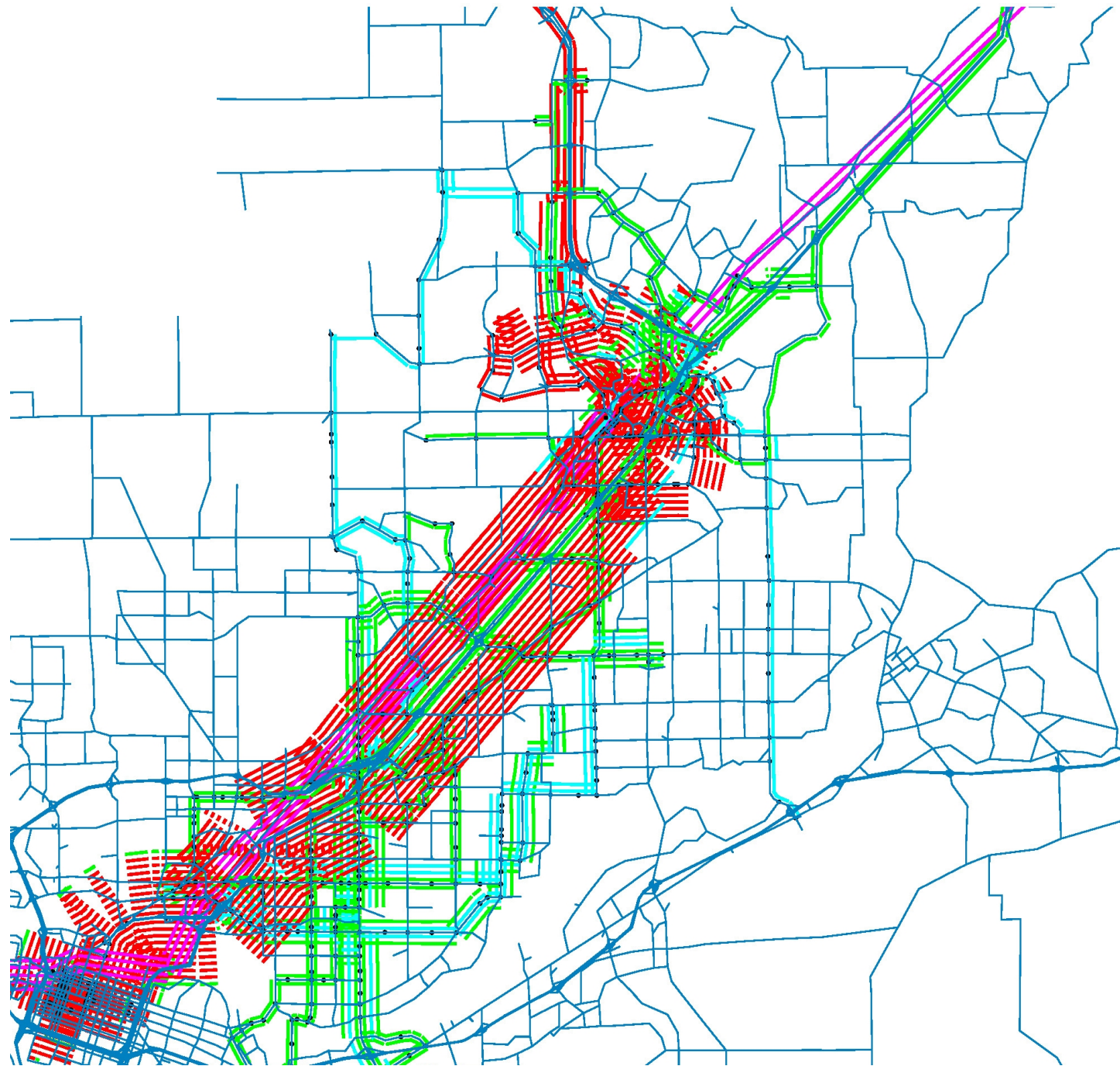
- Capitol Corridor Rail
- SacRT Blue Line LRT
- Bus Rapid Transit (BRT)
- Intercity/Commuter Bus
- Transit Stop/Station



