

Multi-County Goods Movement Action Plan



Metro



Summary of Technical Memoranda 6a, 6b, and 7
for the
Stakeholder Advisory Group

July 25, 2007

Presentation Overview

- 1. Review of the Multi-County Goods Movement Action Plan (MCGMAP) study area and objectives**
- 2. Discussion of initial findings (including Technical Memorandum 7)**
- 3. Summary of Technical Memoranda 6a and 6b**
- 4. Conclusions and next steps**

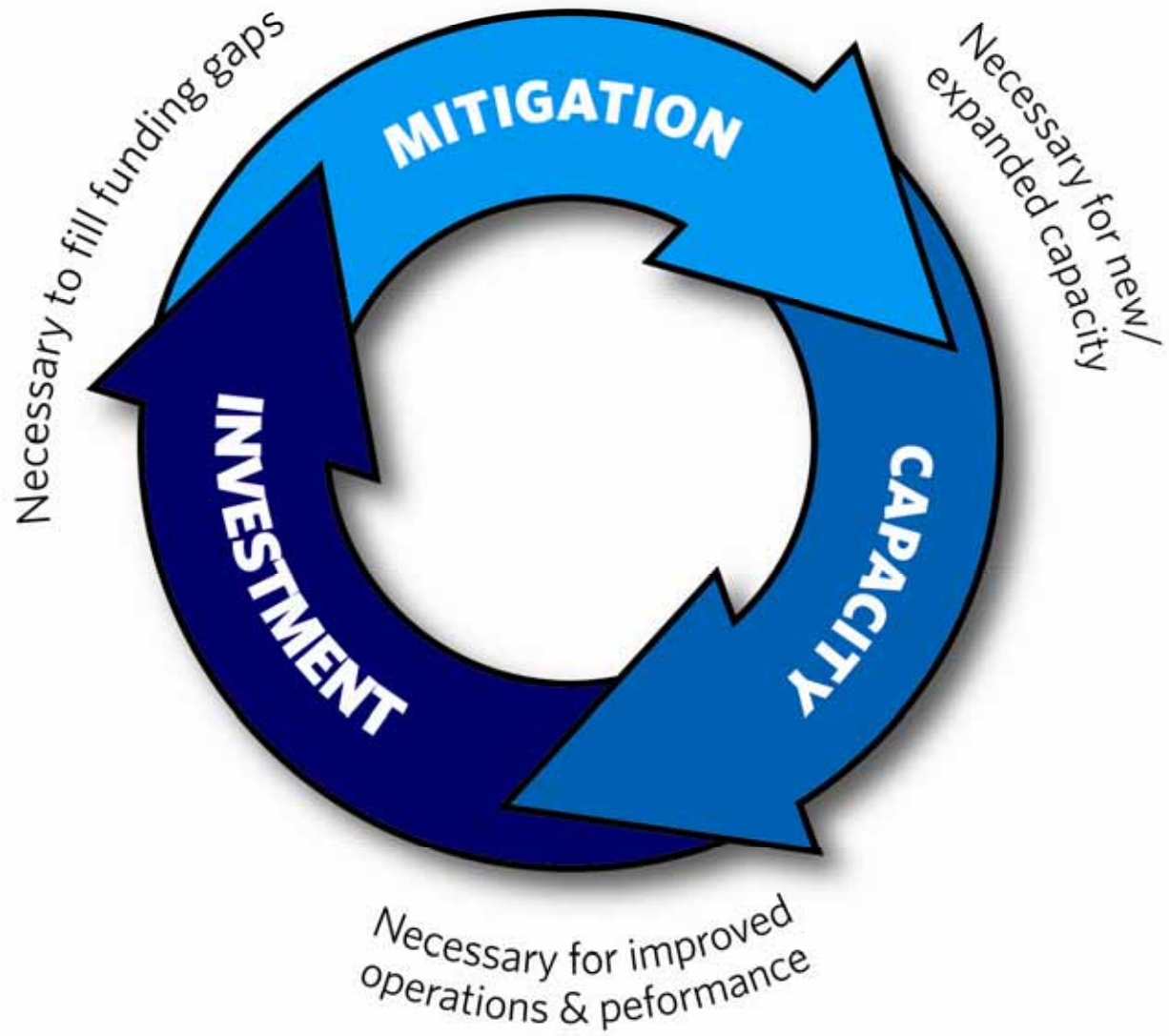
MCGMAP Study Area



Overview of Action Plan Objectives

- > Use systems approach to goods movement
- > Achieve simultaneous infrastructure and air quality improvement
- > Build plan using market segment approach
- > Improve mobility; reduce congestion
- > Develop “win-win” solutions
- > Find a “funding balance” of both public and private sources
- > Build consensus

SIMULTANEOUS AND CONTINUOUS



Building an Action Plan

8. Multi-County Goods Movement Action Plan

7. Mitigating the Effect of Goods Movement

6. Strategies for Improving Goods Movement

5. Community, Environmental, & Economic Impacts

4. Assess Growth in Freight Demand

3. Compile and Collect Goods Movement Data

2. Outreach Assistance

1. Project Management / Administration

Findings

Issues

Community Concerns about Environmental and Health Impacts

Port and Airport Facility Efficiency, Capacity and Throughput

Highway Congestion, Delay and Maintenance

Truck Access and Turnaround Times at Goods Movement Facilities

Mainline Rail Capacity

Rail Intermodal Capacity Constraints

Grade Crossings

Truck Safety

Changes in Regional Shipping and Transloading

Shifting of Land Uses and Development Patterns

System-wide Goods Movement Data and Information

Security

Availability of Funding

A Disparate Goods Movement System and Community

Core Mandates

Environmental Mandate

- Reduce environmental impacts of goods movement and protect public health

Mobility Mandate

- Assure the safe and efficient movement of all modes of travel

Economic Mandate

- Maintain economic vitality of the region and role of goods movement as employer

Funding Mandate

- Fair share of public funds and assure that the private sector pays its fair share

Four Groups of Actions



ACCELERATE Regional Environmental Mitigation

- 1) Project specific mitigation
- 2) Broader regional strategies



INVEST STRATEGICALLY in Infrastructure

- 1) Target market segments
- 2) Reduce reliance on trucking



PROMOTE FAIR-SHARE Public/Private Financing

- 1) Federal/state
- 2) Private sector contribution



CAPITALIZE on Operational Efficiencies

Marine terminal operations, truck turn times, intermodal operations, highway operations

Acceleration of Regional Environmental Mitigation

- > Tech Memo 7 presents a list of potential mitigation measures
- > The Action Plan anticipates the endorsement of Agency Environmental plans

MITIGATION STRATEGIES (Examples)

PROJECT MITIGATION

Project specific impacts

Land use policy, codes

BROADER REGIONAL STRATEGIES

On-dock rail, mainline rail capacity,
fleet replacement, Maximize
PierPass, etc.

