

Mobility. Environment. Community. Economy. Technology



I-710 Corridor Project EIR/EIS

metro.net

I-710 Initial Screening Results Presented to I-710 CAC

February 18, 2009



Presentation Overview

- Purpose of Alternatives Screening
- Review of Alternatives
- Findings by Goal/Objective
- CAC Discussion

Alternatives Screening Process

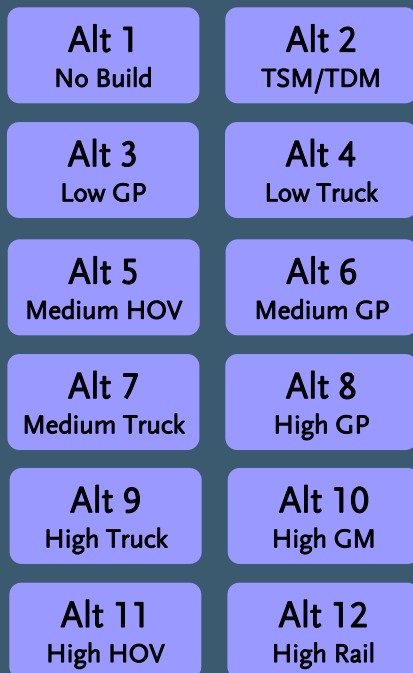
Major Corridor Study Phase

Winter 2002

Summer 2002

Fall 2004

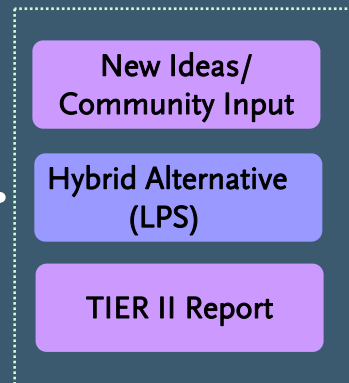
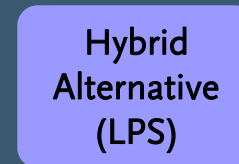
Initial Set



Final Set



LPS



Many Alternatives, Less Detail

Fewer Alternatives, More Detail

Alternatives Screening Process

EIR/EIS Phase

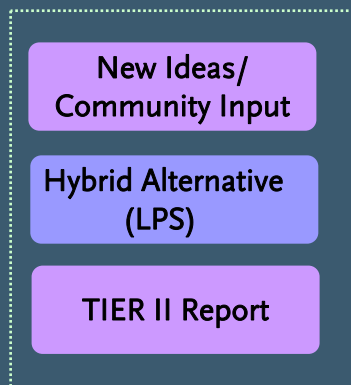
Winter 2008

Summer 2008

Summer 2010

Summer 2011

Scoping



- Alt 1
No Build
- Alt 2
TSM/TDM
- Alt 3
Alt. Technology
- Alt 4
Congestion Relief
- Alt 5
GP Lane Imp.
- Alt 6
Alt. 5 + Freight
Corridor

Environmental Analysis

- No Build
- Screened Alt. 1
- Screened Alt. 2

LPA

- LPA

Many Alternatives, Less Detail

Fewer Alternatives, More Detail

Alternatives for Screening

1. **No Build**
2. **Transportation System Management/Transportation Demand Management/Transit**
3. **Goods Movement Enhancement by Railroad and/or Advanced Technology (fixed guideway)**
4. **Arterial Highways and I-710 Congestion Relief Improvements (includes Alternatives 2 and 3(Rail))**
5. **Mainline I-710 Improvements (includes Alternatives 2, 3(Rail) and 4)**
 - A. **10 General Purpose Lanes or,**
 - B. **8 General Purpose Lanes w/ 1 carpool lane in each direction (total of 10)**
6. **Hybrid LPS (includes Alternative 5 + freight corridor of 4 truck lanes)**

Screening Criteria

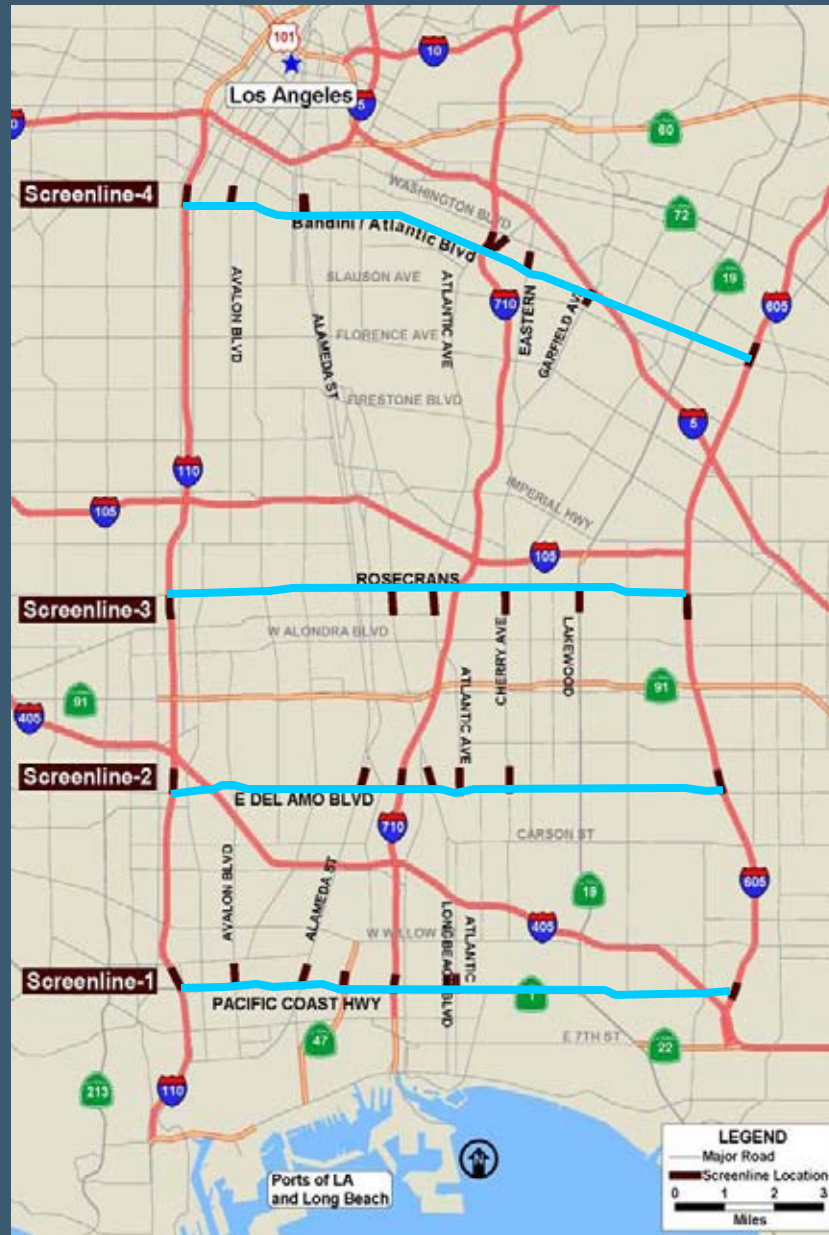
- Mobility
- Air Quality
- Traffic Safety
- Right of Way Impacts
- Environmental Impacts
- Cost