TRANSIT PROJECTS MODEL CODING

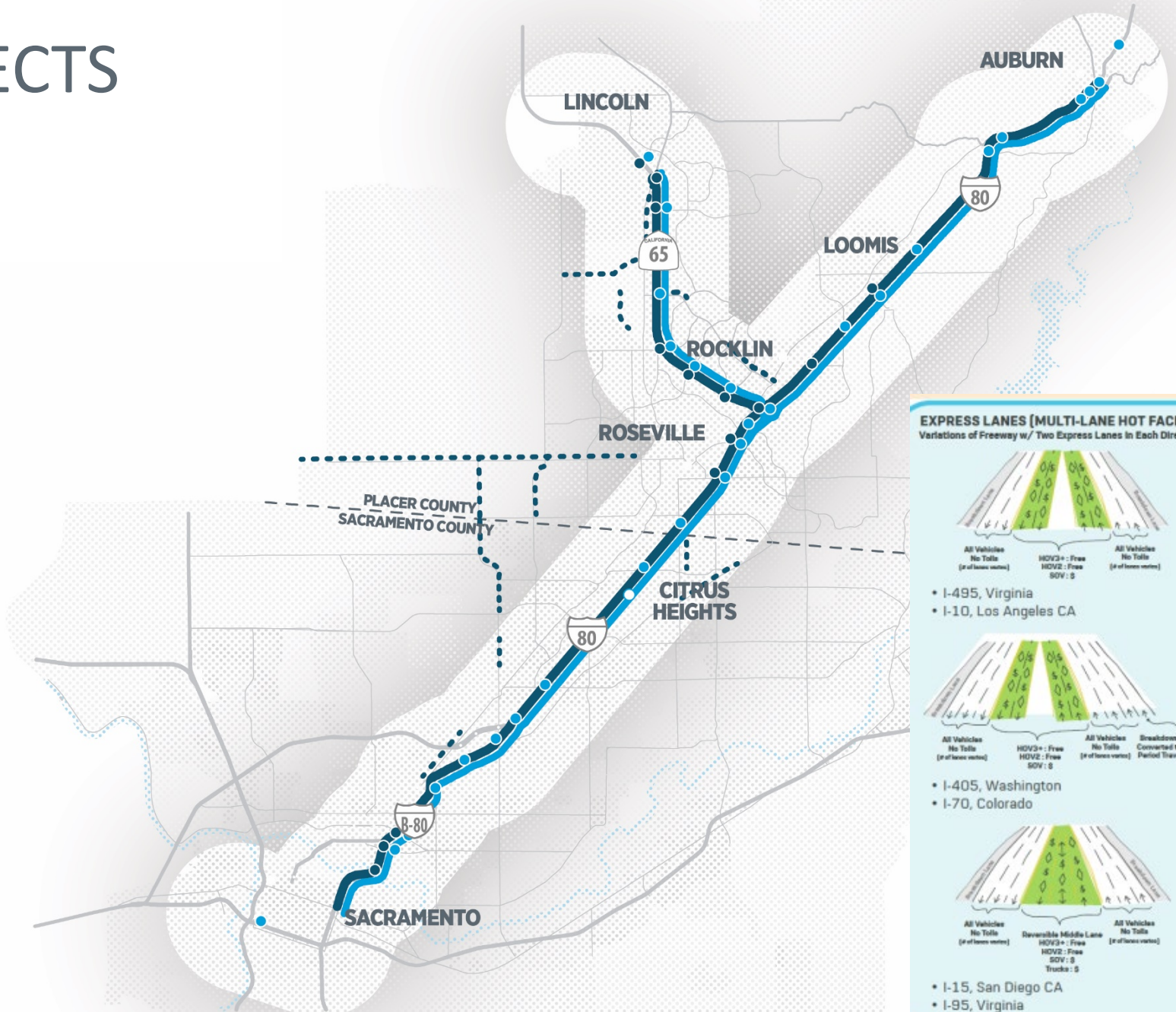
New transit facilities

- Commuter buses
- BRTs
 - High Frequency
 - Higher speed
- Capitol Corridor extension
- Capitol Corridor station
- Park and Ride lot