Alternative technologies,
operational changes, new and
innovative approaches

Agency Environmental Plans

Plan

Focus

Cal/EPA-BTH GMAP



Statewide GM

**CARB Emissions
Reduction Plan**



**Statewide Ports & GM
Emissions**

MCGMAP



Study Area GM

**SCAQMD
AQMP**



**South Coast Air Basin
Emissions**

**Ports
CAAP**



**San Pedro Bay Ports
Emissions**

Strategic Investment

Implementation Plan

**Implementation
of actions to follow.....**

**Strategic means
to address...**

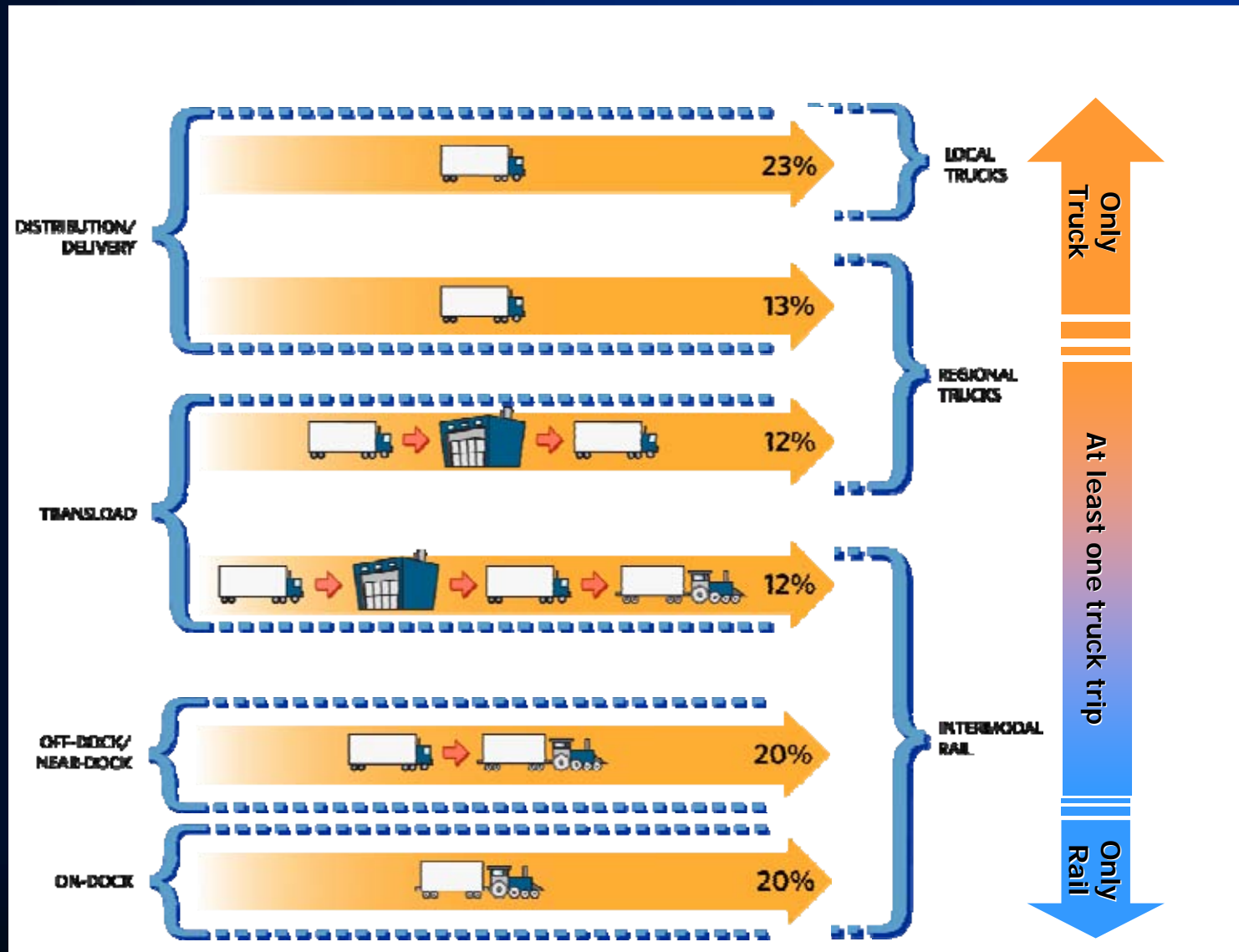
**Market
Segmented
Approach**

Truck Issues

Environmental Mitigation

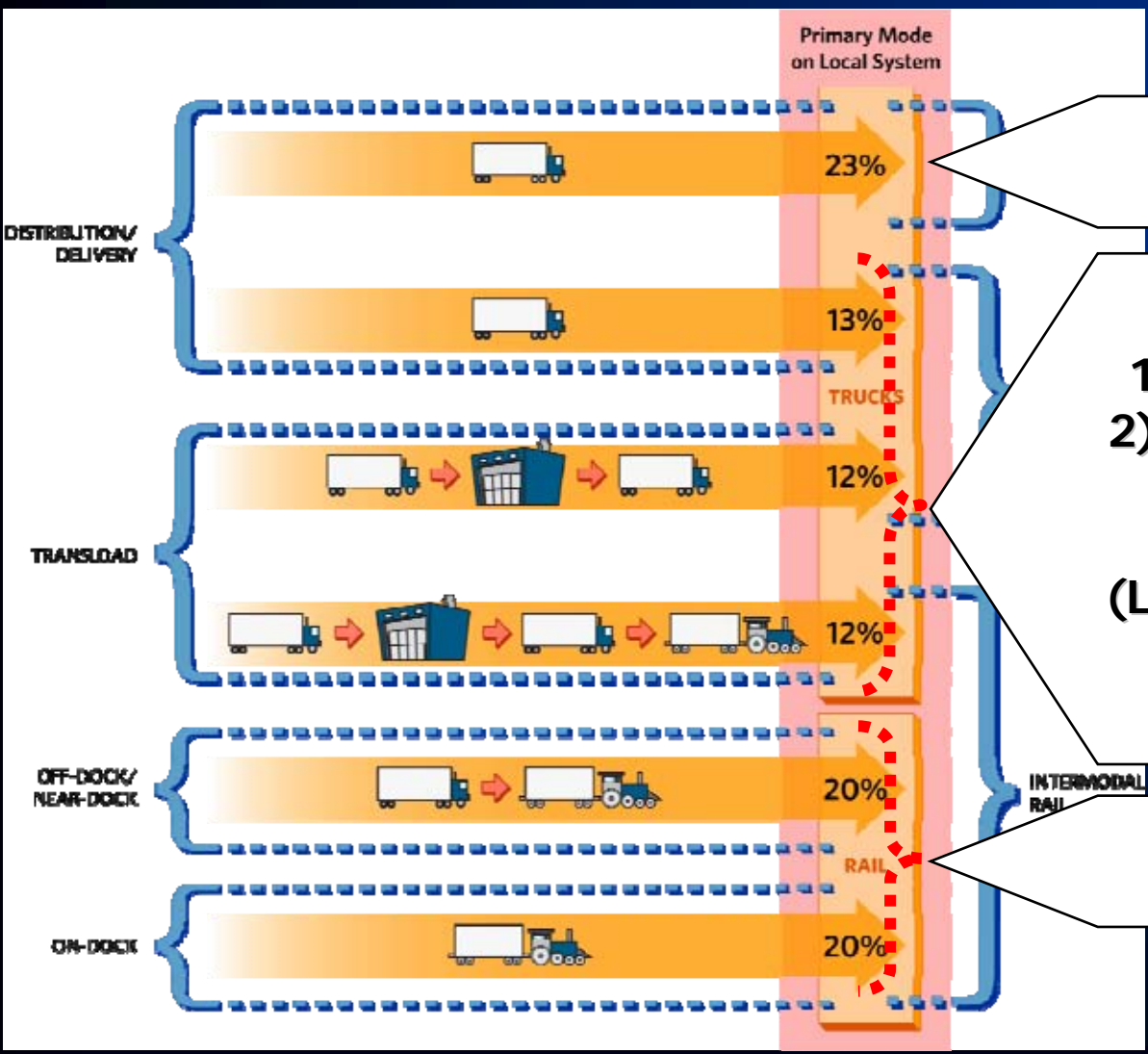
Fair Share Funding

Modal Market Segments



* All percentages estimated based on 2005 data.

