



East – West Freight Corridor Planning

Status Update

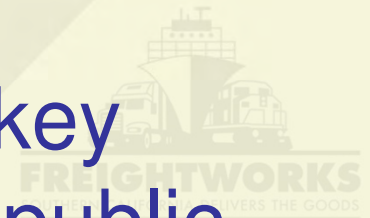
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June 21, 2011

Regional Freight Corridor System Purpose

- Improve mobility for trucks serving key regional industries and the general public
- Improve truck safety
- Mitigate community impacts in regionally significant goods movement corridors
- Support zero-emission goods movement
- Minimize ROW conflicts with other planned improvements in goods movement corridors



Key Lessons Learned

- Many corridors would benefit from truck lanes and no single corridor provides a complete regional solution
- Long-haul truck traffic moving between ports and the rest of the nation is not a major market. Significant markets are:
 - Inter-regional trade (domestic)
 - Port traffic (including secondary trips) to SGV and IE warehouses
 - Manufacturing, warehousing and transportation uses



4-Step Evaluation Process

Step 1: Define Initial Potential E-W Truck Corridor Alignments



Step 2: Screen Preliminary Alignments Against Three Initial Criteria:

- Proximity to goods movement markets
- ROW constraints / limitations
- Traffic / operational characteristics



4-Step Evaluation Process



Step 3: Develop Hybrid Alignments:

- Avoid constraints / deficiencies Identified in Step 2



Step 4: Traffic Modeling of Leading Alternatives Against MOEs:

- Truck traffic volumes on freight corridor
- Impacts on parallel facilities (regional benefit)
- Impacts on truck delay
- Impacts on total delay

Initial Screening Outcomes

Proximity to Goods Movement Markets

Resulted in elimination of I-210 (SR-91 also scored low on this criterion but was evaluated for traffic impacts)

ROW Constraints / Limitations (Grades, etc.)

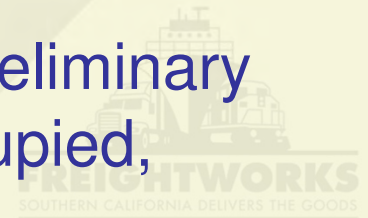
Resulted in elimination of UPRR as a primary alignment (considered for connection to I-710) and SCE – identified need for other alignment options

Traffic Impacts

Confirmed need for E-W Corridor, particular importance of SR-60 and need for options to connect to I-710

Goods Movement Markets- Warehousing

Warehouse Square Footage within 5.0 Miles of Preliminary
Alternative East-West Freight Corridors – Occupied,
Vacant and Developable Land



	Total Square Feet (mil)	Percent of Regional Total
UP Line (adjacent)	533.4	52%
SR-60	509.9	50%
I-10	442.9	43%
SCE	291.5	29%
SR-91	188.9	18%
I-210	171.2	17%

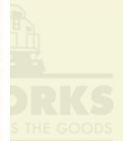
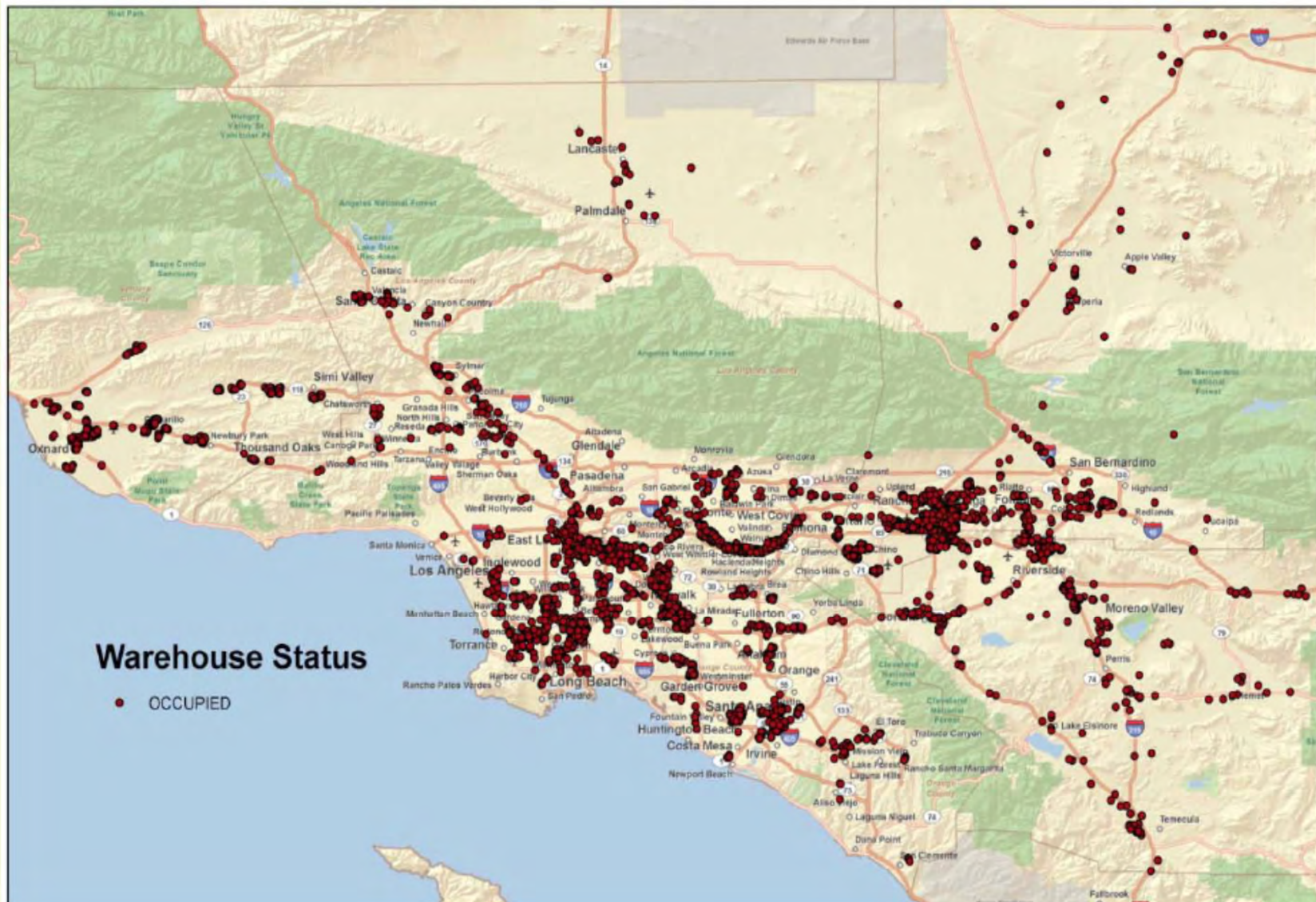
Goods Movement Markets- Manufacturing

Manufacturing Employment within 5.0 Miles of Preliminary
Alternative East-West Freight Corridors (2009)



	Total Manufacturing Employment (thousands)	Percent of Regional Total
UP Line (adjacent)	238	28%
SR-60	227	27%
SR-91	166	20%
I-10	156	19%
I-210	60.9	7%

