I-80 ICM

I GOT OFF THE FREEWAY…NOW WHAT?

SEPTEMBER 30, 2015

Kimley»Horn

Presentation Highlights

▶ What are the Caltrans TMC Operators and local agencies doing?

▶ What is the I-80 ICM software doing?

▶ How are the signal timing strategies developed?

▶ When a freeway incident occurs, what will drivers see on arterials?
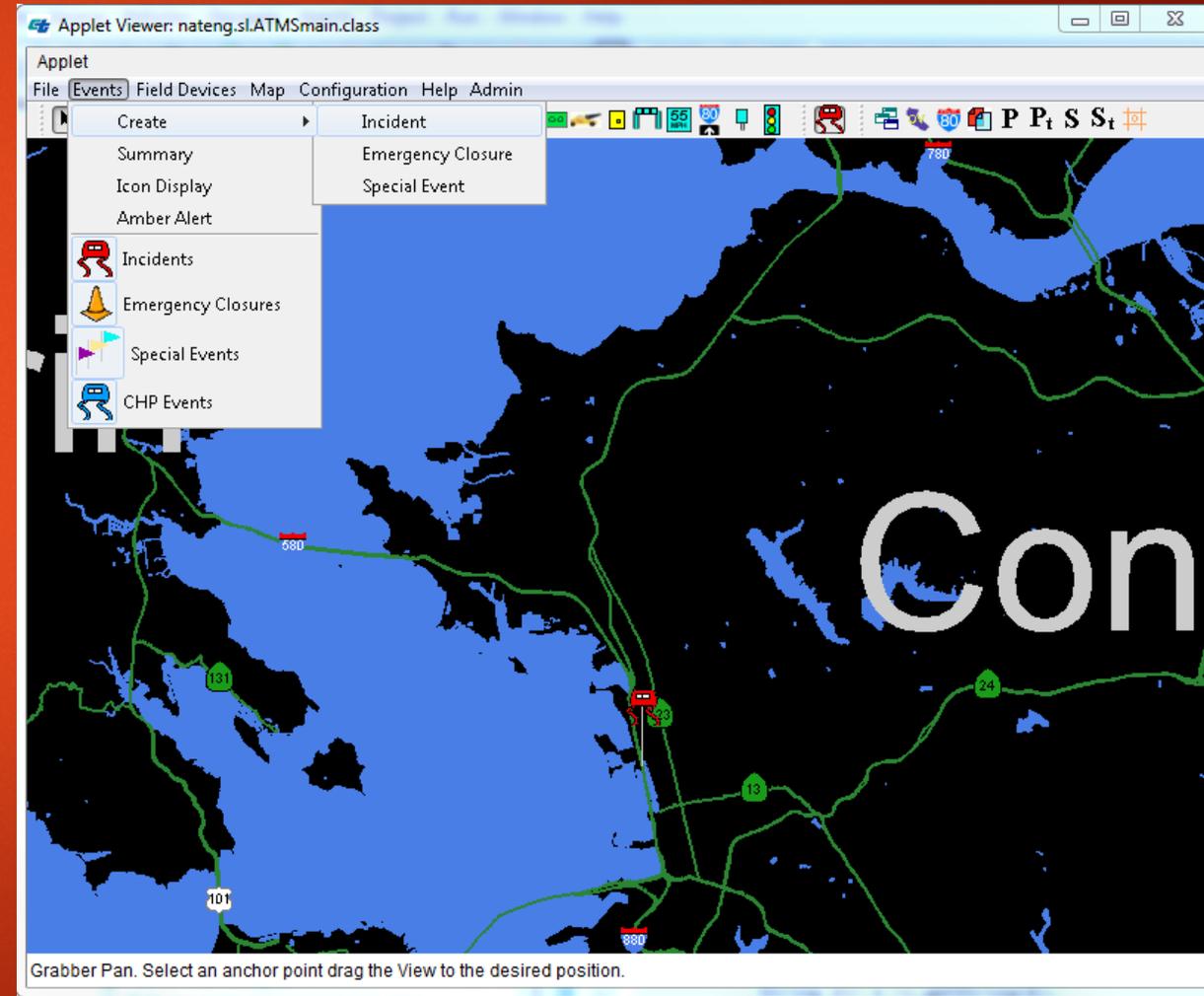
▶ What should drivers expect?

What are Caltrans TMC Operators and Local Agencies doing?