Strategic means to address ... Truck Issues

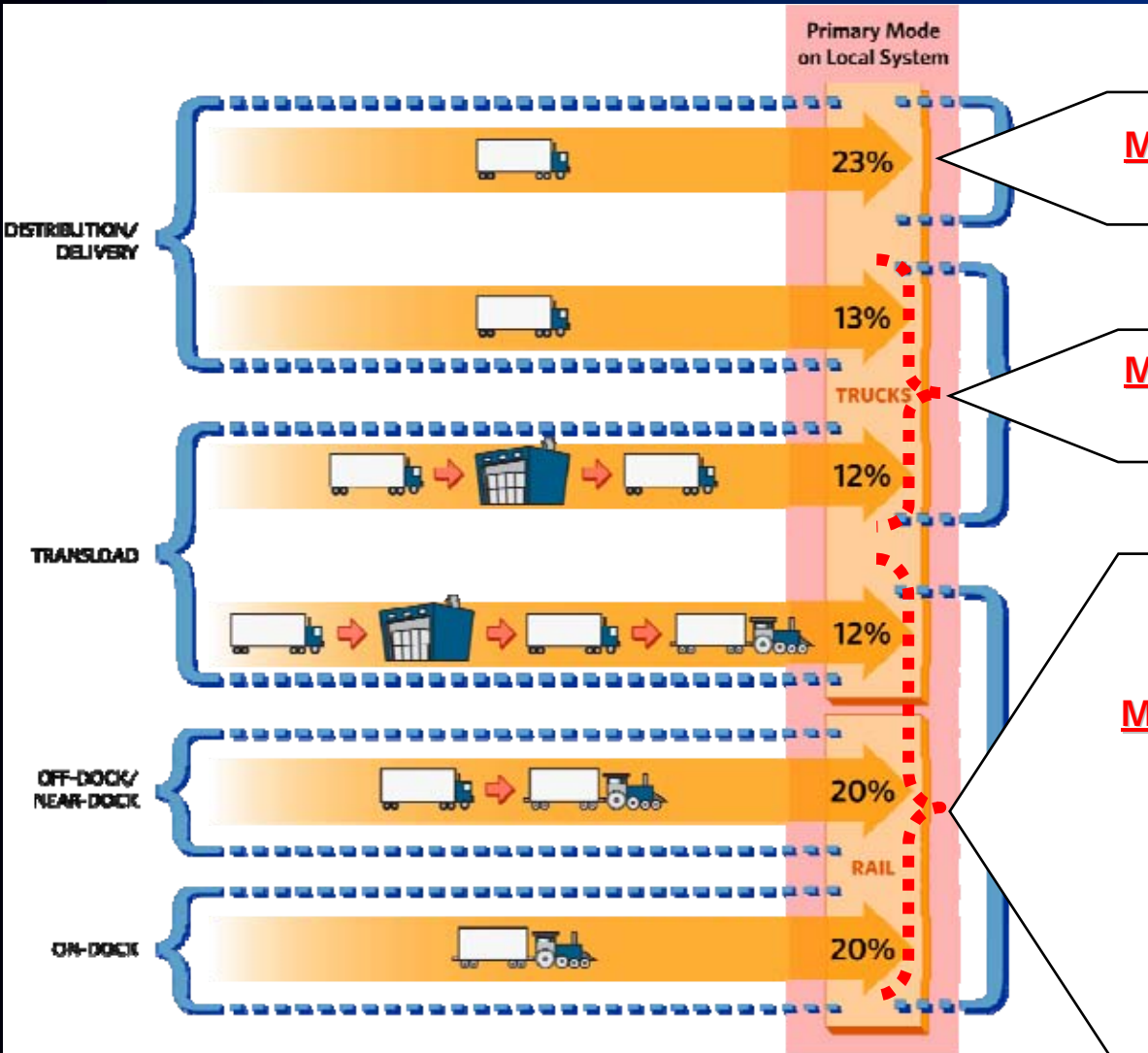


Hwy Operations & Capacity
General purp. hwy network

- Innovative Strategies**
- 1) Inland staging areas (inland port);
 - 2) Separated corridor (truck lanes, rail, maglev, other shuttle technologies);
 - 3) Clean fuels & efficient vehicles (LNG trucks, maglev, LNG locomotives);
 - 4) Warehouse clustering around inland port.

Maximize On-Dock Rail
Minimize local truck drayage

Strategic means to address ... Fair-Share Funding



Minimal Opportunity for Fair-Share Contributions
Traditional funding sources – already strained

Moderate Opportunity for Fair-Share Contributions
Target regional truck markets

Maximum Opportunity for Fair-Share Contributions
Target intermodal rail market to increase:
1) State and Federal contributions;
2) User fees;
3) Port assessed or container fees

Funding Options

- > **Traditional grant & loan programs**
- > **New Federal funding opportunities (2009 reauthorization)**
- > **State General Obligation bonds – Prop. 1B**
 - > \$2 billion for goods movement infrastructure
 - > \$1 billion for trade-related emissions reductions
 - > Other categories

Technical Memorandum 6a: Evaluation of Initial Goods Movement Strategies

Role of Scenarios in Evaluation

Impact of Port Growth

Projects evaluated assumed implemented under Scenario 4

Scenarios

1. High Growth - Current Investment Levels

2. Low Growth – Current Investment Levels

3. Mod Growth – Current Investment Levels

4. High Growth – Full Investment Levels

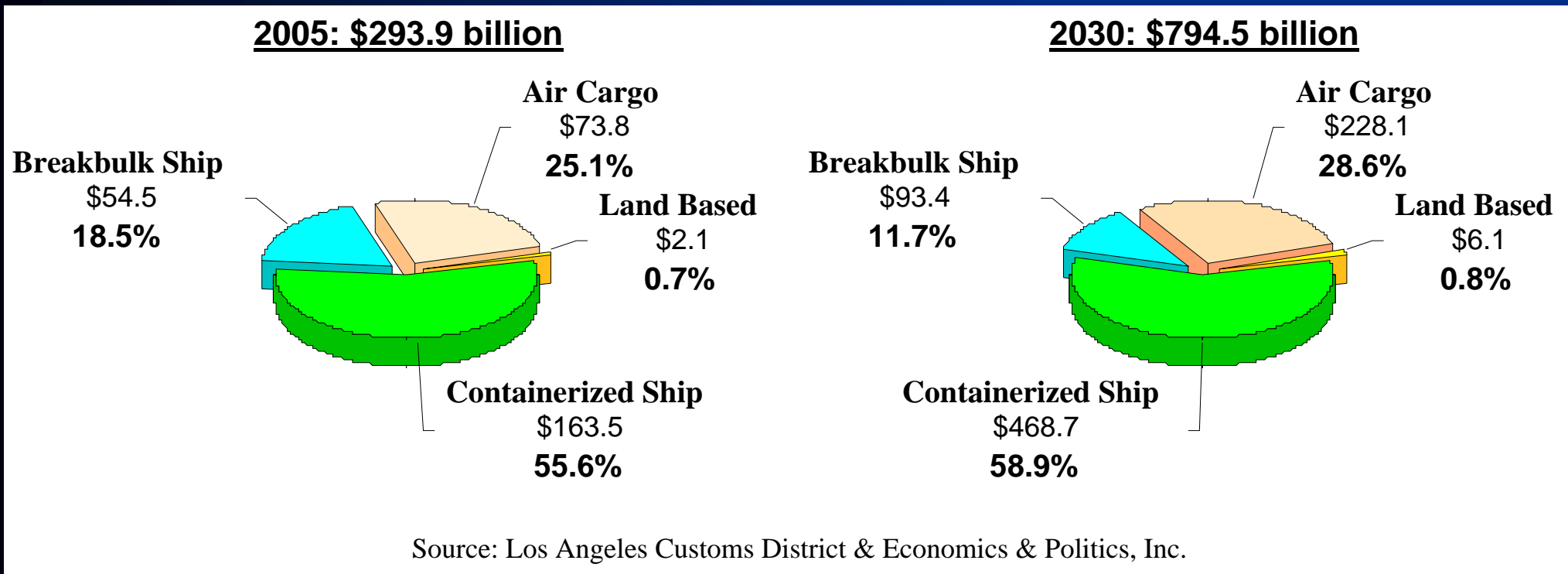
Are Trade Policies Effective as a Singular Congestion Management Strategy?