ROADWAY/TSM PROJECTS

-  Freeway Capacity
-  Express Lanes
-  Local Road Capacity
-  Interchange Improvement
-  Ramp Meter
-  Weigh Station



EXPRESS LANES (MULTI-LANE HOT FACILITY) Variations of Freeway w/ Two Express Lanes in Each Direction



- I-495, Virginia
- I-10, Los Angeles CA



- I-405, Washington
- I-70, Colorado



- I-15, San Diego CA
- I-95, Virginia

ROADWAY/TSM PROJECTS

MODEL CODING

Local Roadway improvement

HOV lanes

Aux Lanes

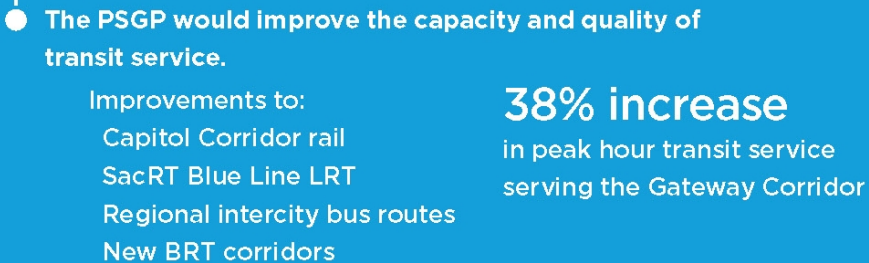
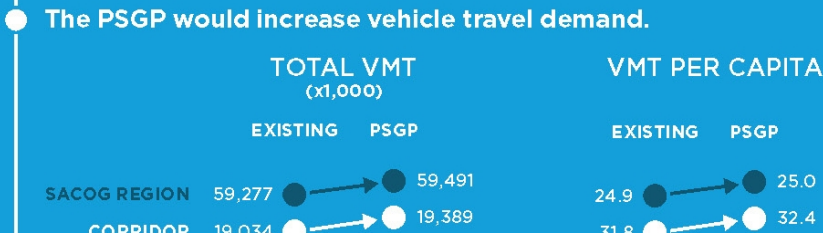
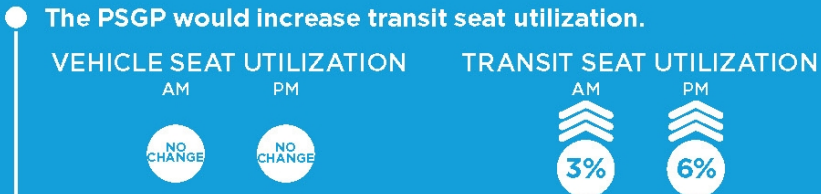
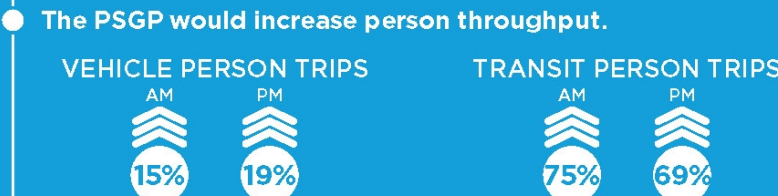
Manage Lanes/HOT lanes

- Add toll IDs to appropriate segments of the corridor
- Edit toll_coding.xlsx
- Peak Period Toll for SOV in the HOT lanes
- Utilize toll optimization loop



RESULTS

PERFORMANCE MEASURES



LESSONS LEARNT FROM THE MODEL

What's great?