Warehouse Locations - Current

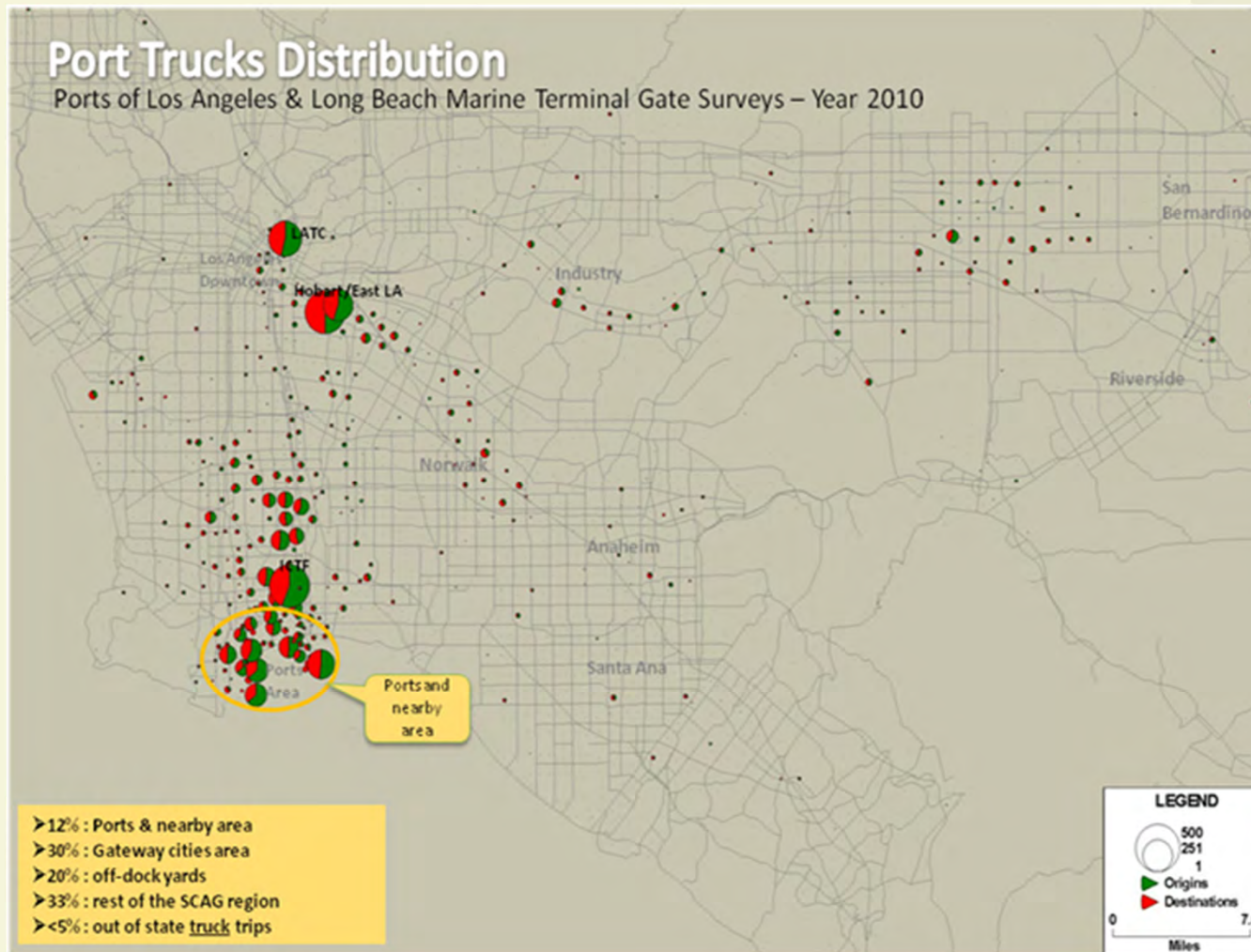


New Warehouse Locations - Future



Land Developable for Warehousing (zoned but not developed)


Serving Port Uses – Current



Source: Task 13 port gate survey

Serving Port Uses – Future

County	Distribution Submarket	2008 Port – Related Warehouse Space Distribution	2035 Port – Related Warehouse Space Distribution	Change (2008 – 2035)
L.A. County	Central L.A.	8%	7%	-1.1%
	I-5 Corridor	1%	1%	0%
	I-605 Corridor	4%	5%	1.0%
	Mid-I 710	5%	3%	-1.4%
	North L.A.	0%	0%	0.3%
	San Gabriel Valley	5%	6%	0.5%
	South Bay	54%	27%	-27.6%
San Bernardino County	East San Bernardino Valley	5%	14%	9.3%
	High Desert	0%	1%	1.0%
	Westend SB	6%	11%	5.1%
	March JPA	2%	9%	7.4%
Riverside County	Pass (Banning / Beaumont)	0%	1%	0.7%
	SW Riverside County	0%	0%	0%
	West Riverside	5%	6%	0.7%
Orange County	North Orange	0%	2%	2.0%
	Orange Airport	1%	2%	1.4%
	South Orange County	0%	0%	0%
	West Orange County	1%	1%	0.7%
Imperial County	S. Imperial	0%	0%	0%
	N. Imperial	0%	0%	0%
Ventura County	Port Hueneme	1%	<1%	-0.5%
	SR-101	0%	0%	0.3%
	SR-118	0%	0%	0.3%



By 2035, a larger percentage of port-related warehousing will be located in places such as East San Bernardino Valley (+9.3%), March JPA (+7.4%), and Westend San Bernardino County (+5.1%).

Secondary Port Trips

- Are included in modeled truck trips but not listed as port trips
- Most imported cargo is destined outside of region but much of this moves by rail – not a source of traffic for E-W Corridor
- Only container loads generate secondary trips – a substantial fraction of port truck trips are bobtails and chassis



Secondary Port Trips - Transloads

- Transloading reduces truck trips for secondary moves – “5:3”
- Most transloaders located in Gateway Cities
- Much transloading is truck to rail intermodal – secondary trips in I-710 corridor
- Trips transferring imports from OEM DCs to retailer DCs are not secondary trips



Conclusions of Market Assessment

1: UP and SR-60 provide greatest proximity to warehousing and manufacturing markets