Role of Scenarios in Evaluations

- > Committed funding plans of the MCGMAP project partners represent the “current investment levels” specified under Scenarios 1, 2, and 3
- > The “full investment levels” would require additional investment beyond the existing committed funding plans
 - > Therefore, projects and strategies evaluated are assumed to be implemented under Scenario 4

Economic Impacts of Scenarios

> Value and Share of Trade, Los Angeles Customs District, 2005 – 2030 (\$billions)



Economic Impacts of Scenarios (Jobs)

- > **Scenario 1:** Total 2030 employment impact of trade through the ports would be 1,601,476 jobs.
- > **Scenario 2:** Total 2030 employment impact of trade through the ports would be 1,013,101 jobs (-36.7% impact).
- > **Scenario 3:** Total 2030 employment impact of trade through the ports would be 1,303,490 jobs (-18.6% impact).
- > **Scenario 4:** Identical to Scenario 1.

System Performance of Scenarios

- > **Scenario 1:** Described in TM4b.
- > **Scenarios 2 and 3:** Analytical results would not be accurate based on travel demand model limitations.
 - > It is clear there is a link between port container traffic and truck traffic within, into, and out of the region.
 - > From a technical standpoint, there is no direct linkage (currently) between travel demand model generated regional truck traffic and SPB Port trade volume forecasts.
- > **Scenario 4:** Presented in TM6b (later in this presentation).

TM6a Summary

- > **A list of 249 projects and strategies were initially identified (discussed at 8/7/06 SAG Meeting)**
 - > A broad, comprehensive list of projects and strategies was developed
 - > The list includes innovative and non-traditional as well as traditional strategies
- > **Qualitative evaluation performed**
 - > 15 categories of projects and strategies
 - > 26 evaluation criteria
- > **Resulting in eight projects and strategies for detailed evaluation**

Technical Memorandum 6b: Evaluation of Detailed Goods Movement Strategies

- > Detailed evaluation of eight projects and strategies**
- > Evaluation performed to answer specific questions**
- > Regional travel demand model and land use databases used for technical evaluation**

Projects & Strategies Evaluated

- 1. Expansion of On-Dock Rail at Ports:** All detailed evaluations assume this project and strategy is in place.
- 2. Additional Intermodal Facilities / Freight Yards:** All detailed evaluations assume this project and strategy is in place.
- 3. Implement Alternative Technologies to Additional Intermodal Terminals:** The effects of alternative technologies (e.g. non-truck systems) to link the Ports to inland intermodal terminals.
- 4. Construction of Exclusive Truck Lanes:** The effects of dedicated freight guideways (e.g. exclusive truck lane systems) along major regional goods movement corridors. This also includes the potential toll revenue generation.

Projects & Strategies Evaluated

(Continued)

5. **Allow Use of LCVs on Dedicated Facilities:** The effects (in terms of potential toll revenue generation) of LCVs on dedicated facilities (e.g. truck lanes or a dedicated freight guideway system).
6. **Additional Freeway Lanes/Capacity:** The effects of adding general purpose mainline capacity along regional highways. This includes HOV systems.
7. **Additional Freeway Operational/Safety Improvements:** The effects of operational / safety (e.g. auxiliary lanes, truck climbing lanes) along regional highways.
8. **Increase Port/Rail Yard Freight Capacity:** All detailed evaluations assume this project and strategy is in place.

Key Questions

Dedicated Truck Lanes

- Cost effective investment?

User Fees

- What share of costs offset by user fee financing?

Policies & Obstacles

- What policies enhance truck lane feasibility?

Other Alternatives

- Are truck lanes a preferable alternative?

Route Options

- What are effects of truck lanes on sub-regions?

Travel Demand Model Evaluation

> Answers the questions:

Dedicated Truck Lanes

- Cost effective investment?

Other Alternatives

- Are truck lanes a preferable alternative?

Route Options

- What are effects of truck lanes on sub-regions?

Project Bundles for Evaluation

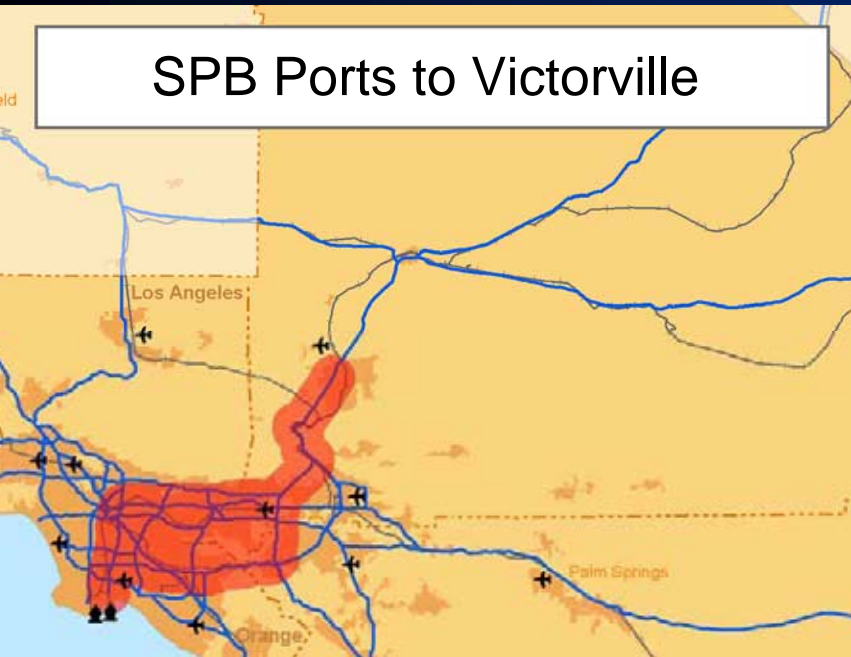
- 1. Operational and safety improvements:** Strategic freeway widening, bottleneck relief, auxiliary lanes, interchange improvements on freeways carrying heavy flows of truck traffic.
- 2. Dedicated truck lanes:** I-710 > SR-60 > I-15
- 3. Dedicated truck lanes:** I-710 > I-10 > I-15
- 4. Dedicated truck lanes:** I-710 > SR-91 > I-15
- 5. Dedicated truck lanes:** I-710 > I-10 (WB) / SR-60 (EB) > I-15
- 6. Dedicated truck lanes:** I-710 > SR-91 > SR-57 > SR-60 > I-15

Project Bundles for Evaluation

- 7. Dedicated truck lanes:** I-710 > SR-91 > I-605 > I-10 > I-15
- 8. Dedicated truck lanes:** I-5 (I-710 to Kern County)
- 9. Dedicated truck lanes:** I-5 (U.S./Mexico Border to Kern County)
- 10. Mixed-flow toll expressways:** I-710 > SR-60 > I-15
- 11. Alternative technologies:** (e.g. Shuttle Trains, Maglev) between POLA/POLB and inland destinations
- 12. Dedicated truck lanes:** I-15 (U.S./Mexico Border to Victorville)