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▶ TMC Operators monitor freeway

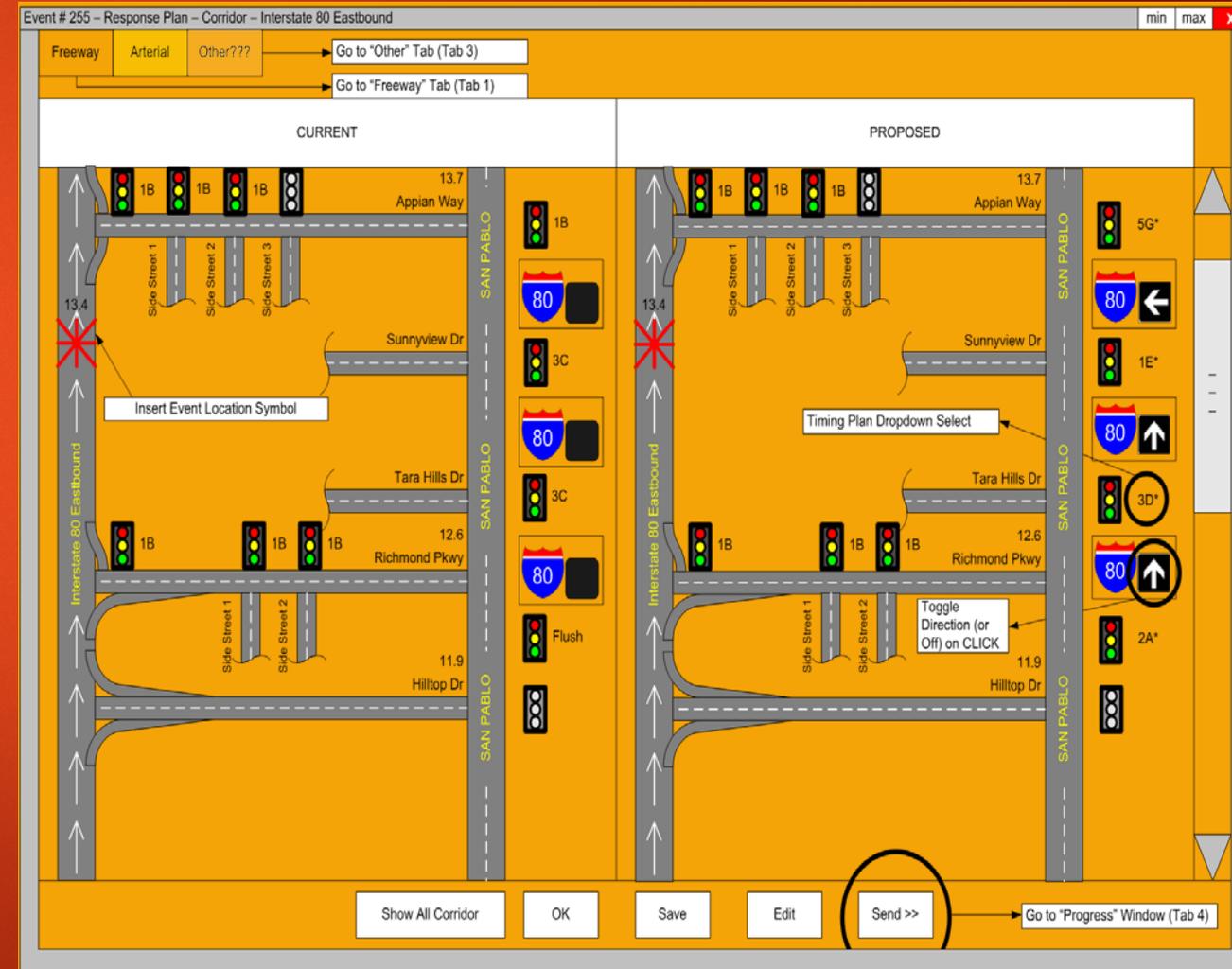What are Caltrans TMC Operators and Local Agencies doing?

What are Caltrans TMC Operators and Local Agencies doing?

What is the I-80 ICM software doing?

▶ Capturing incident location (lat/long), direction, severity, duration, queue length, etc.

▶ Trailblazer signs and traffic signals (and freeway devices) are associated with each incident location and queue

▶ Software prompts to implement management solution

▶ Trailblazer and traffic signal controllers store information locally

▶ Caltrans has communications interface to local signal systems to deploy during incidents

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What are Caltrans TMC Operators and Local Agencies doing?