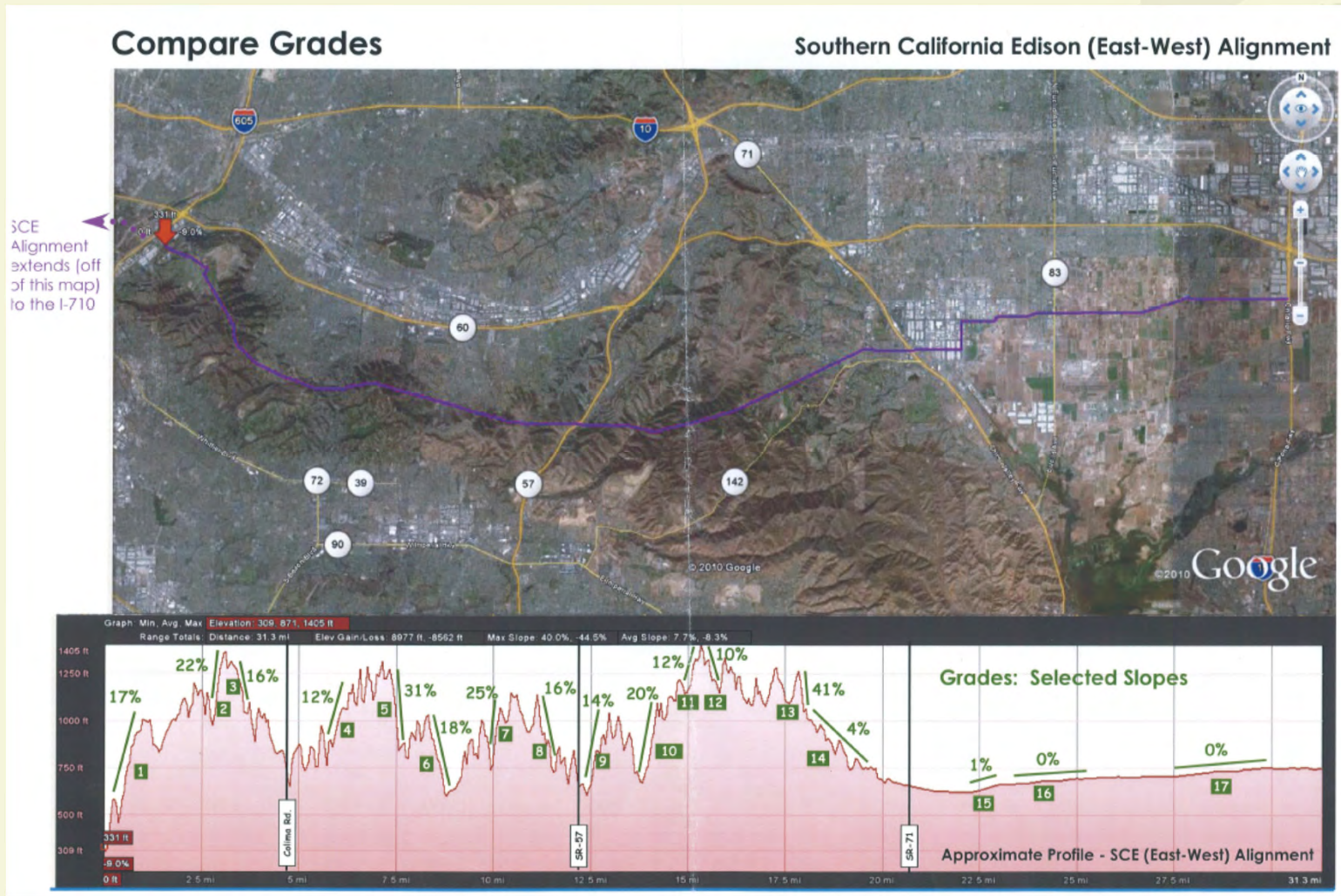


2: I-210 and SCE provide least proximity to warehousing and manufacturing markets:

- I-210 dropped from further consideration – also limited opportunity to expand truck-related use to north and high proximity to sensitive uses (MCGMAP)
- SCE dropped from further consideration – also issues with physical feasibility (gradient)



Physical Feasibility – SCE



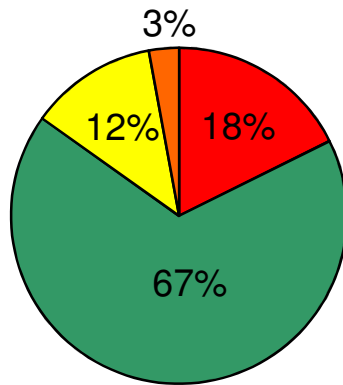
Conclusions of Market Assessment

3: SR-91 initially dropped from consideration due to poor proximity to existing warehousing:

- Re-introduced for traffic modeling
- Potential to serve shifting port warehouse market and significantly different general truck O-D patterns – provides a bookend to the analysis
- Will do ROW Constraints Analysis to complete the study

ROW Impact Assessment

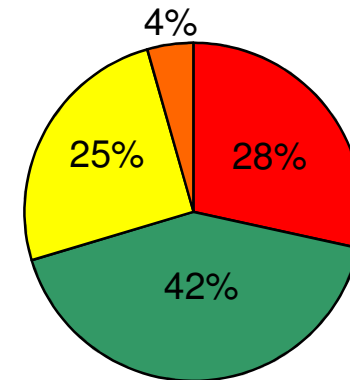
SR-60



Green: Footprint located or contained within public, transportation (Caltrans) rights of way.

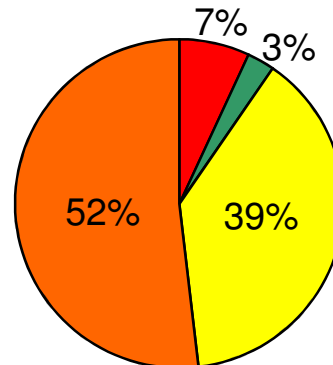
Red: Residential impacts (partial or full parcel), and land impacts to potential 4f-type or 404-type, or Section 106-type properties (e.g., parks, schools, natural water courses or habitat, landfill, or historic property.)

I-10



Yellow: Non-residential, land-only impacts that would not require a full parcel take and that would not involve an impact to structures. These kinds of land uses including vacant land, peripheral parking, agricultural land, private (non-residential) landscaping, utility corridor land, etc.

UP-Adjacent



Orange: Non-residential (i.e., commercial or industrial) impacts that would significantly compromise the business use of that parcel and/or that would result in a full parcel take of the business activity, or that would lead to direct impacts to major structures / facilities.

Conclusions of ROW Analysis

- All three alignments have ROW constraints that should be avoided if possible with hybrid and alternative alignments
- SR-60 has most limited ROW constraints
 - Much of “green” ROW is east of SR-57
- UP-adjacent alignment would require expensive industrial property acquisitions
 - Some segments could be viable especially as connector to I-710



Conclusions of ROW Analysis (cont.)

- I-10 would involve significant residential property impacts
 - Most residential impacts are in segments west of I-605 and east of SR-57
 - May present significant problems as a potential connector to north end of I-710



Corridor Traffic/Operational Characteristics

Several key E-W corridors could see truck volumes grow between 70% - 100%.

The highest E-W Truck volumes will be on SR-60 (40,000 – 50,000 trucks per day).

All E-W corridors will experience high levels of truck traffic.

Highway	To	From	Change (2008 – 2035)
I-710	SR-91	I-5	121%
	I-5	SR-60	261%
I-605	I-5	SR-60	38%
I-15	SR-91	SR-60	70%
	SR-60	I-10	63%
SR-91	I-710	I-605	35%
	SR-57	SR-55	77%
	SR-71	I-15	50%
SR-60	I-710	I-605	104%
	SR-57	SR-71	73%
	SR-71	I-15	83%
	I-15	I-215	85%
I-10	I-605	SR-57	82%
	SR-57	SR-83	73%
	SR-83	I-15	66%
I-210	I-5	I-605	84%
	I-605	SR-57	67%
	SR-57	SR-83	84%

Corridor Traffic/Operational Characteristics

Many segments of the E-W corridors experience 7 – 10 annual truck-related incidents per mile, with some up to 15



Why “Hybrid” Alignments?