Three Primary Routes of Truck Lane Bundles

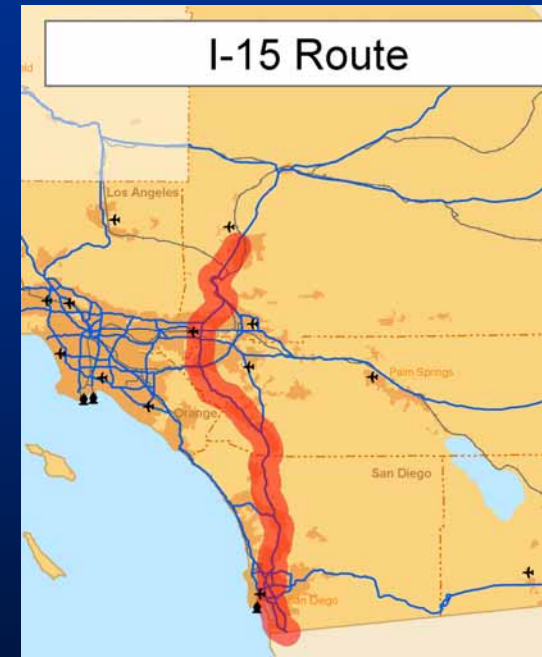
SPB Ports to Victorville



I-5 Routes



I-15 Route



Travel Demand Model Evaluation

Bundle	Description	Distance (Miles)	Avg. Veh. (ADT, One Direction, Spot Location)	Avg. Trucks (ADT, One Direction, Spot Location)	Sum of Avg. Veh. & Trucks	Entire Route	
						Vehicles (Daily, Both Directions, by Segment)	Trucks (Daily, Both Directions, by Segment)
2	I-710 to SR-60 to I-15	101.5	63,248	11,872	75,121	267,627	54,563
3	I-710 to I-10 to I-15	98.7	59,740	11,195	70,935	263,168	55,506
4	I-710 to SR-91 to I-15	87.5	61,329	10,542	71,871	271,455	56,745
5	I-710 to I-10 (WB) / SR-60 (EB) to I-15	100.1	68,080	10,328	78,407	262,397	47,248
6	I-710 to SR-91 to SR-57 to SR-60 to I-15	110.0	57,447	9,688	67,135	252,006	49,729
7	I-710 to SR-91 to I-605 to I-10 to I-15	96.1	57,935	10,328	68,264	271,079	56,415
8	I-5 (I-710 to Kern County)	74.6	77,752	12,328	90,080	374,735	62,541
9	I-5 (U.S./Mexico Border to Kern County)	204.6	77,425	10,679	88,104	376,202	56,099
12	I-15 (U.S./Mexico Border to Victorville)	161.7	52,918	8,594	61,512	221,443	37,921

SPB Ports to Victorville

I-5 Routes

I-15 Route

* Note: The I-5 and I-15 route information does not include San Diego County data.

Land Use Evaluation

> Schools and Residential Land Uses by Bundle within the SCAG Region

SPB
Ports
to
Victor-
ville

I-5
Routes
I-15
Route

Bundle	Description	Schools	Residential (Acres)
2	I-710 to SR-60 to I-15	35	9,933
3	I-710 to I-10 to I-15	60	11,329
4	I-710 to SR-91 to I-15	48	8,684
5	I-710 to I-10 (WB) / SR-60 (EB) to I-15	77	16,702
6	I-710 to SR-91 to SR-57 to SR-60 to I-15	41	10,533
7	I-710 to SR-91 to I-605 to I-10 to I-15	57	11,177
8	I-5 (I-710 to Kern County)	31	4,979
9	I-5 (U.S./Mexico Border to Kern County)	78	12,806
12	I-15 (U.S./Mexico Border to Victorville)	23	5,500

* Note: The I-5 and I-15 route information does not include San Diego County data.

Land Use Evaluation

> Warehouse/Distribution Land Uses by Bundle within the SCAG Region

SPB
Ports
to
Victor-
ville

I-5
Routes
I-15
Route

Bundle	Description	Warehouse (Acres)
2	I-710 to SR-60 to I-15	6,290
3	I-710 to I-10 to I-15	3,135
4	I-710 to SR-91 to I-15	4,716
5	I-710 to I-10 (WB) / SR-60 (EB) to I-15	6,767
6	I-710 to SR-91 to SR-57 to SR-60 to I-15	5,057
7	I-710 to SR-91 to I-605 to I-10 to I-15	2,691
8	I-5 (I-710 to Kern County)	579
9	I-5 (U.S./Mexico Border to Kern County)	3,054
12	I-15 (U.S./Mexico Border to Victorville)	3,151



* Note: The I-5 and I-15 route information does not include San Diego County data.