- Tolling component
- Additional time periods
- Additional value of time users

CHALLENGES



- Lack of documentation
- New model structure
- New output structure
- BRT Coding
- Transit Sensitivity
- Toll coding
- Toll Sensitivity

LESSONS LEARNT FROM THE MODEL

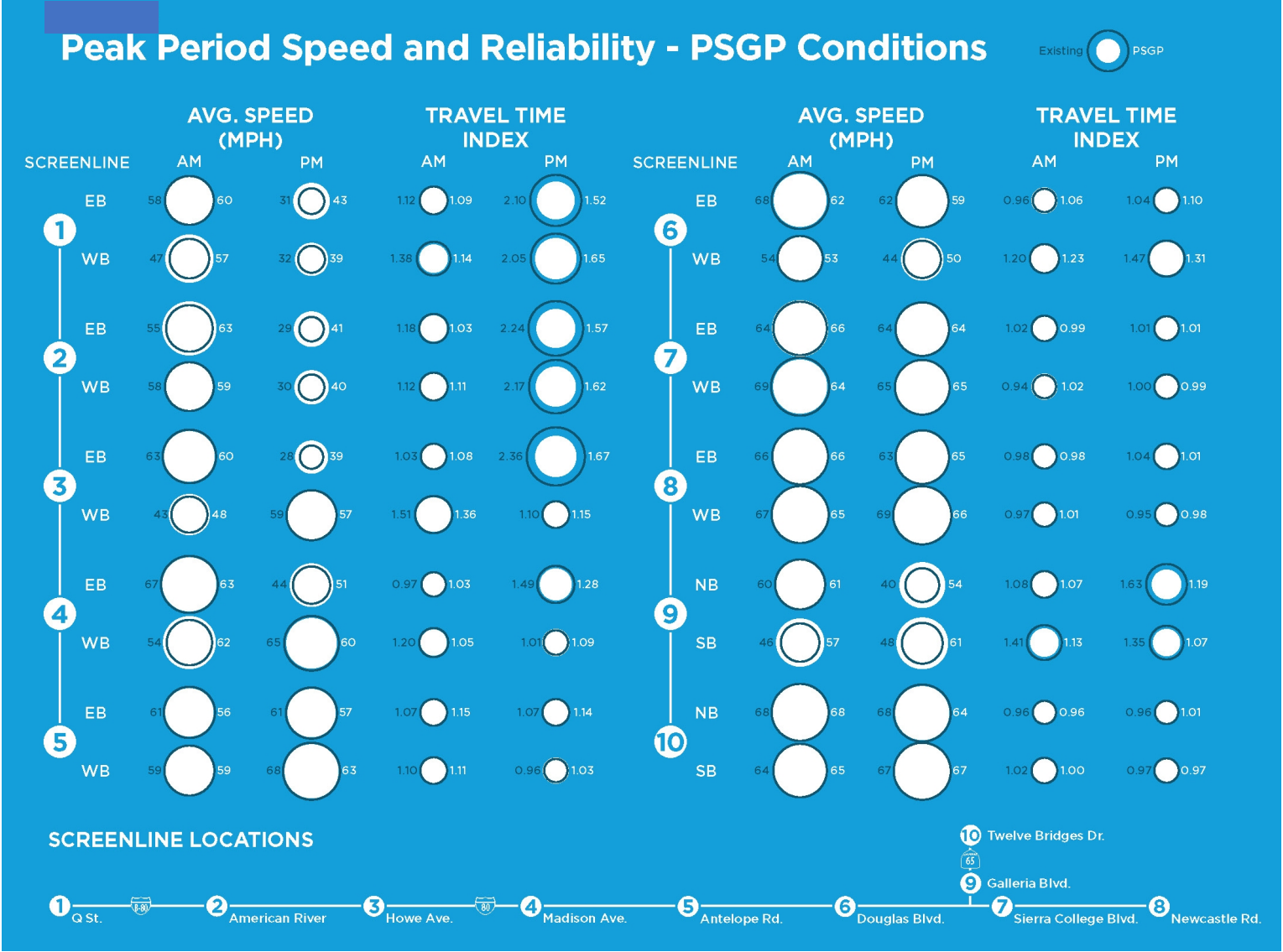