Potential to reduce conflicts with ROW proposed for other regional transportation improvements

Minimize impacts to communities – fewer residential or other sensitive land uses along alignments

In some cases (San Jose Creek Channel) majority of land is owned by the public sector (LA County DPW and USACE)

Preliminary “hybrid” alignments under consideration:

- UPRR-adjacent to San Jose Creek
- I-105 to I-605 to San Jose Creek
- SR-91 to I-605 to San Jose Creek

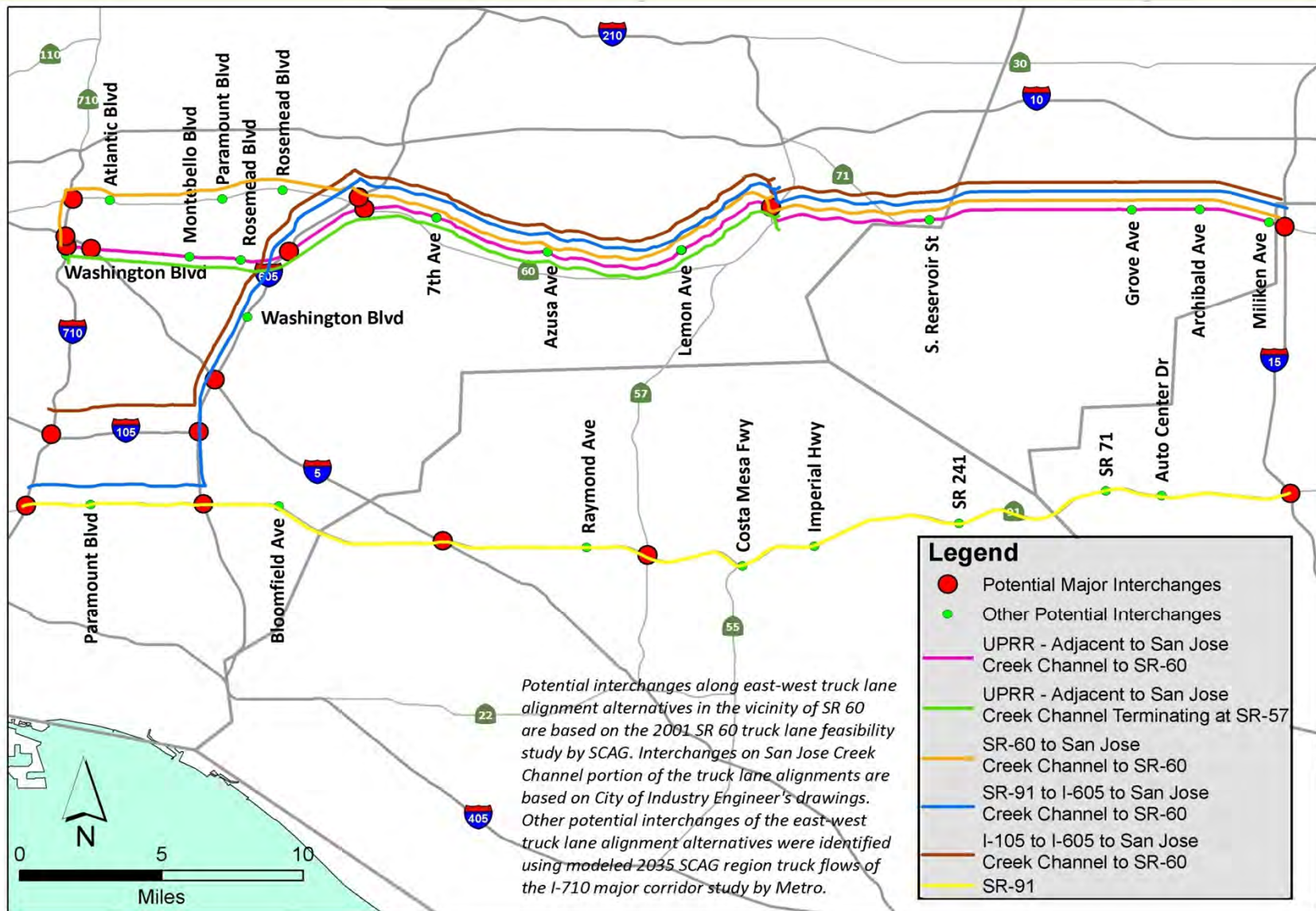


San Jose Creek

- Identified by City of Industry
- Serves same markets as SR-60/I-10, but with fewer impacts to communities along SR-60 and I-10
- Preserves options for other planned projects in SR-60/I-10 ROW – potential links to SR-60/SR-57/Grand Ave. interchange improvements
- Potential “win-win” leading to needed improvements to flood control channel



Potential Alignments



Connector Challenges

- SR-91 to I-605, I-105 to I-605
 - Lined by residential properties
 - Would require substantial elevated sections with potential neighborhood impacts
 - Impacts on other planned improvements
- UPRR-adjacent alignment
 - Interest in trenching – feasibility to be established
 - Need to ensure rail safety and rail access
 - Expensive ROW acquisition



Modeled Measures of Effectiveness (MOEs)

Truck Volumes

The volumes of trucks that would be carried by each of the potential alignments in 2035

Delay (All Traffic)

Impact on delay of all traffic within the influence area

Delay (Truck Traffic)

Impact on delay of all heavy-duty truck traffic within the influence area

Impact on Parallel Routes

Effectiveness of each alignment to reduce the truck volumes and congestion on parallel routes

Screenline Locations for Analysis

East-West Corridor Truck Lane Alignment Alternatives and Interchanges



2035 Freight Corridor Truck Volumes

Screenline #	Alternative Description					
	UP/SJC/60	UP/SJC	60/SJC/60	91/605/SJC/60	105/605/SJC/60	91
SL1	58,700	58,600	60,700	57,081	60,657	78,600
SL2	58,200	55,400	57,800	54,700	55,300	62,300
SL3	70,300	N/A	71,000	70,100	69,300	55,200

- **Freight Corridor truck volumes are high for all alternatives, between 54,700 and 78,600 bi-directional daily trucks**
- **Highest truck volumes are forecast for 91 at Screenline #1 and for UP/SJC/60 and 60/SJC/60 at Screenline #3**
- **Lowest truck volumes are forecast for 91/605/SJC/60 at Screenline #1 and 91 at Screenline #3**

2035 Impacts on Delay

Observed Impacts	Alternative Description					
	UP/SJC/60	UP/SJC	60/SJC/60	105/605/SJC/60	91/605/SJC/60	91
Heavy Truck	-9.9%	-6.9%	-9.1%	-10.9%	-10.7%	-10.6%
All Truck	-8.6%	-5.9%	-7.9%	-9.8%	-9.5%	-10.2%
All Traffic	-4.3%	1.0%	-3.7%	-1.3%	-0.8%	-1.2%

- UP/SJC/60 provides highest overall delay reduction in the study area followed closely by 60/SJC/60 – these are only two alignments that do not increase overall delay during the PM peak period
- Heavy truck delay reductions are comparable across most of the alternatives with 105/605/SJC/60 reducing heavy truck delay the most