Advanced Technology Corridor

**SPB Ports
and Victorville**

**Operational
Assumptions...**

**Advanced
Technology
Corridor**

Equiv of Hobart Yard at Victorville

- 1.35 mil annual lifts
- 5,400 trucks per day

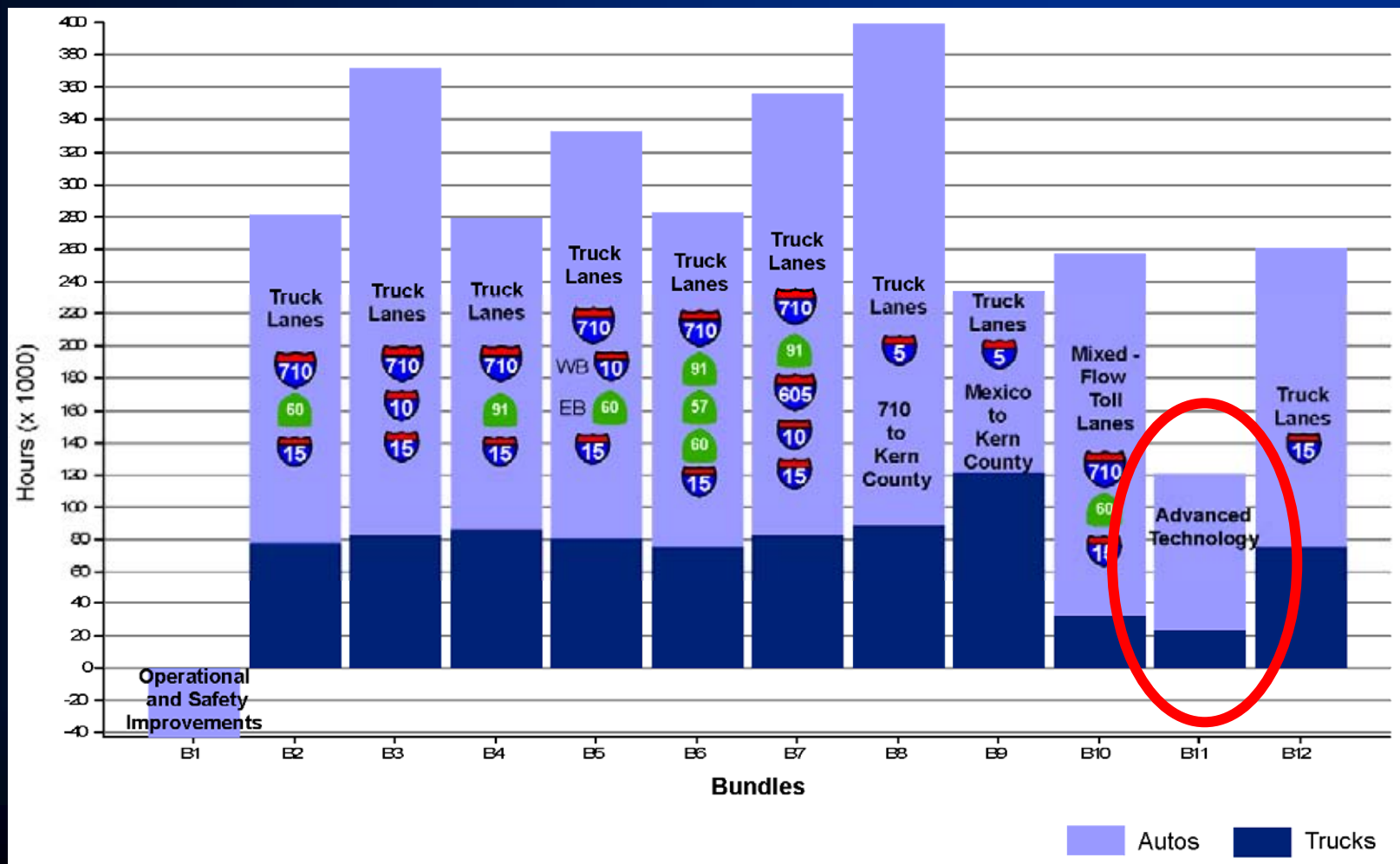
Fixed Guideway System

- Connects distinct origin & destination
- Along Bundle 2 alignment (parallel to SR-60)

Clean, Advanced Tech Mode

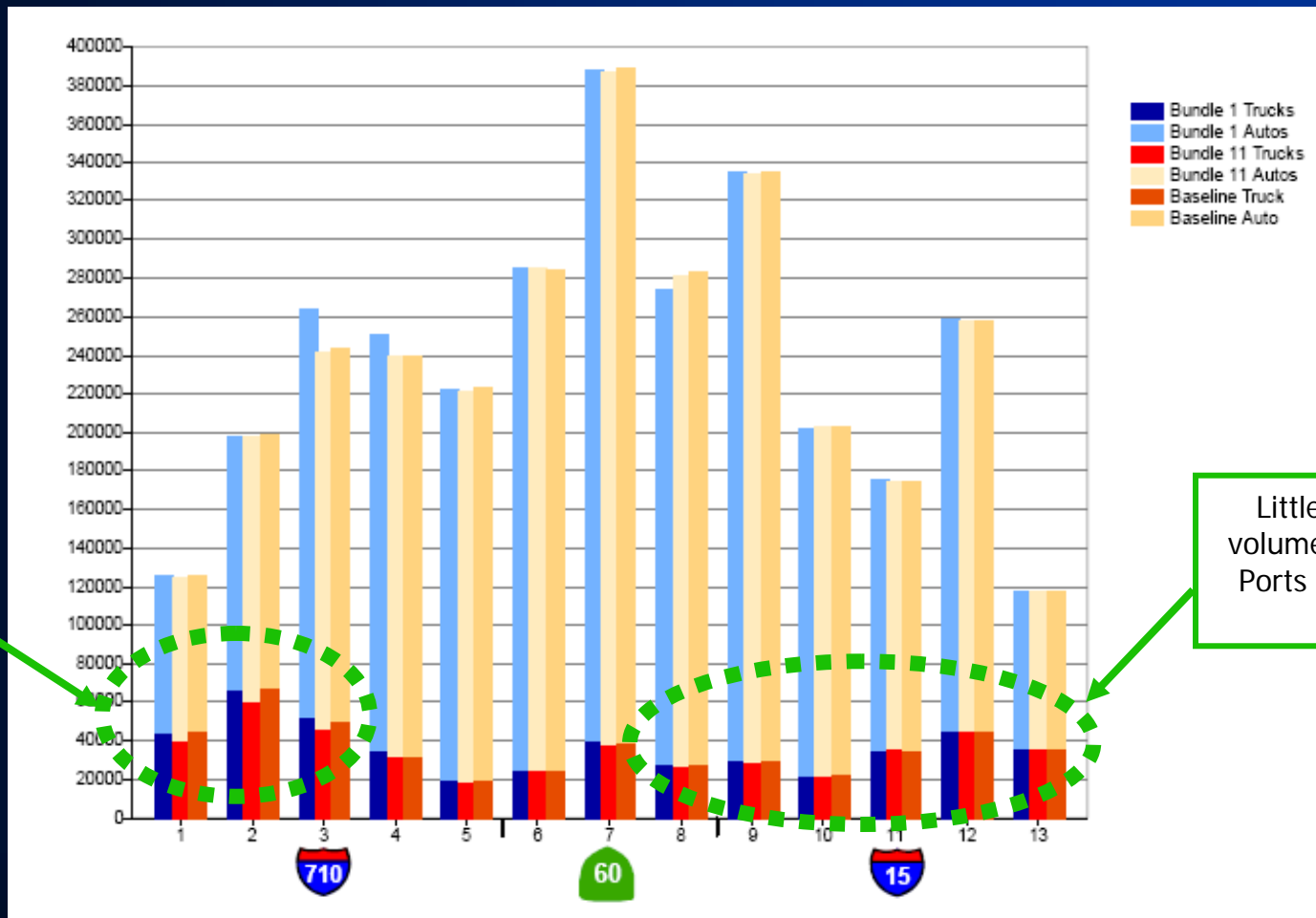
Impact of Advanced Technology

- > Reduction in Hours of Delay for Vehicles and Trucks, (Year 2030 Baseline vs. all Bundles)



Impact of Advanced Technology

Change in ADT Routes
Baseline vs Operational vs Advanced Technology Corridor



Decrease in truck volumes due to Alternative Technology

Little change in truck volumes further from the Ports due to Alternative Technology