▶ Upon activation, TMC Operators monitor local street congestion using detection and arterial cameras; local agencies are notified

▶ Local agencies can monitor arterial traffic with cameras if staff is available

▶ Incident Management Strategies can be actively modified during incident to accommodate traffic

How are the signal timing strategies developed?

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- Incident response timing plans will be stored locally in each traffic signal controller
- Plans designed and deployed to handle varying traffic diversion and conditions by:
  - Location of incident
  - Direction of incident
  - Time of incident
  - Severity of incident
- Implemented on a freeway link by link basis (link is a freeway segment between interchanges)
- Focus on providing priority and additional green time to path of diverted traffic, considering background traffic
- Populate a timing plan database that will be used by the system to determine what timing plans should be deployed at each intersection

I-80 Integrated Corridor Mobility Project

How are the signal timing strategies developed?

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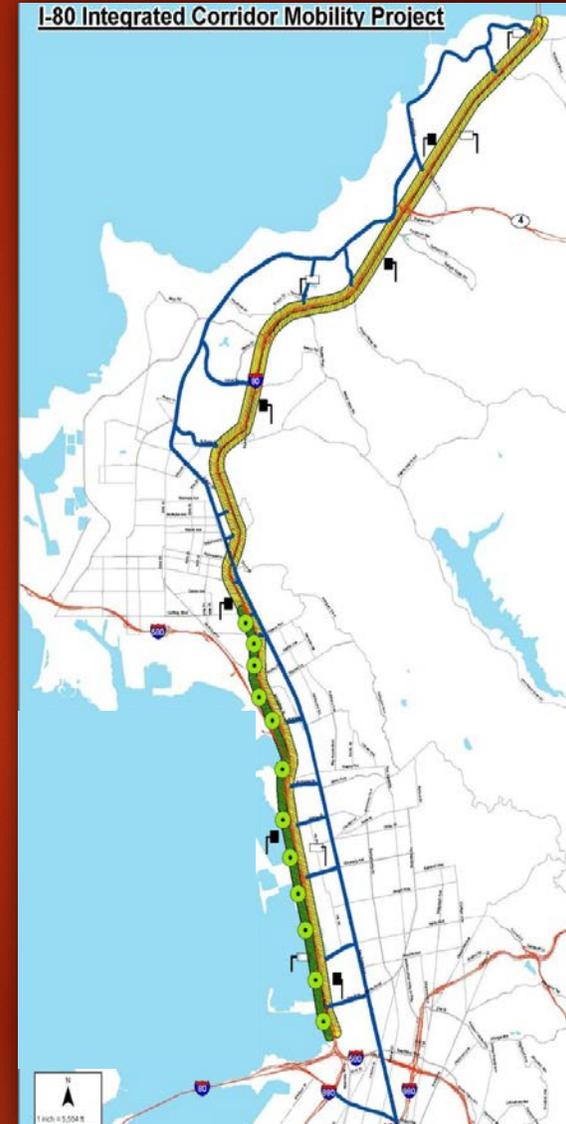
- Based on controller limitations, an estimated 4 incident patterns (cycle/splits) will be deployed
  - Cycle lengths set to provide maximum throughput for diverted traffic while limiting impact on background traffic and other modes (ped/bike)
  - Splits provide additional green time (priority) along path of diverted traffic
  - Multiple offsets (offset A, B, C) provide directional preference as appropriate to traffic conditions, including diverted traffic overlaid with background traffic
- Timing accounts for "stitching" of links, as feasible, as the traffic diverts earlier at upstream interchanges
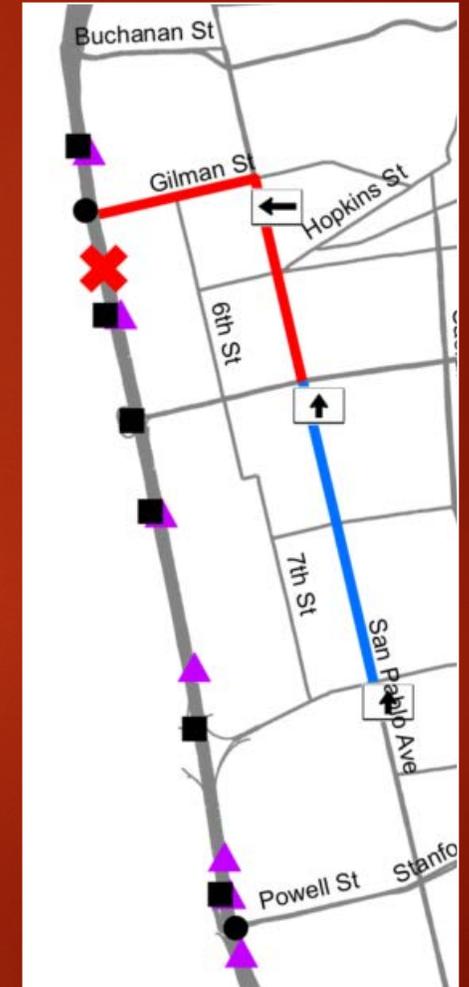
How are the signal timing strategies developed?

