



# Traffic Congestion Management



# MAJOR TRAFFIC ENGINEERING FUNCTIONS

- Safety
  - Vehicle accidents
  - Bicycle and pedestrian facilities
  - Roadway markings and signs
- Vehicle speeds/enforcement
  - Speed limits
  - Regulatory posting
- Long range planning
  - Predicting future traffic demand
  - Identifying capacity needs
  - Changes in technology
- Street/signal system management and operation
  - Signal operations and corridor coordination
  - Markings & signs
- Neighborhood traffic and parking issues



A decorative graphic consisting of a dashed line that forms a large, open rectangular shape. The line starts at the top left, goes right, then down, then left, and finally up, with arrows at each end pointing outwards. The line is white and set against a dark blue background with a fine grid pattern.

# What is the mission of Traffic Engineering?





**Provide street system operations that balance the public's need for safety, mobility and convenience for the variety of users (modes) of the system**



# What is “balance” on our street system?

- Very subjective and no technical definition
- Most street design elements “dictated” by design standards
- Many design standards include appropriate conditions for use
- Need to establish clear priorities - important considerations are often at odds with each other (e.g. safety vs convenience)
- Considers a variety of conditions that occur throughout the 24 hrs of the day – but “worst case” often prevails
- “Design person” often dictates design over the majority of users
- Managing liability exposure is a significant factor



# WHAT CURRENTLY GUIDES EFFORTS

- General Plan Circulation Element
- Traffic Signal Master Plan
- Bike Master Plan
- Staff reviews/traffic safety evaluations
- Feedback from City Council/City Management
- Residents
- Funding opportunities/priorities
  - Measure M grants
  - Traffic safety grants
  - AQMD funding
  - City funds (General Fund, Gas Tax, Prop 42, etc.)

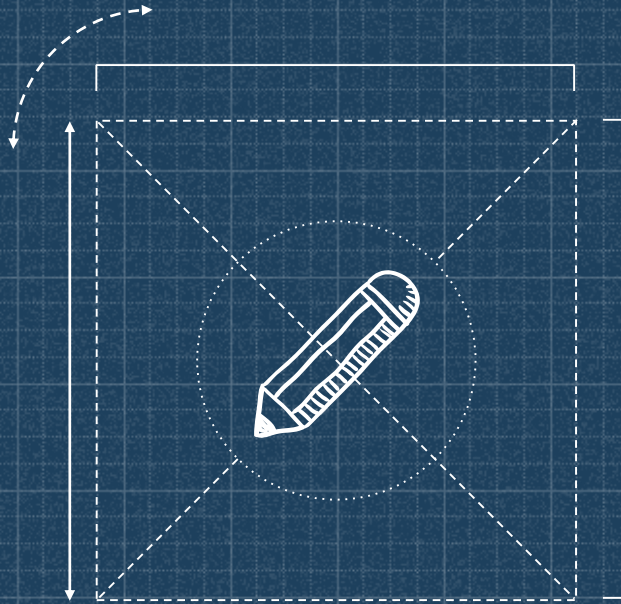


# WHAT DO WE HEAR MOST FROM THE COMMUNITY?

(in no particular order)

- Safety
- Speeding
- Vehicle/motorcycle and truck noise
- Congested corridors
- Isolated intersection congestion
- Unnecessary delays at intersection/waiting
- Motorists not yielding to pedestrians





**One study can't effectively  
address all of these topics**



# CONGESTED CORRIDORS

- Beach Boulevard (mostly north of Ellis)
- Edinger – Goldenwest to Beach
- Pacific Coast Highway – Beach to Goldenwest
  - Commute times
  - Weekend and summer conditions
  - Active with different modes (pedestrians, cyclists, cars)
- Pacific Coast Highway – Warner & Goldenwest
  - High tide and weather event detours
- Warner – Goldenwest to Newland
- Adams – east of Bushard