POTENTIAL IMPROVEMENTS



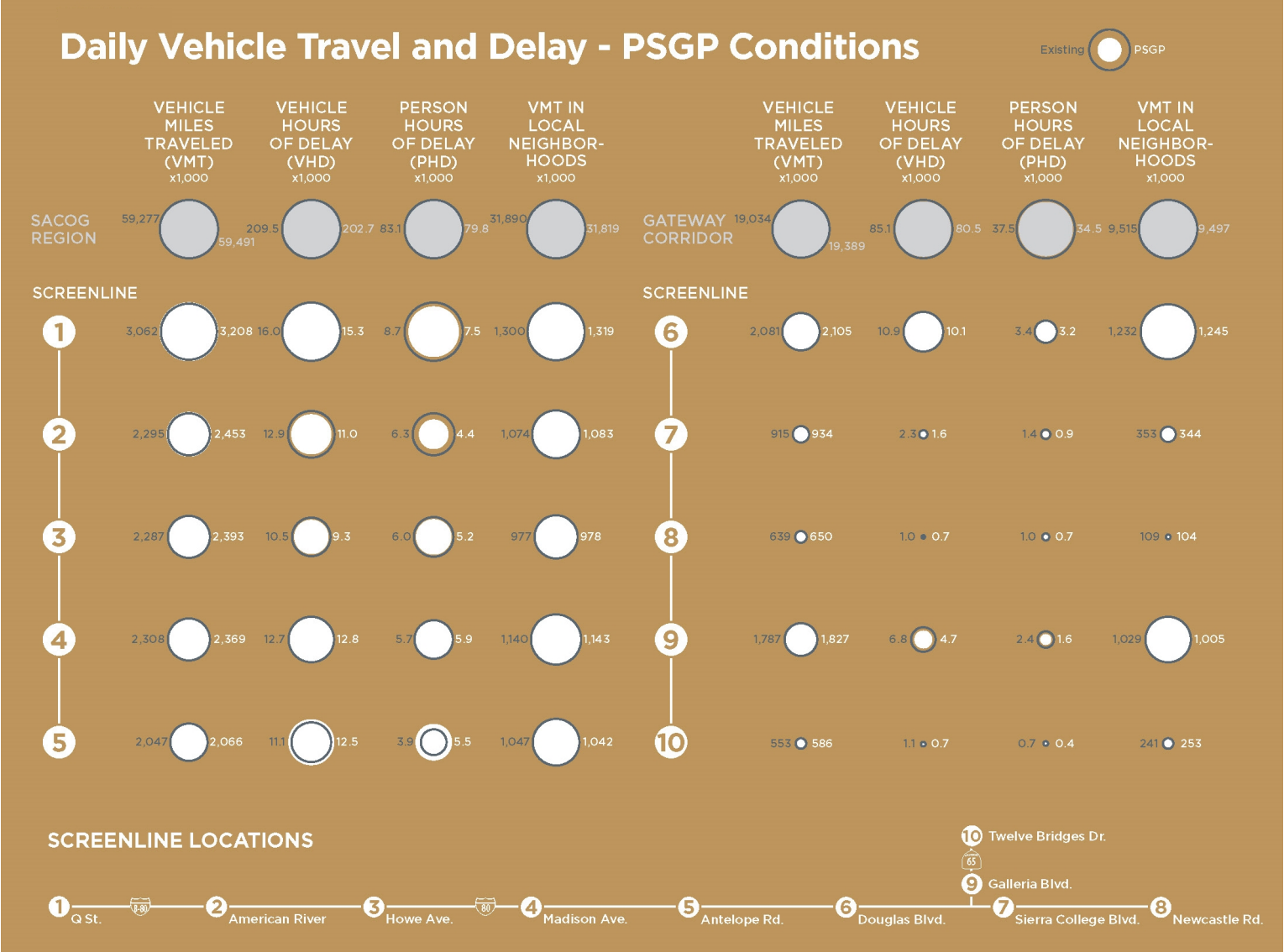
- Documentations
- Faster run time
 - Without toll optimization – 19 hours, 1 minute
 - With toll optimization – 50 Hours, 28 minutes
- Include HOV violators
- Vehicle time period vs transit time period
- Sensitivity testing
 - Transit
 - Tolling

THANK YOU!

