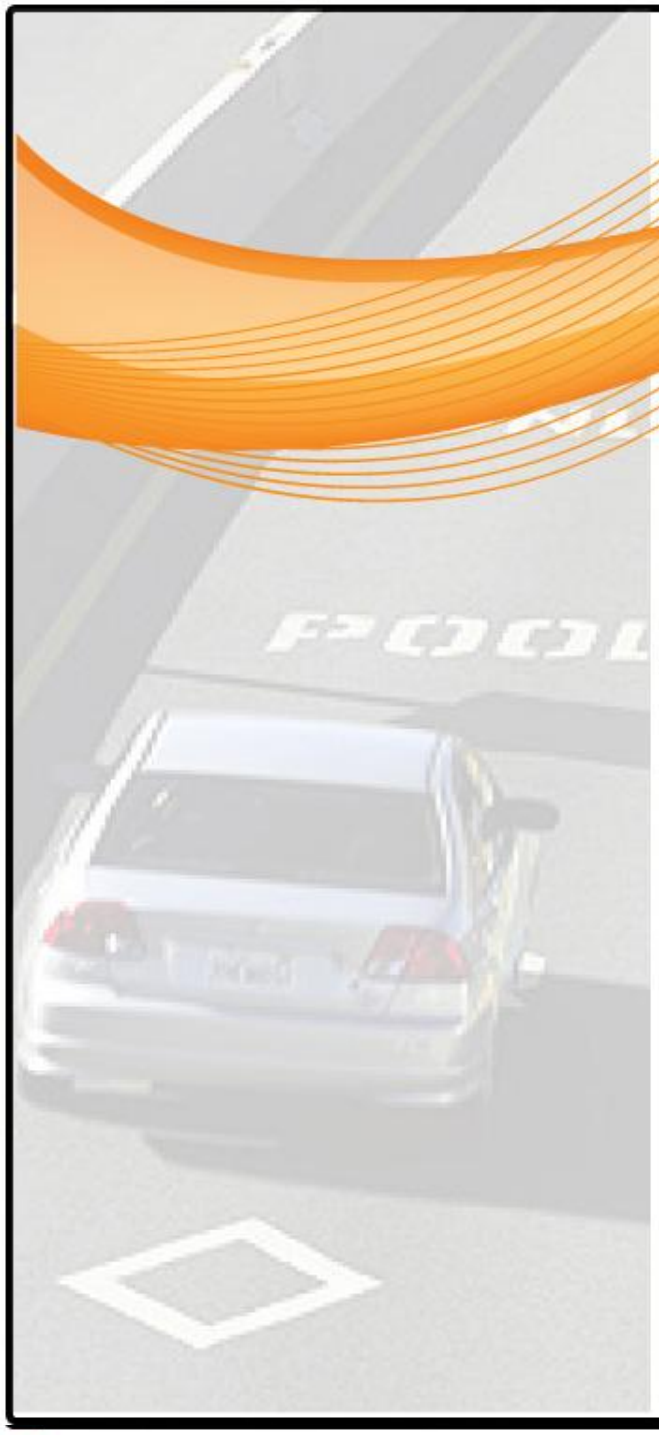
ORANGE COUNTY TRANSPORTATION AUTHORITY

High-Occupancy Vehicle Degradation Study

Powerpoint



DISTRICT 12 HOV DEGRADATION

Orange County Transportation Authority
Board of Directors Meeting

April 8, 2013

MAP-21
Moving Ahead for Progress in the 21st Century

- Enacted on July 6, 2012
- Requires a degradation study per 23 USC § 166 (d)
- Requires State DOTs to remedy degraded HOV/HOT lanes (180 days)
- Potential sanctions: Loss of Federal funding and project approvals

Definition of HOV & Degraded Segment:

- High-Occupancy Vehicle lane, or carpool lane
- Speed falls below 45 mph for 10% or more of the morning or evening weekday peak hour periods over a consecutive 180-day period

HOV lane demand is exceeding capacity resulting in degradation. People are using HOV lanes.