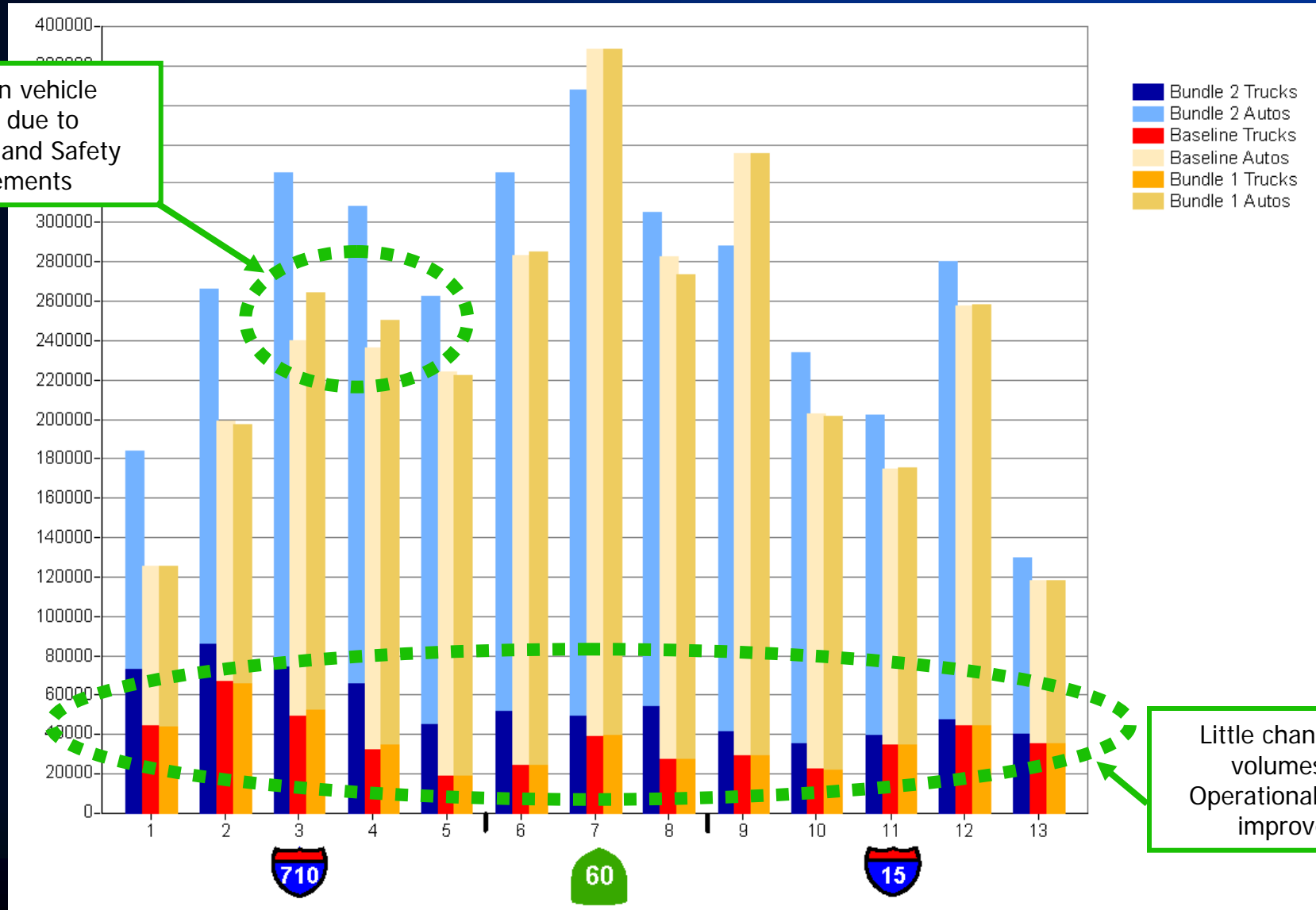
Staging at Ports	(5,400)	(4,581)	(6,446)	(3,065)	(278)	(940)	(536)	(1,354)	(659)	(532)	(91)	101	(55)	23	(5,400)	Staging at V-Ville
------------------	---------	---------	---------	---------	-------	-------	-------	---------	-------	-------	------	-----	------	----	---------	--------------------

Summary of Advanced Technology

- > Overall, substantially less reduction in hours of delay (autos and trucks) for the region
 - > Operational assumptions require 1) fixed origin & destination and 2) an equivalent of the existing Hobart Yard at Victorville
 - > Result is a removal of approximately 5,400 truck trips per day between a fixed O & D
- > Greatest reduction in truck volumes would occur closest to the Ports
 - > The Ports are a singular origin/destination
 - > Further from the Ports, more O & D pairs overlap
 - > Difficult to isolate market segments and fixed O & D

Impact of Operational and Safety Improvements

Change in ADT Routes
Baseline vs Operational & Safety vs Bundle 2



Increase in vehicle volumes due to Operational and Safety improvements

Little change in truck volumes due to Operational and Safety improvements

Operational and Safety Improvements

- > **Trucks:** Operational and safety improvements do not affect forecast volumes
 - > Therefore it can be stated that operational and safety improvements would not affect a change in truck travel patterns or volumes along a specific route.
- > **Autos:** Operational and safety improvements have the greatest effect on forecast volumes along I-710; with virtually no change to vehicle volumes along other identified segments.
 - > Reflects high volume of trucks along I-710 and the associated benefit of adding additional capacity for vehicles.
 - > However, overall it shows that operational and safety improvements (including mixed-flow lanes) tend to accommodate rather than induce volumes along a specific route.
 - > Similarly, operational and safety improvements would result in a modest increase in hours of delay.

Potential Toll Revenue Evaluation

> Answers the questions:



Evaluation of Potential Toll Revenue Generation

- > Percent Trucks Using Toll Lanes for Each Bundle - Year 2030
 - > Focus on SPB Ports to Victorville routes
 - > Greatest potential truck market for tolling located near the Ports along I-710
 - > Truck market for tolling directly linked to proximity of warehouse/distribution centers and modal market segmentation
 - > Challenges to implementation exist

Bundle	Description	Toll Market Share for Specific Segments
2	I-710 to SR-60 to I-15	I-710 – 25% to 65% ⁽¹⁾ ; SR 60 – 40%; I-15 – 18%-28% ⁽²⁾
3	I-710 to I-10 to I-15	I-710 – 33% to 77% ⁽¹⁾ ; I-10 – 50%; I-15 – 14%-30% ⁽²⁾
4	I-710 to SR-91 to I-15	I-710 – 29% to 35%; SR 91 – 27%-30%; I-15 – 16%-43% ⁽²⁾
5	I-710 to I-10 (WB) / SR-60 (EB) to I-15	I-710 – 30% to 50% ⁽¹⁾ ; SR 60/I-10 – 30%; I-15 – 14%-30% ⁽²⁾
6	I-710 to SR-91 to SR-57 to SR-60 to I-15	I-710 – 30% to 33%; SR 91 – 30%; SR 60 – 25%-43%; I-15 – 16%-43% ⁽²⁾
7	I-710 to SR-91 to I-605 to I-10 to I-15	I-710 – 30%; I-605 - 25%; I-10 – 28%-35%; I-15 – 14%-28% ⁽²⁾

⁽¹⁾ Highest share towards northern end of I-710.

⁽²⁾ Lowest share towards northern end of I-15.

Evaluation of Potential Toll Revenue Generation

- > Potential Toll Revenue Generation Year 2030 for a Truck Lane System that Includes an East-West Connection between I-710 and I-15

Toll Rate (\$LHDT / \$MHDT / \$HHDT)	Annual Revenue (\$millions)					
	Bundle 2	Bundle 3	Bundle 4	Bundle 5	Bundle 6	Bundle 7
.10/.20/.30	199.5	197.8	177.0	199.7	177.9	185.0
.15/.30/.45	240.4	239.4	215.3	241.3	213.6	224.1
.20/.40/.60	255.0	254.3	231.1	256.5	226.5	239.4
.25/.50/.75	253.1	250.5	230.1	253.5	222.3	236.5
.30/.60/.90	245.1	242.6	223.9	242.7	213.5	225.3

- > **Greatest toll revenue generation potential:** Dedicated truck lanes on I-710, SR-60 (EB) / I-10 (WB), and I-15
 - > Also, dedicated truck lanes on I-710, SR-60, and I-15
 - > Also, dedicated truck lanes on I-710, I-10, and I-15
- > **Least toll revenue generation potential:** Dedicated truck lanes on I-710, SR-91, SR-57, SR-60, and I-15
 - > Also, dedicated truck lanes on I-710, SR-91, and I-15

Long-Haul LCV Evaluation

> 2030 SCAG Region LCV Volume & VMT from Long-Haul

	Annual Standard Truckloads	Annual LCV Truckloads		Annual LCV VMT*	
		Triple Short	Double Long	Triple Short	Double Long
SCAG Region	22,713,618	15,142,423	11,356,821	1,120,539,302	840,404,754
Bundle 2 Corridor	2,271,362	1,514,255	1,135,693	148,396,990	111,297,914

Note: * Assume Average trip length of 74 miles within the SCAG region and 98 miles for the Corridor.