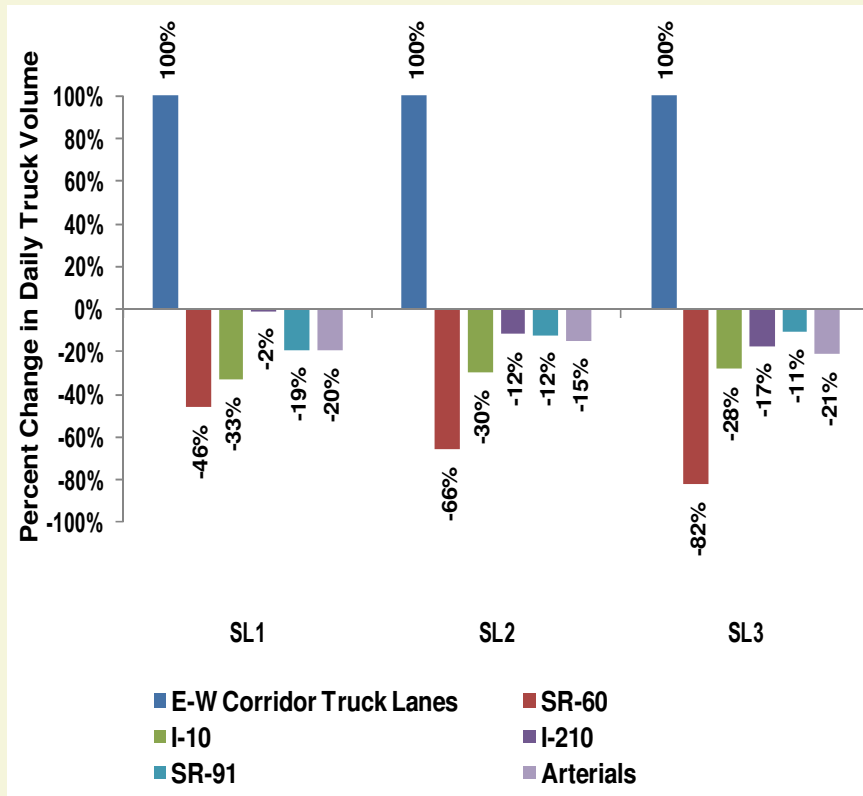
2035 Impacts on Parallel Routes

Highway	Screenline #	Alternative Description						
		No-Build	UP/SJC/60	UP/SJC	60/SJC/60	91/605/SJC/60	105/605/SJC/60	91
I-210	SL1	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	SL2	40,900	36,000	37,500	37,000	35,300	35,900	38,600
	SL3	27,300	22,600	25,900	23,400	21,700	22,200	24,900
I-10	SL1	21,500	14,300	15,000	12,900	15,900	15,800	18,600
	SL2	36,400	25,600	28,000	26,700	26,500	26,700	32,800
	SL3	39,100	28,100	34,700	28,800	28,700	28,700	34,800
SR-60	SL1	42,500	22,900	21,800	11,400	29,000	29,300	33,200
	SL2	41,000	14,100	11,300	12,000	17,000	18,000	31,400
	SL3	51,000	9,000	60,300	7,000	9,200	10,700	39,000
SR-91	SL1	51,200	41,500	42,700	43,700	38,500	34,500	14,600
	SL2	36,100	31,700	32,700	32,600	32,600	31,300	7,200
	SL3	29,600	26,400	28,800	26,700	26,700	25,900	6,500

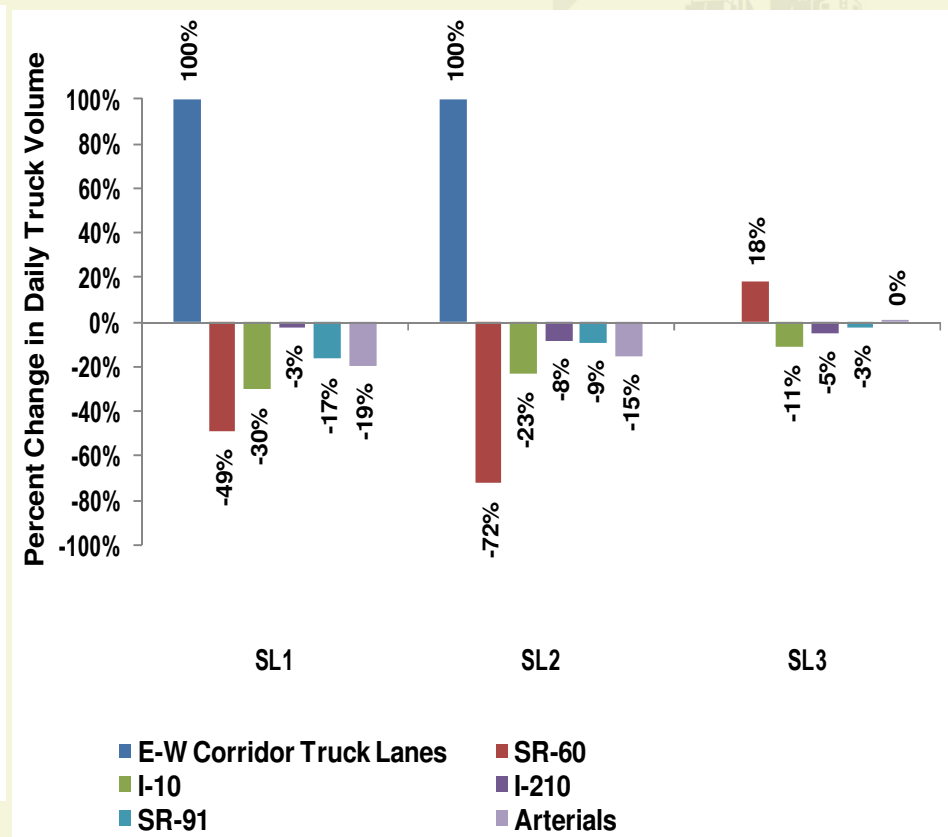
- SR-91 has least impact on parallel routes – less regional impact