Benefits of HOV Lanes

- **Saves travel time and improves trip reliability**
- **Provides commuters an alternative**
- **Moves more vehicles (during peak, congested conditions)**
  - 1 GP lane carries 1,400 vehicle per hour per lane (vphpl) (2,000 at free flow)
    - *AVO* is 1.1*
  - 1 HOV lane carries 1,500 vphpl
    - *AVO is 2.2*
  - 2 HOV lanes carry 1,700 vphpl
    - *AVO is 2.2*
- **Moves more people**
  - 1 GP lane = 1,540 people/hour/lane
  - 1 HOV lane = 3,300 people/hour/lane
  - 2 HOV lanes = 3,740 people/hour/lane

*AVO = Average Vehicle Occupancy

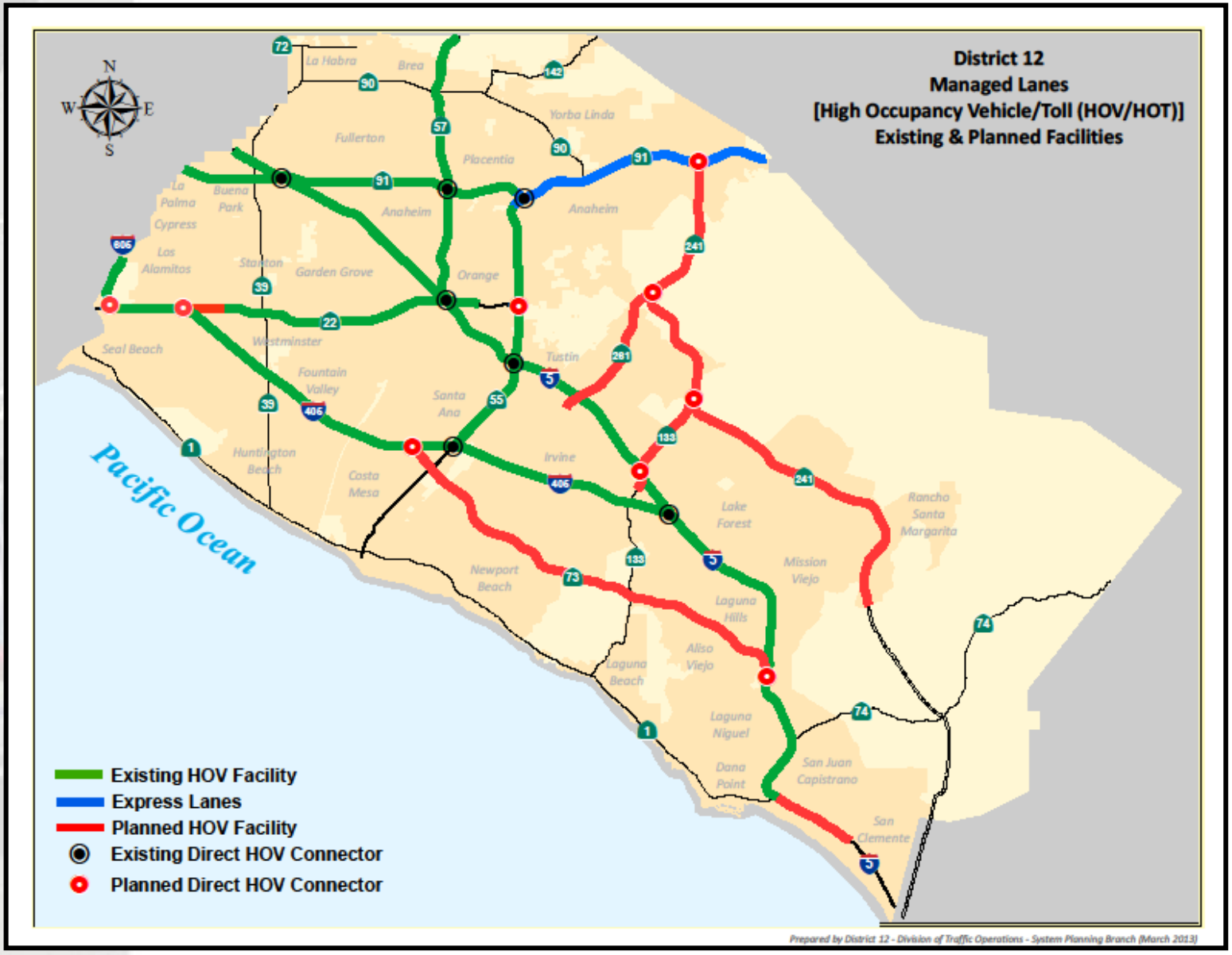
Peak Period (Congested) Vehicles and People Throughput

Lane Type	No. of Lane(s)	Vehicle Production (Throughput) (veh/hr)	Occupancy Rate	People/hr
HOV	1	1,500	2.2	3,300
GP	1	1,400	1.1	1,540
HOV	2	1,700	2.2	7,480*
GP	2	1,400	1.1	3,080
GP	3	1,400	1.1	4,620
GP	4	1,400	1.1	6,160
GP	5	1,400	1.1	7,700

Notes:

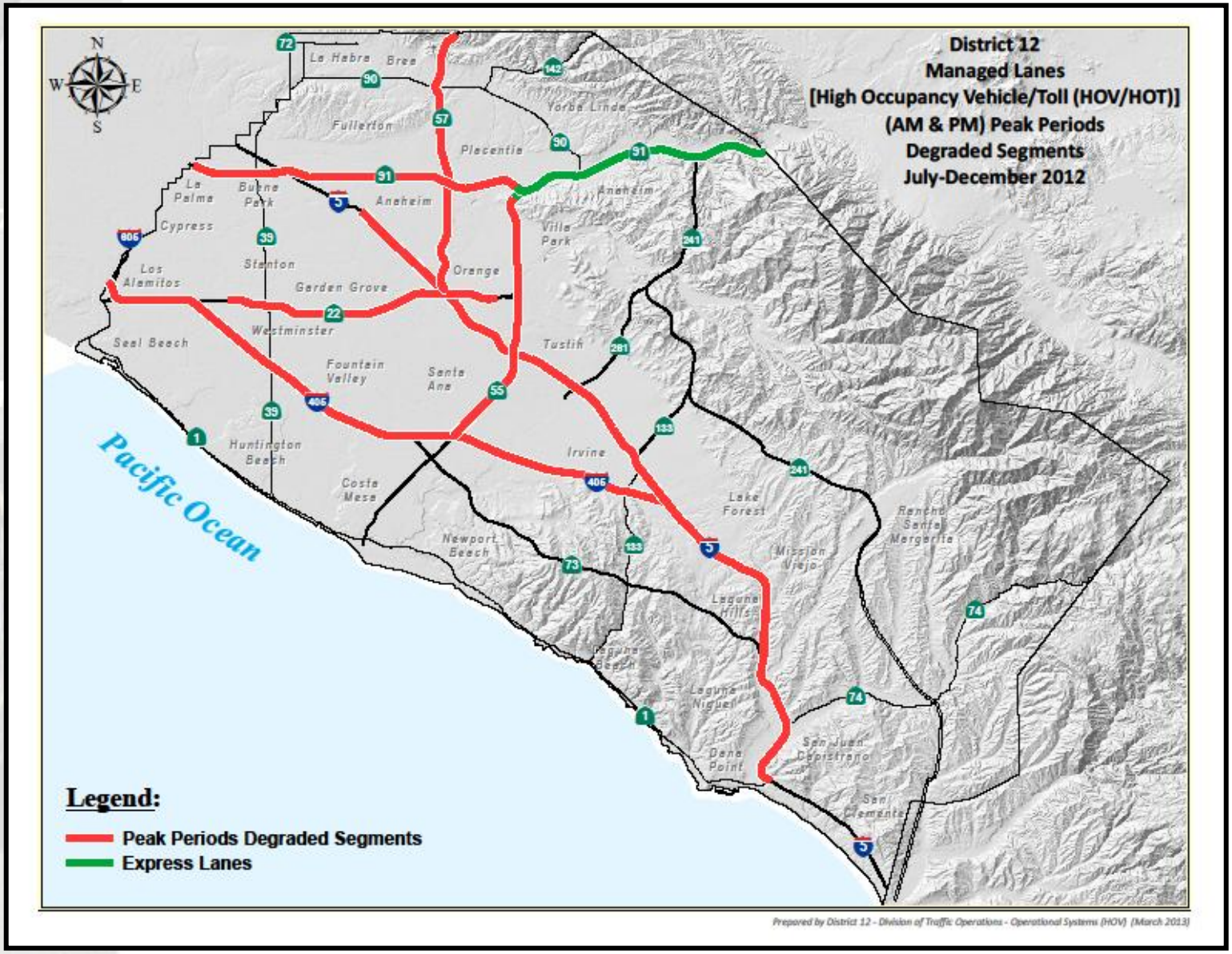
- Peak hour volume for 2 HOV lanes = 2 x 1,700 x 2.2 = 7,480 people/hour

Orange County HOV Lane Map



DISTRICT 12 HOV DEGRADATION

Orange County HOV Lane Degradation Map



Least Effective Solutions to Address Degradation and Corridor Throughput

SOLUTION	PRO	CON
1. Increase enforcement	Address perceived lack of enforcement by public Serves as deterrent to violators	Limited congestion relief Require supplemental funding for periodic enforcement
2. Increase HOV violation fine	Reduce violation	Limited congestion relief
3. Prohibit Inherently Low Emission Vehicles (ILEV)	Minimal congestion relief in the HOV lanes	Increase congestion in GP lanes Counter to air quality strategies
4. Provide direct access to HOV lanes and connectors	Reduce weaving maneuver Remove pressure on nearby interchages	Additional capital costs
5. Peak period 3+	Relieve congestion in the HOV lanes	Empty lane syndrome Increase congestion in GP lanes Implementation challenges