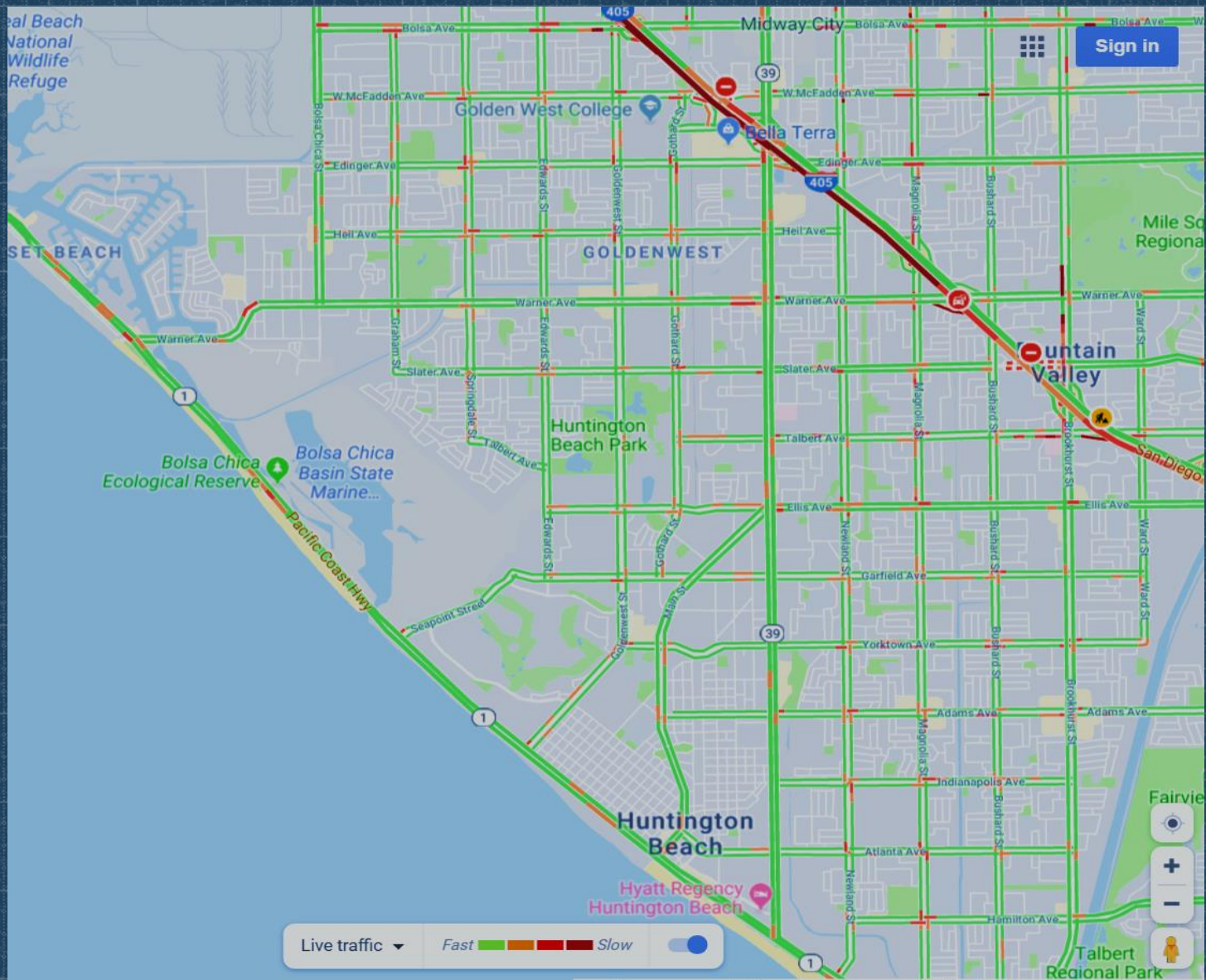
# ISOLATED INTERSECTION CONGESTION

Common locations identified:

- Beach/Edinger
- Beach/Main/Ellis
- Beach/Warner
- Beach/Talbert
- Brookhurst/Adams
- PCH/Warner
- PCH/Main
- Warner/Magnolia