2035 Impacts on Parallel Routes (Cont.)

Alternative #1

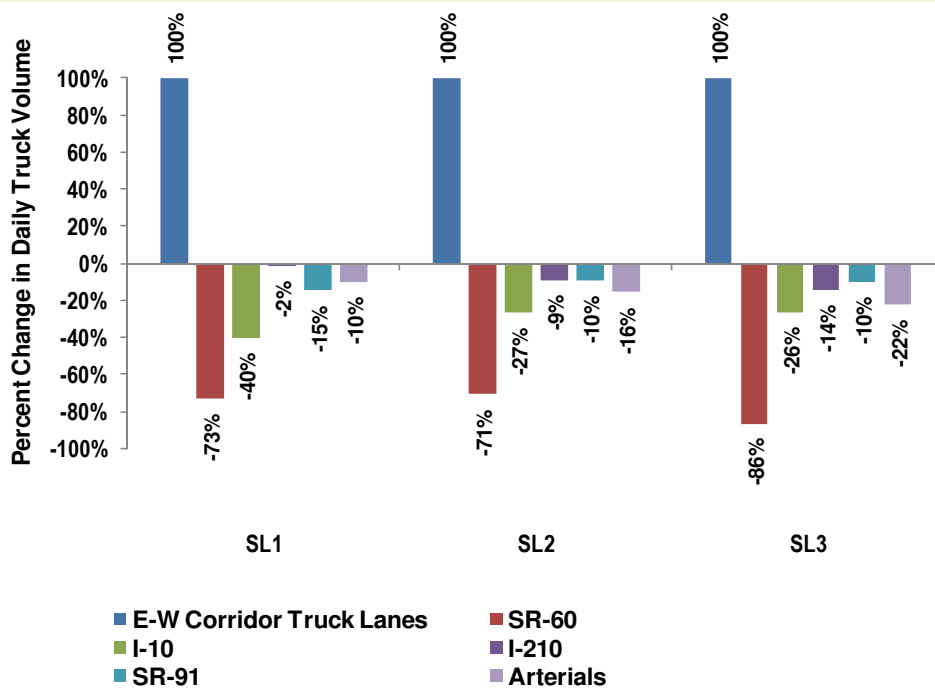


Alternative #2

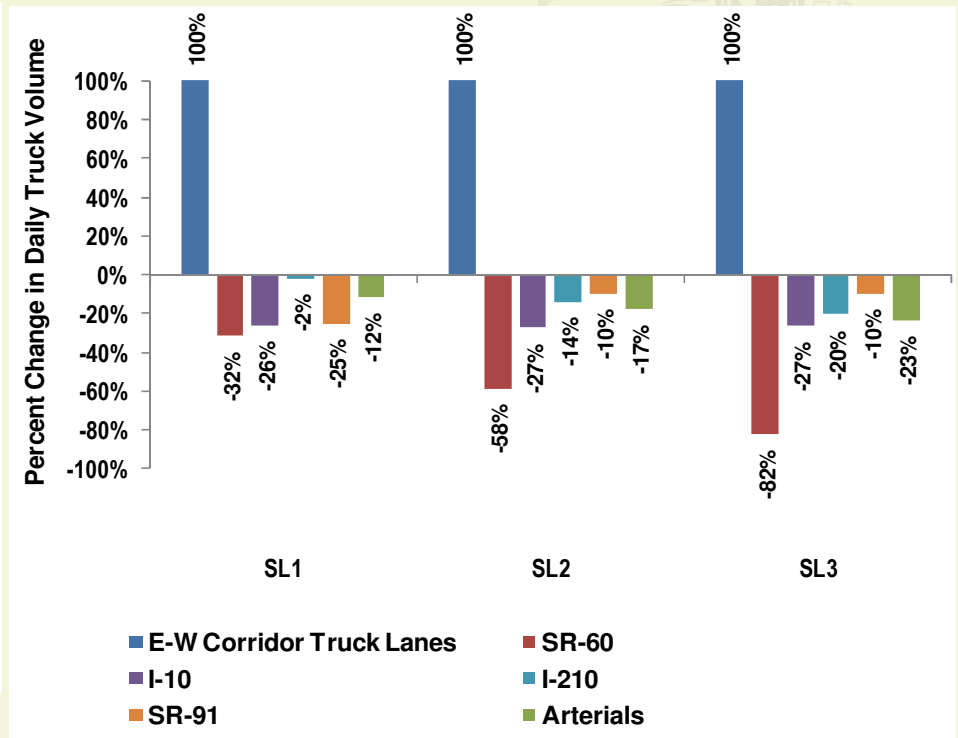


2035 Impacts on Parallel Routes (Cont.)

Alternative #3

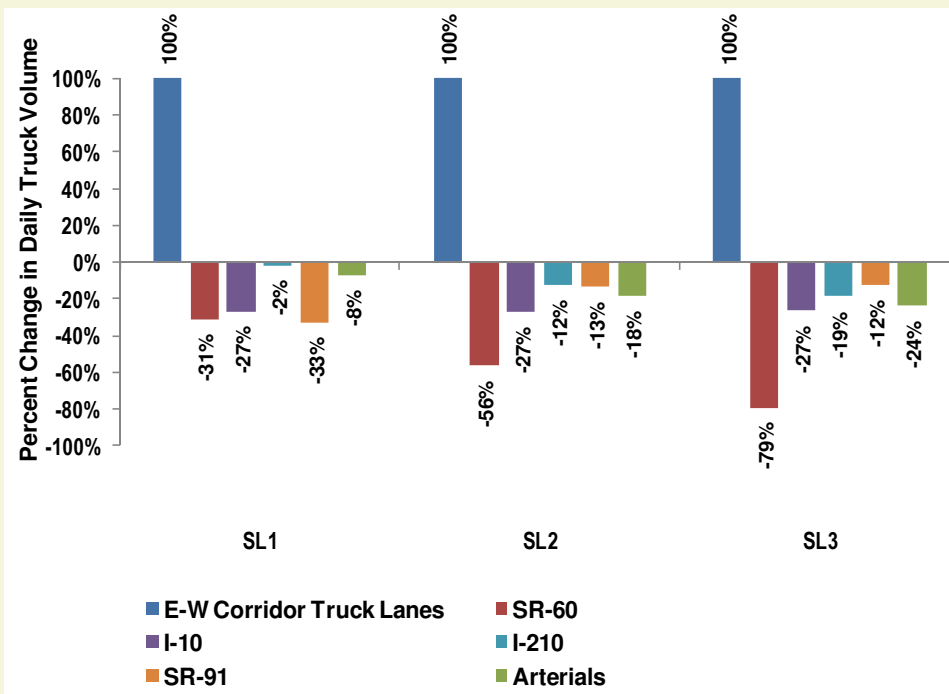


Alternative #4a

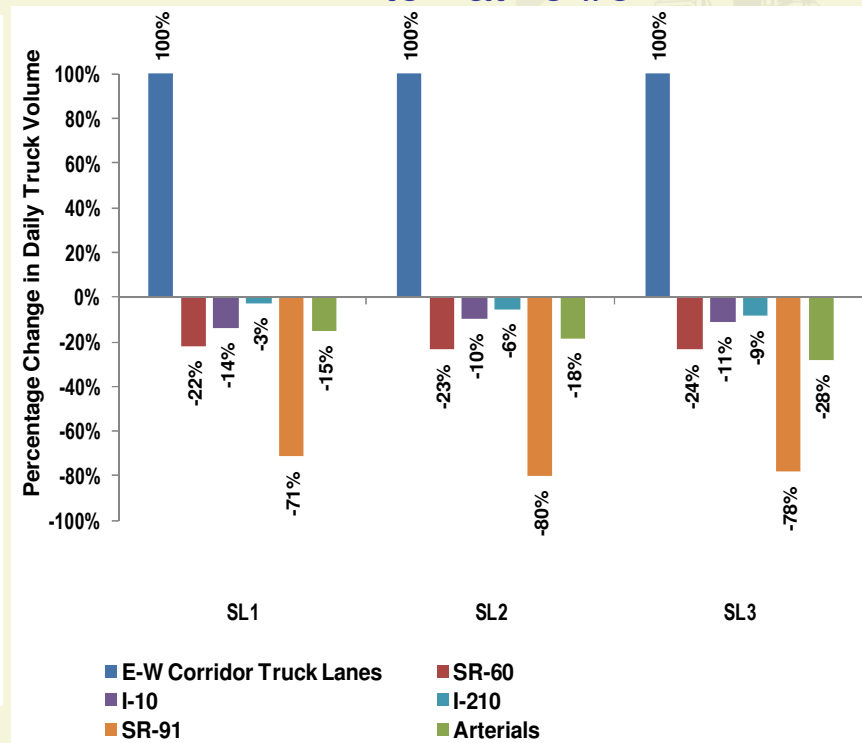


2035 Impacts on Parallel Routes (Cont.)

Alternative #4b

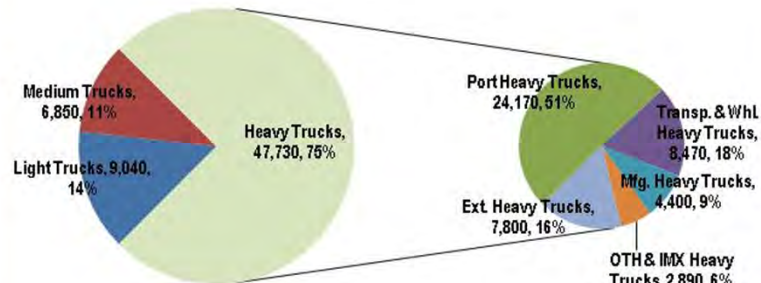


Alternative #5

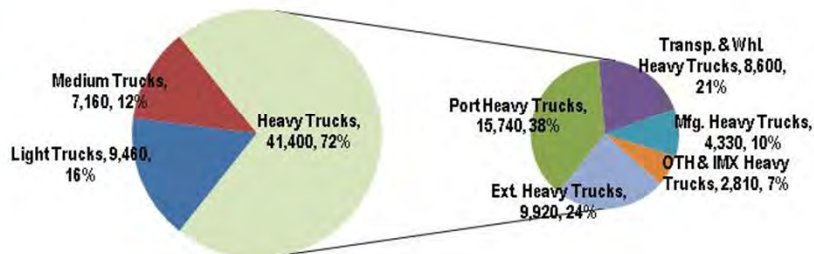


Markets Served by Truck Lanes

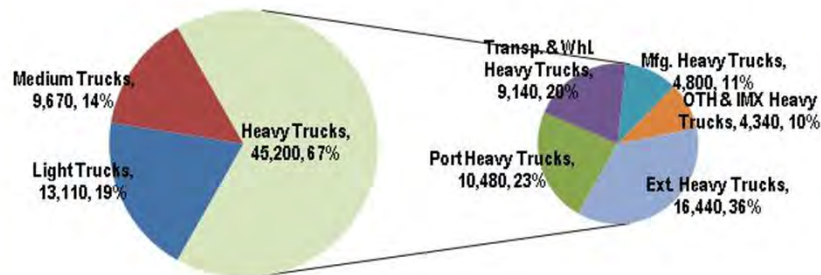
Alternative 3 - Screenline 1



Alternative 3 - Screenline 2



Alternative 3 - Screenline 3



- High level of heavy truck usage
- Port trucks decline as share moving east
- One-third to one-half of trucks serve local industries