Most Effective Solutions to Address Degradation and Corridor Throughput

1. Raise occupancy (3+) (one lane)
2. Raise occupancy (3+) and convert to HOT (one lane)
3. Add second HOV lane (2+) (two lanes)
4. Add second HOV lane and convert to HOT (2+) (two lanes)
5. Add second HOV lane and convert to HOT, raise occupancy to (3+) (two lanes)

Most Effective Solutions to Address Degradation and Corridor Throughput

SOLUTION	PRO	CON
1. Raise occupancy (3+) (one lane)	Eliminate degradation	Empty lane syndrome Near-term congestion in GP lanes Perceived take-away
2. Raise occupancy (3+) and convert to HOT (one lane)	Same as (1) Improved travel time reliability Move more vehicles Manages congestion Potential revenue for corridor	Same as (1) May eliminate future ML options Tolling resistance Limited funding
3. Add second HOV lane (2+) (two lanes)	Same as (1) Improved travel time reliability Improved incident response Move more people and vehicles Allows 2+ to stay in lanes	Limited funding Potential right-of-way impact Near-term empty lane sydrome
4. Add second HOV lane and convert to HOT (2+) (two lanes)	Same as (2) and (3) Allows 2+ to stay in HOT lanes	Same as (3) Tolling resistance
5. Add second HOV lane and convert to HOT Raise Occupancy to (3+) (two lanes)	Same as (1) and (2) Improved incident response Move more people Greater options for single occupant vehicles	Same as (1), (3) and (4)

Recommendations to Address Degradation & Corridor Throughput

Long-Term

- **Add HOV lanes or HOT lanes (creating a two-lane system)**

  As project opportunities arise

  Subject to funding availability

Short-Term

- **Convert existing HOV lanes to HOT lanes and increase occupancy from 2+ to 3+**

  Where long term options are not feasible

  Where GP capacity is added to corridor (ideal)

  Create a two-lane system when available

THANK YOU

QUESTIONS OR CONCERNS?

James Pinheiro, PE
Deputy District Director, Caltrans District 12
Operations & Maintenance
Email: James_Pinheiro@dot.ca.gov

Additional information:

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ORANGE COUNTY TRANSPORTATION AUTHORITY

High-Occupancy Vehicle Degradation Study

Handout

California Department of Transportation, District 12
High Occupancy Vehicle Degradation Study
Responses to Committee Comments

At the April 1, 2013 Regional Planning and Highways Committee (Committee) meeting the State of California Department of Transportation (Caltrans) made a presentation on the status of High Occupancy Vehicle Lane (HOV) operations on Orange County freeways. They also outlined possible near–term and long-term solutions to address degraded HOV facilities. The impetus for the effort is related to changes in transportation funding legislation. This presentation also is being provided to the full Board of Directors (Board) on April 8, 2013. A list of Committee questions and preliminary responses are provided below.

Director Donchak

Question: Is there anything that would prohibit HOV violation fines from matching the cost of added enforcement in order to be revenue neutral?

Response: HOV enforcement is typically performed on an overtime basis by the California Highway Patrol and as such there are limited resources. In addition, this approach would only provide a partial solution as it could address no more than five percent of the degradation issues.

Director Miller

Question: Do we have degradation data by freeway segment?

Response: Yes. Caltrans is expected to provide this information within the next several weeks.

Question: By what percentage will the proposed solutions fix degradation?

Response: It is unknown precisely what percentage reduction each proposed solution would provide. However, solutions have been generally characterized as “least effective” and “most effective.”

Question: What is the Traffic and Revenue projection for one High Occupancy Toll (HOT) lane?

Response: This analysis has not been completed and would require an amendment to the Parsons Transportation Group agreement. It would take approximately four months to complete.

Director Murray

Question: When does the clock start ticking for the 180 days?

Response: Once Caltrans Director, Malcolm Dougherty, signs the HOV Degradation Study report and transmits it to the Federal Highway Administration (FHWA), Caltrans has 180 days to identify a plan and begin implementing solutions to address degradation.

Vice Chairman Nelson

Question: How will the degradation solutions be paid for?

Response: Degradation solutions are subject to funding availability and would be implemented as project opportunities arise.

Director Spitzer

Question: What is the State of California's position on where excess revenues should be spent?

Response: SBx4 indicates excess toll revenues may be paid to the regional transportation agency for use in improving public transportation in and near the project boundaries.

Question: How is Caltrans Headquarters handling the degradation findings statewide?

Response: Caltrans Headquarters is encouraging each district to explore remedies and districts are looking at similar solutions to those presented to the Committee. FHWA would like to see degradation remedies within 180 days, but if not feasible a plan must be submitted within the 180 day timeframe.