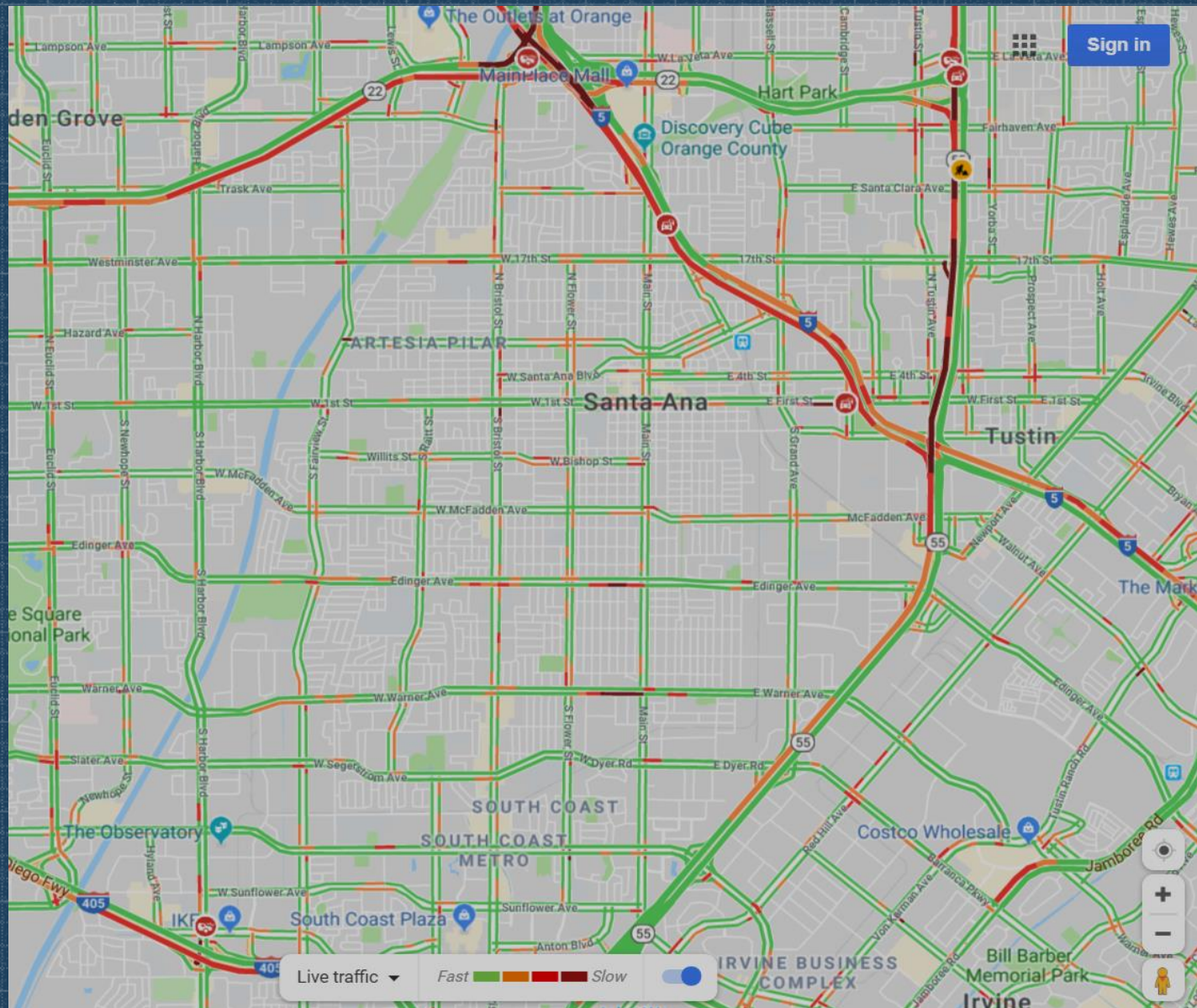


# HB Area – 8:30 am 8/26/19



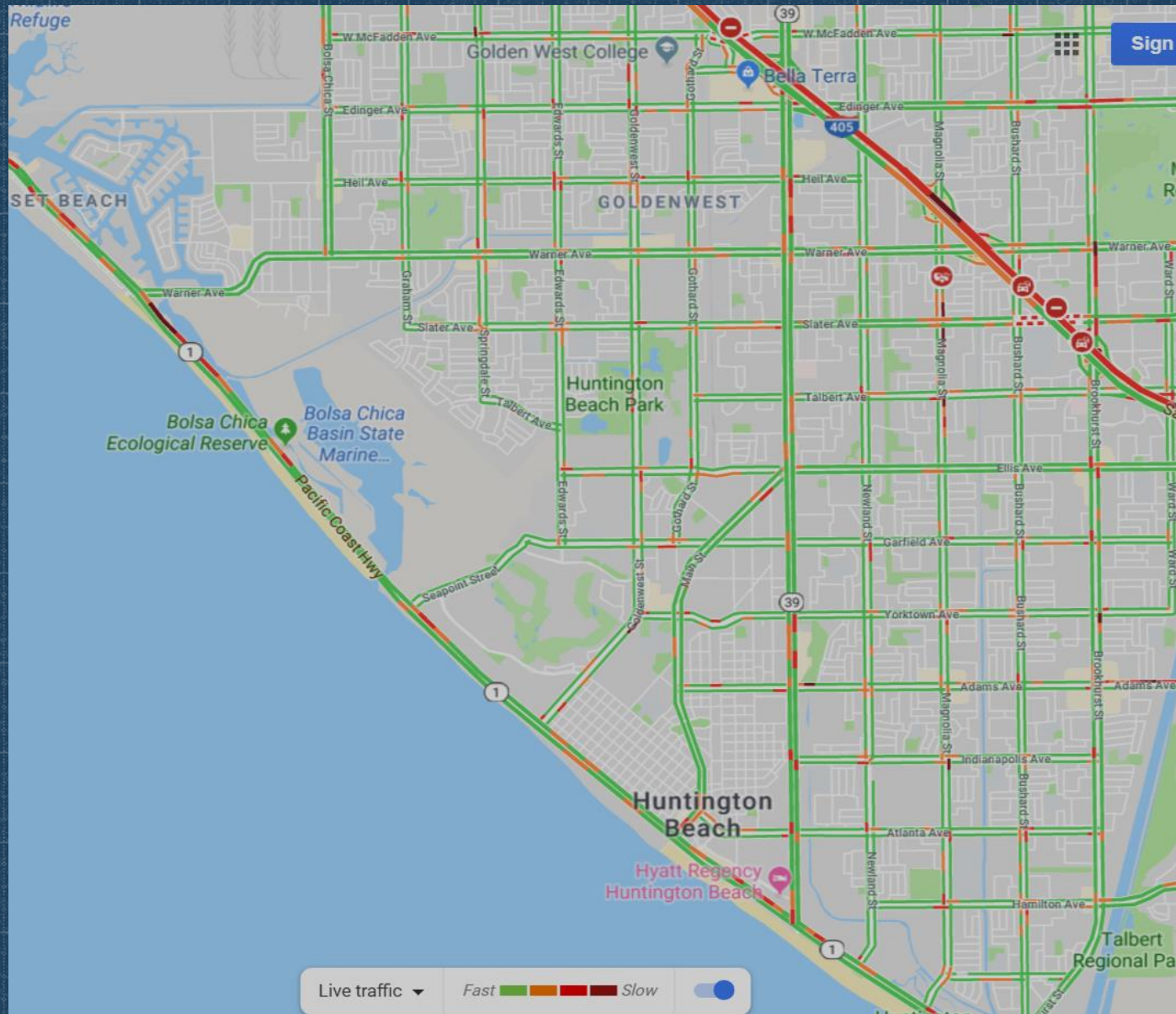


# Santa Ana Area – 8:30 am 8/26/19



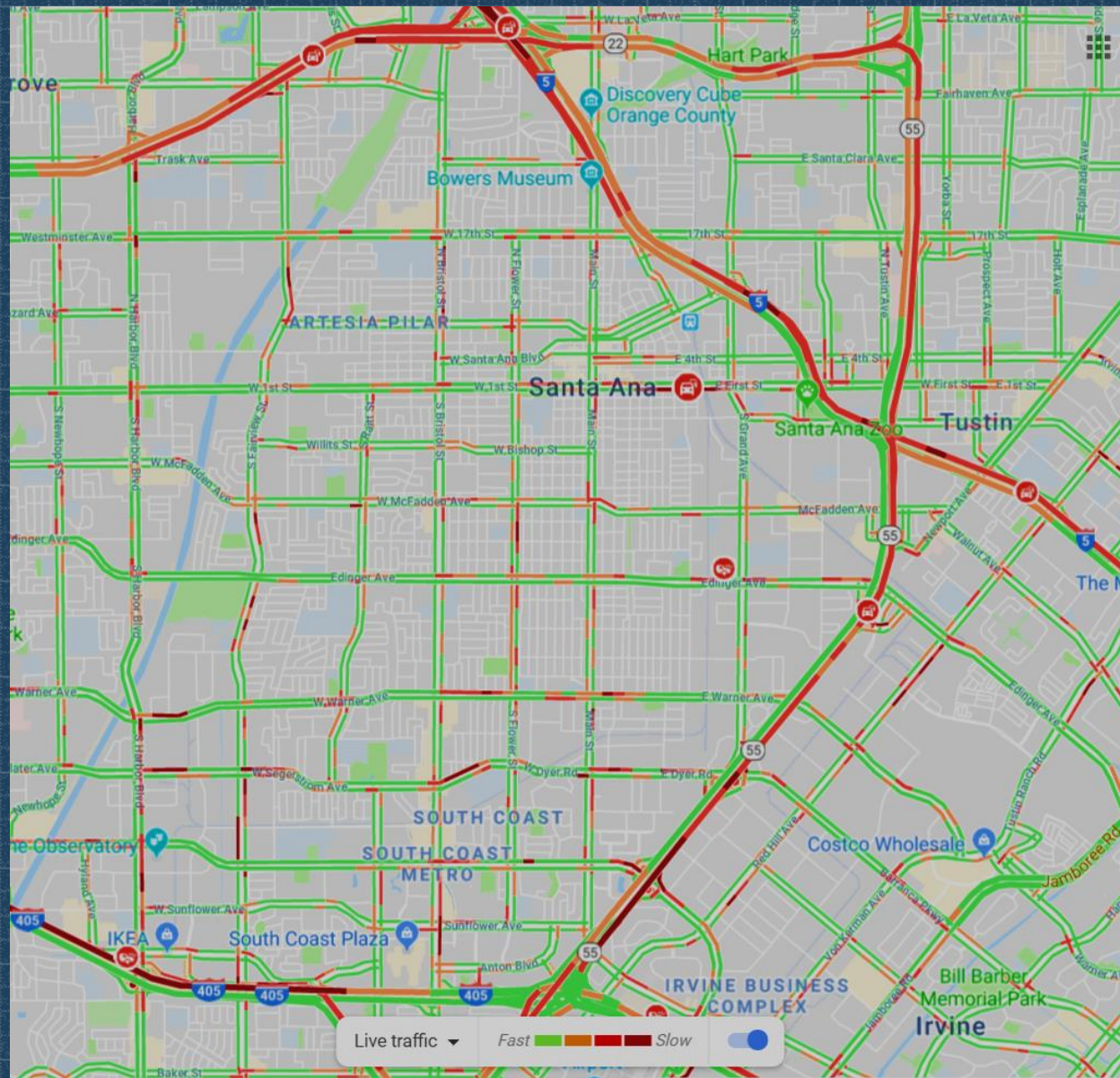


5 pm Thursday August 15, 2019





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# STRIKING THE RIGHT BALANCE

## >Safety

## Can Result In

Some safety treatments require greater controls – eliminate motorist judgement in certain situations

## > Delays/Inefficiency

Safety measures can result in less efficient vehicle and pedestrian movement

- New traffic signals
- Protected left turn arrows
- Exclusive pedestrian phases
- Split phase operations



# STRIKING THE RIGHT BALANCE

## >Signal coordination can result in

Signal coordination improves efficiency along a given corridor

- Reduces travel time along corridor
- Increased travel speeds possible (positive and negative)