- High share of usage is inter-regional trade moving east

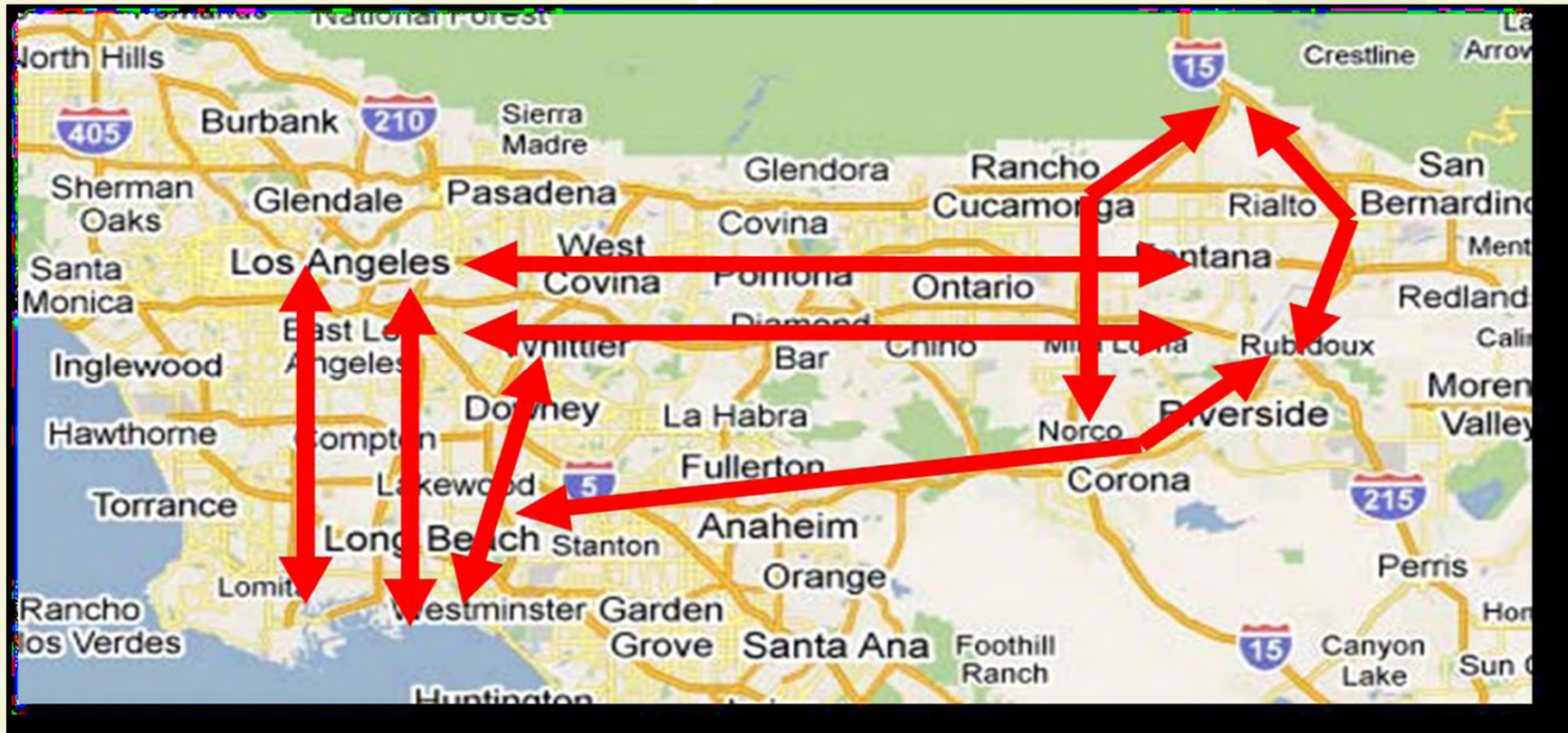


How to Incorporate Zero-Emission Goals?

- Fixed guideway systems would lack flexibility needed to serve diverse markets
 - Move towards electrified trucks with or without wayside power
- High power requirements and current limitations of battery technology will limit range of vehicle
 - Advantage of wayside power is range extender
 - Does not need to be restricted to freight corridors



Wayside Power and a Regional System



- Major goods movement freeways only account for 20% of regional truck VMT
- Will need to be supplemented with conventional charging station concepts – what is the appropriate balance between this and wayside power systems?