RESULTS



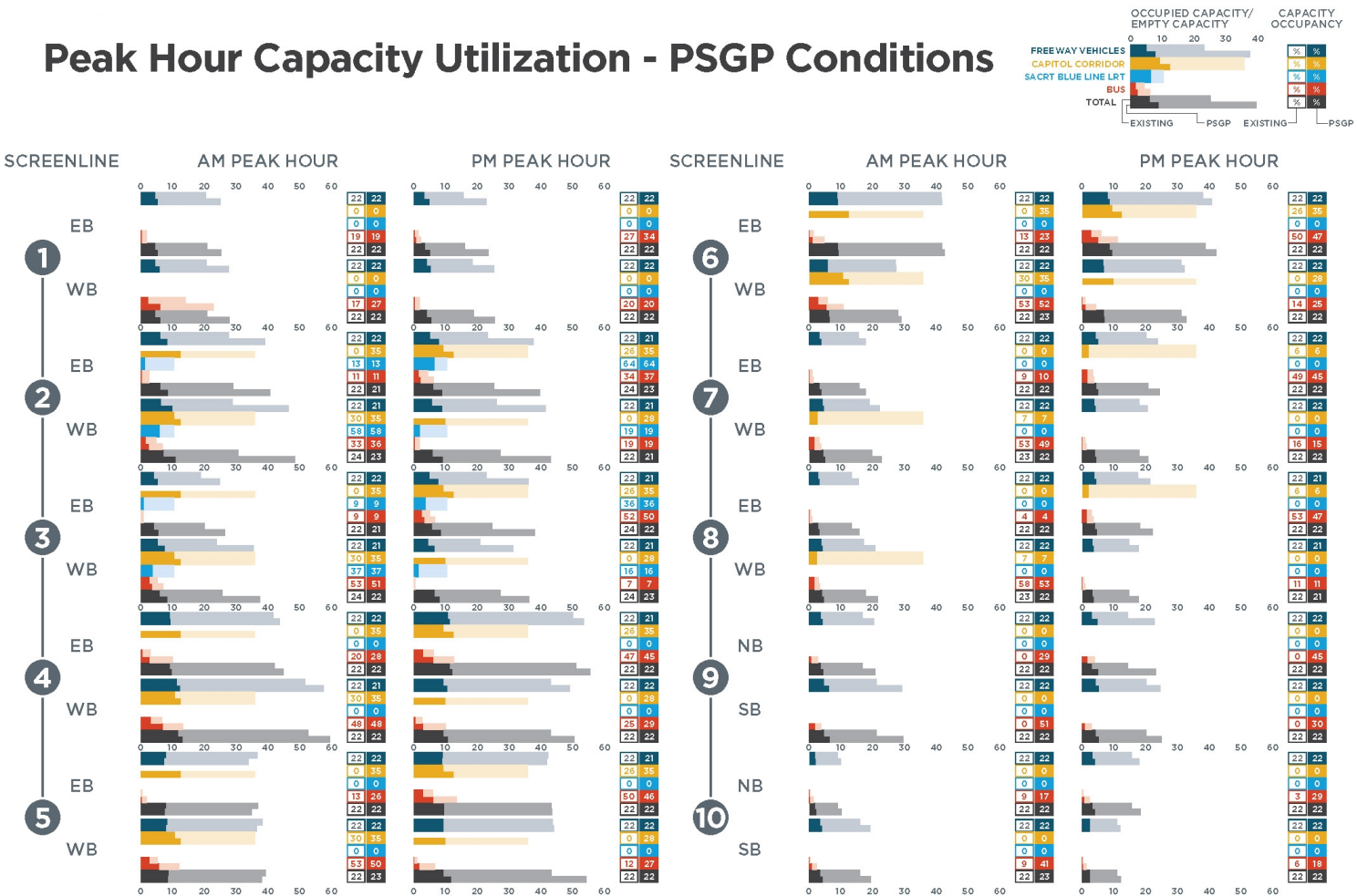
RESULTS



** 2% increase in corridor VMT but 1% reduction in regional GHG emissions*

RESULTS

Peak Hour Capacity Utilization - PSGP Conditions



SCREENLINE LOCATIONS