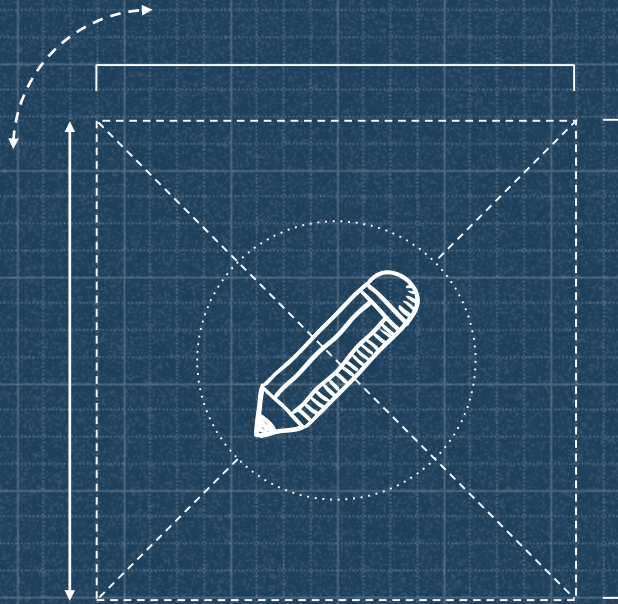
## >Delays

- Increased delays to cross street traffic – common cycle length

## >Speeds

- Less stopping and starting
- Less congestion
- Higher travel speeds
  - Can raise concerns





**What are we doing?**  
**What more can we do?**  
**What are the limitations?**



# CONGESTED CORRIDORS

- Current efforts – Signal Coordination Projects
  - Edinger
  - Warner
  - Magnolia
  - Brookhurst
- What more can we do?
  - Develop/lead new coordination projects (PCH, Beach, Bolsa Chica others)
  - Explore new technology (adaptive signals, connected vehicles)
  - Isolated modifications to improve intersection efficiency
- Limitations & Challenges?
  - Caltrans control of Beach and PCH – cooperative effort needed
  - Funding availability for improvements
  - I-405 project influences – short and long term



# ISOLATED INTERSECTION CONGESTION

- Current efforts
  - Limited pursuit of capacity improvements
  - Plans completed for Beach/Warner and Brookhurst/Adams
- What more can we do?
  - Apply new technologies where appropriate/beneficial
  - Pursue projects using Traffic Impact Fee funds
- What are the limitations?
  - Many key intersections are Caltrans jurisdiction (PCH and Beach)
  - Funding
    - Most intersections don't qualify for Measure M grant funding
    - Few intersections meet "below standard" level of service requirement
  - Some Traffic Impact Fee money available, but limited



# CURRENT AREAS IN DEVELOPMENT

- Current Technologies in Development
  - Adaptive Signal Controls
  - Upgraded Traffic Signal Controllers
  - Preparing for future of autonomous vehicles/intelligent vehicles
- Coordinating Traffic Signals
  - Current and new projects to improve coordination & infrastructure
    - Magnolia & Brookhurst (current)
    - Traffic Management Center upgrades
    - Warner, Edinger & Talbert (SB1 Grants)
  - Potential new projects
    - Pacific Coast Highway – significant planning with Caltrans
- Staffing
  - Filling additional traffic engineering position now
  - Ability to more proactively address operational issues



# CURRENT AREAS IN DEVELOPMENT

- **I-405 Freeway Project**
  - Significant disruption to normal patterns for another 4 years
  - Potential to significantly alter local street patterns and relieve congestion on certain routes



# SMART SYSTEMS/INTELLIGENT TRAFFIC SIGNAL

- The Vision
  - Create an integrated system of vehicles and street operations
    - Autonomous vehicles – self driving
    - Intelligent vehicles
      - Advanced sensor, warning & control systems
      - Vehicle to Vehicle & Vehicle to Infrastructure communication
    - Intelligent roadway system
      - Cross street sensor systems (crash avoidance)
      - Communication with signal controllers (e.g. , current indications, anticipate red or green lights)
      - Active communication of congestion and travel speeds
      - Incident warnings
      - Adapt operations to conditions
      - Transit priority



# SMART SYSTEMS/INTELLIGENT TRAFFIC SIGNAL

- What is the current status?
  - Rapidly changing/still developing
  - Designing systems that are likely to meet future needs
  - Some capabilities functional (e.g. adaptive controls)
  - Analyzing infrastructure needs
  - OCTA leading regional efforts
    - Needs
    - Funding



# Thank you!