- > 2030 Long-Haul LCV revenue estimates:
 - > \$64 million if only the Triple Short
 - > \$116 million if only the Double Long

Intra-Regional LCV Evaluation

> Port Container LCV Market – Daily Truck Trips (2030)

	From Ports	To Ports	Total
Total Daily Port Truck Trips*	63,051	60,277	123,328
Potential LCV Convertible Trips	20,528	11,699	32,227
Market Share	33%	19%	26%

* Source: SCAG Port Truck Trip Model

> VMT and Revenue Estimates for Container Truck LCVs

Daily Miles Traveled on LCV Facility (VMT)			Annual Toll Revenue (\$ Millions)
General Location of Staging Area	Standard Trucks	Double LCV	
Victorville	88,430	44,215	13.8
Colton/I-15	873,962	436,981	136.3
Covina	87,892	43,946	13.7
Hobart/East LA	180,757	90,379	28.2
	1,231,042	615,521	192.0

Challenges

Long-Haul LCV

- > Not legal in CA
- > Local ordinances barring LCVs from local streets
- > Existing infrastructure not designed for LCVs
- > New staging areas required to assemble/break-down LCVs

Inter-Regional LCV

- > “Container LCVs” do not exist
- > New facilities necessary for assembly of “Double Container” chassis

Understanding the Regional Truck Market

	Annual Truck Trips	Daily Truck Trips	Share of SCAG Region Market
Total SCAG 2030	166,000,000	553,333	
Port Generated	39,594,300	131,981	24%
SPB Ports to Victorville Corridor	16,500,000	55,000	10%
Long-Haul LCV Market (Total)	22,700,000	75,667	14%
Long-Haul LCV Market (SPB to Victorville Corridor)	2,271,362	7,571	1%
Port Truck LCV Market	9,668,100	32,227	6%
Port Truck LCV Market (Excluding Victorville)	9,397,500	31,325	6%
Adjusted Combined LCV Market	11,668,862	38,896	7%

Conclusions Based on LCV Toll Revenue Generation

- > Total potential annual revenue is estimated at **\$308 million**
 - > \$115.7 million - long-haul market
 - > \$192 million from the port container market
- > Allowing conventional trucks to run on LCV lanes would increase revenue
 - > \$371 Million with 25% of traditional truck toll revenue
 - > \$436 Million with 50% of traditional truck toll revenue
 - > \$499 Million with 75% of traditional truck tolls revenue

Ability To Pay For Itself

What portion can
be user financed?

Cost
Assumptions...

Truck
Lane Corridor

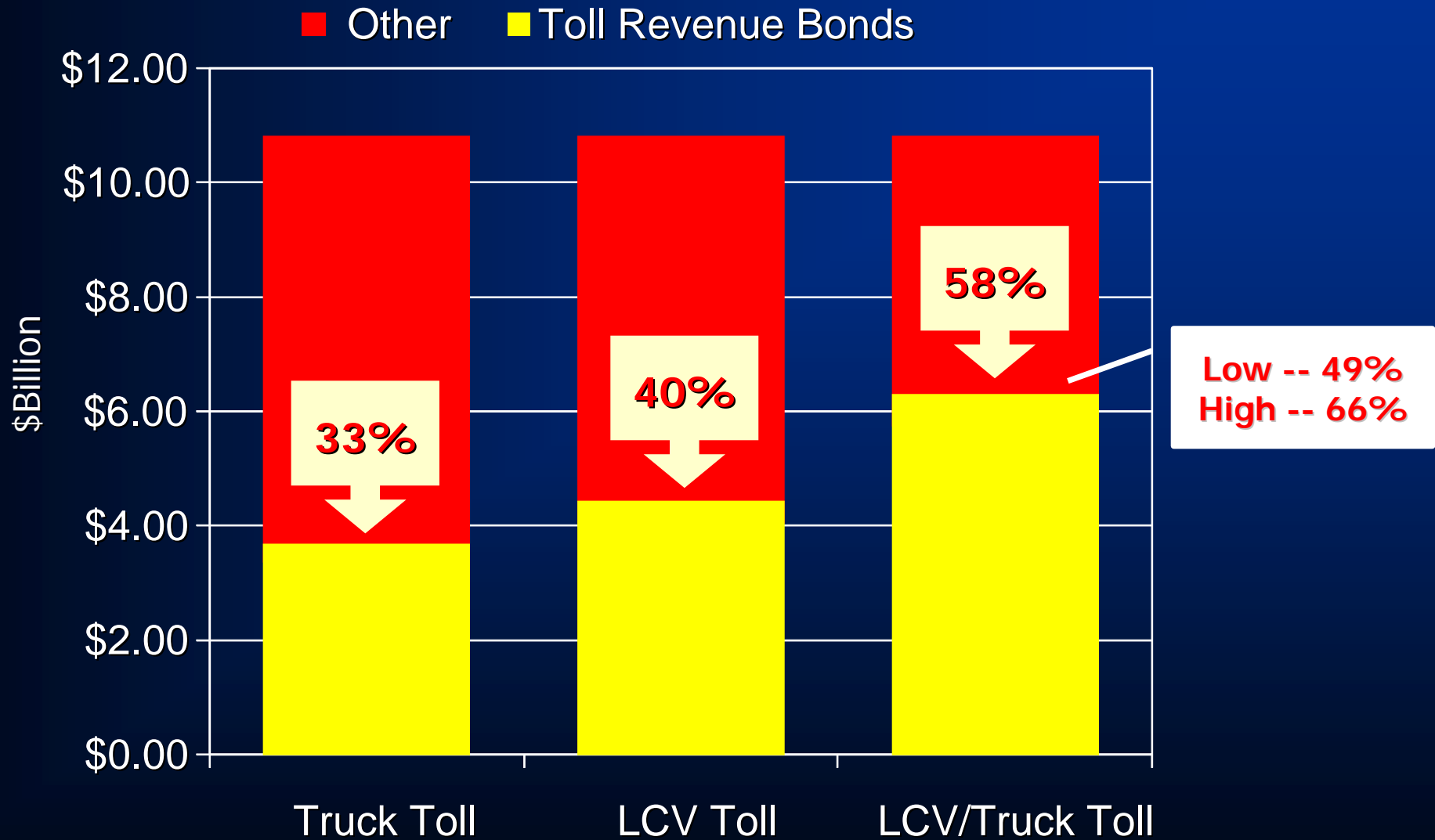
\$9-23 Billion

- \$10-12 B -- Ports to Victorville
- \$23 B – Mx border to Kern Co.

O&M Costs - \$6-14Million annual

1.4X Bond Coverage; 5.75% Int.

Ability To Pay For Itself



* 40 Year amortization increases coverage by 13%.

TM6b Summary

- > **Answered five key questions:**
 - > The answers to these questions used to develop the Four Groups of Actions.
- > **TM6b is not an endorsement of truck lanes, LCVs or tolling:**
 - > The analysis provides useful information to increase fair-share funding contributions from the users of the regional goods movement system who benefit the most.

Conclusion

- > **The Draft Action Plan will be prepared and presented**
 - > Today's presentation is not the Action Plan
- > **The Draft Action Plan will include a list of projects and strategies**
 - > Today's presentation is not the list of projects and strategies
- > **The analyses presented today will be used to identify detailed elements of the Four Groups of Actions**

Four Groups of Actions



ACCELERATE Regional Environmental Mitigation

- 1) Project specific mitigation
- 2) Broader regional strategies



INVEST STRATEGICALLY in Infrastructure

- 1) Target market segments
- 2) Reduce reliance on trucking



PROMOTE FAIR-SHARE Public/Private Financing

- 1) Federal/state
- 2) Private sector contribution



CAPITALIZE on Operational Efficiencies

Marine terminal operations, truck turn times, intermodal operations, highway operations

Next Steps

- > **Release Draft Action Plan – August**
- > **Final Stakeholder Advisory Group Meeting - September**
- > **Conduct county workshops –September/October**
- > **Begin Environmental Justice (EJ) Grant analysis and outreach process – October**
- > **Seek Board approval of Action Plan – November**

Questions & Answers

More Information:
www.metro.net/mcgmap