- Look at the capacity along corridor on a link by link basis.

- Identify critical intersection(s) and critical movement(s) within each link.

  - Focus on off-ramp intersections and crossing corridor intersections

- Determine maximum additional traffic that can be accommodated at the critical intersections and the "optimum" cycle length where further increasing of cycle does not benefit operations

  - **Establish a maximum cycle length**, based on existing conditions, for which incident timing plans will not exceed (Sensitivity to bike/ped wait times and side traffic delays).

  - **Incrementally increase the cycle length and volume** giving added green time to the critical movement(s) to determine additional vehicular throughput.

  - **Determine the delay at the intersection and identify "optimum" high cycle length**. Incremental increases will be performed until intersection failure, delays become unacceptable, or the maximum cycle is reached.

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How are the signal timing strategies developed?

- Group traffic signals based on "optimum" cycle lengths at critical intersections, consideration of existing grouping and cycle lengths, and to provide extended progression

- Prepare models for various incident locations and time of day, using estimated maximum diversion and selected cycle lengths

- Optimize timing, including splits and offsets for the specific strategy, considering setting offsets to allow "stitching" of segments together

- Populate timing plan database for various incident locations and conditions
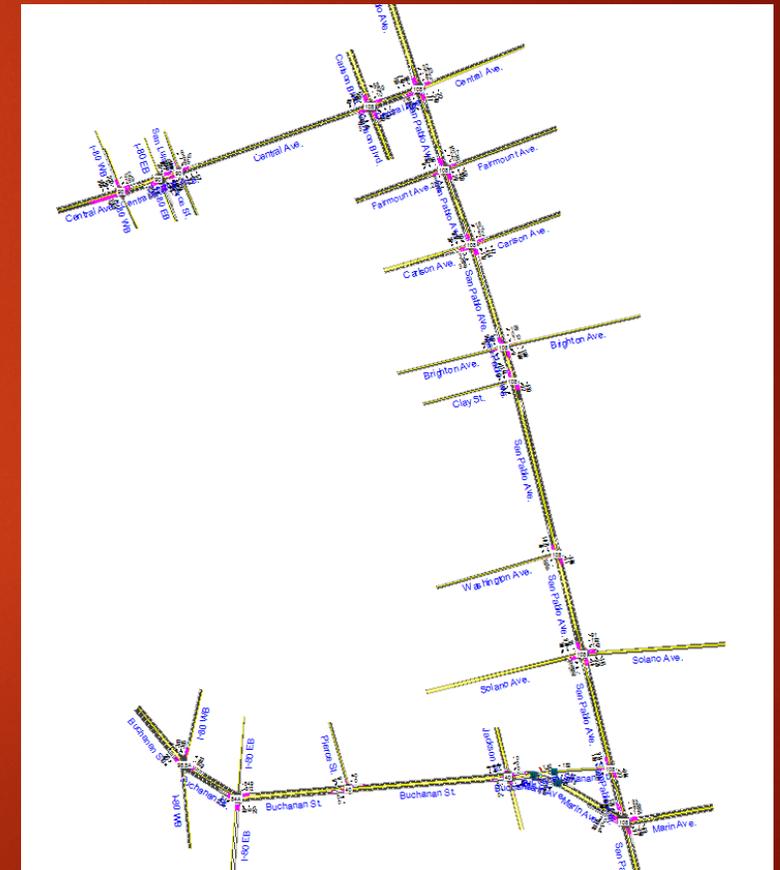
What will drivers see on arterials?

What should drivers expect on arterials?

What should drivers expect on arterials?

- ► Flow will still be very congested
- ► Impacts to side streets, pedestrians, and bicycles will be similar to what exists today
- ► Arterials should recover from incident more quickly

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