Remaining Questions

- Should the corridor plans include a wayside power system?
- Could this corridor be the first step in a regional zero-emission system?
- Could private investment be used to finance the zero-emission component?
- Should there be a policy to restrict the corridor to zero-emission trucks?



Summary of Assessment

ID	East-West Corridor ^{1,2}	Truck Volumes	Delay (All Traffic)	Delay (HH Truck Traffic)	Parallel Routes	Summary/Key Points
1	UPRR -Adjacent to San Jose Creek Channel to SR 60	●	●	●	●	<p>Carries the second highest truck volumes – within 5% of Alt. 5</p> <p>Reduces truck traffic on SR 60 by 65-85%</p> <p>Shows greatest reduction in total delay for all traffic (-4.3%) in influence area, as well as high reduction (-10%) for heavy-heavy truck delay</p>
2	UPRR -Adjacent to San Jose Creek Channel Terminating at SR 57	◐	◐	◐	○	<p>Results in negative traffic impacts – 18% more traffic on SR 60 east of SR 57.</p> <p>Shows increase in total delay for all traffic (1%) in influence area, as well as medium reduction (-7%) for heavy-heavy truck delay</p>
3	SR -60 to San Jose Creek Channel to SR 60	●	●	●	●	<p>Carries the same truck volumes as Alt. 1 – within 5% of Alt. 5</p> <p>Reduces truck traffic on SR 60 by 70-85%</p> <p>Shows high reduction in total delay for all traffic (-3.7%) in influence area, as well as high reduction (-9%) for heavy-heavy truck delay</p>
4a	SR 91 to I-605 to San Jose Creek Channel to SR 60	◐	◐	●	●	<p>Carries lower truck volumes than Alt. 1, 3, 4b and 5</p> <p>Shows greatest heavy-heavy truck delay reduction (-10.9%), but fairly low (-1.3%) overall total delay for all traffic</p>
4b	I-105 to I-605 to San Jose Creek Channel to SR 60	●	◐	●	●	<p>Shows high heavy-heavy truck delay reduction (-10.7%), but fairly low (-1%) total delay for all traffic</p>
5	SR 91	●	◐	●	◐	<p>Carries the most trucks at all screenlines – up to 57,780 (two-way volumes)</p> <p>Has little impact on parallel freeway east of SR 57.</p> <p>Shows high heavy-heavy truck delay reduction (-10.5%), but fairly low (-1%) total delay for all traffic</p>

Preliminary Recommendations

- Recommend incorporating SJC/60 alignment as the primary alignment for RTP
- Continue evaluation of connection options to north end of 710



Next Steps

- Conduct further analysis as needed based on Steering Committee comments (I-10 modeling, SR-91 ROW constraints analysis)
- Evaluate Costs of at least one alternative (recommend UP/SJC/60)
- Evaluate phasing options
- Evaluate tolling options and prepare finance plan





East – West Freight Corridor Planning

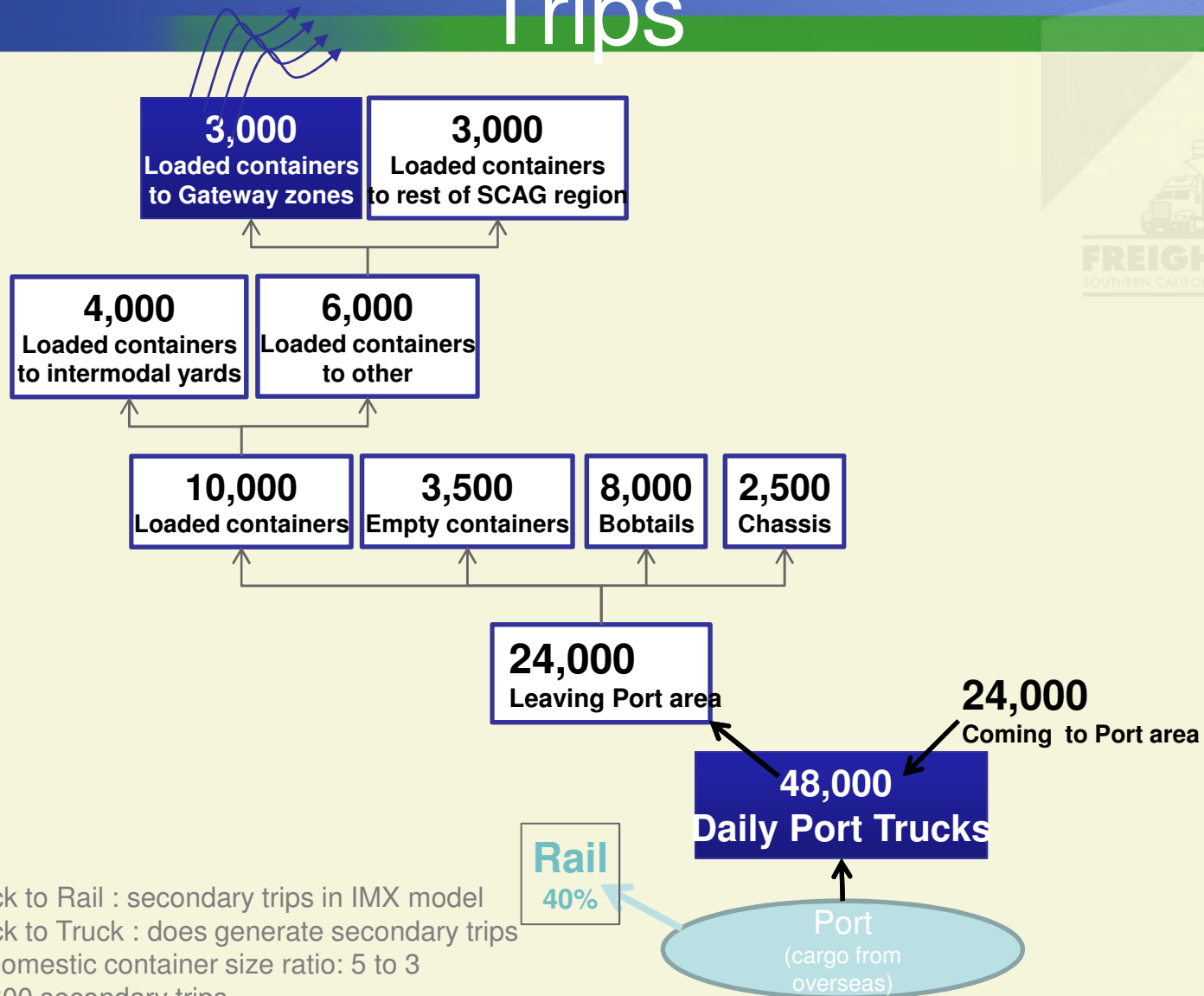
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June 21, 2011

Process for Generating Secondary Trips



Talking points:

- **Transloads Truck to Rail** : secondary trips in IMX model
- **Transloads Truck to Truck** : does generate secondary trips
- International to domestic container size ratio: 5 to 3
- $3000 * (3/5) = 1800$ secondary trips

- Major source of secondary movement = Import loaded containers to Gateway area zones
- Numbers are rounded