Mobility Measures

Overview of Mobility Screening Measures

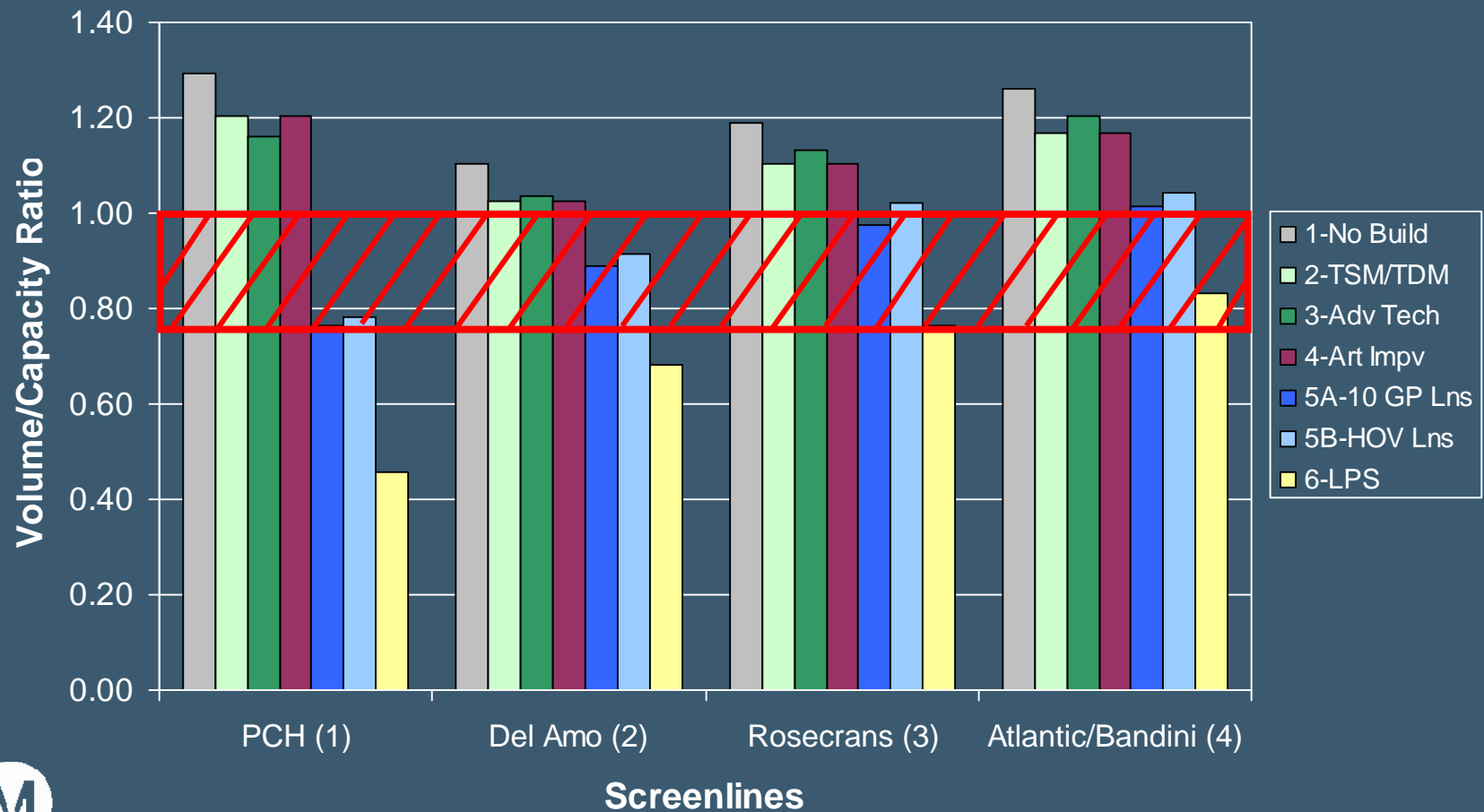
- **Screenline Volume/Capacity Ratios on I-710 General Purpose Lanes**
- **Total Screenline Volume/Capacity Ratios**
- **I-710 Travel Time**

Screenline Locations



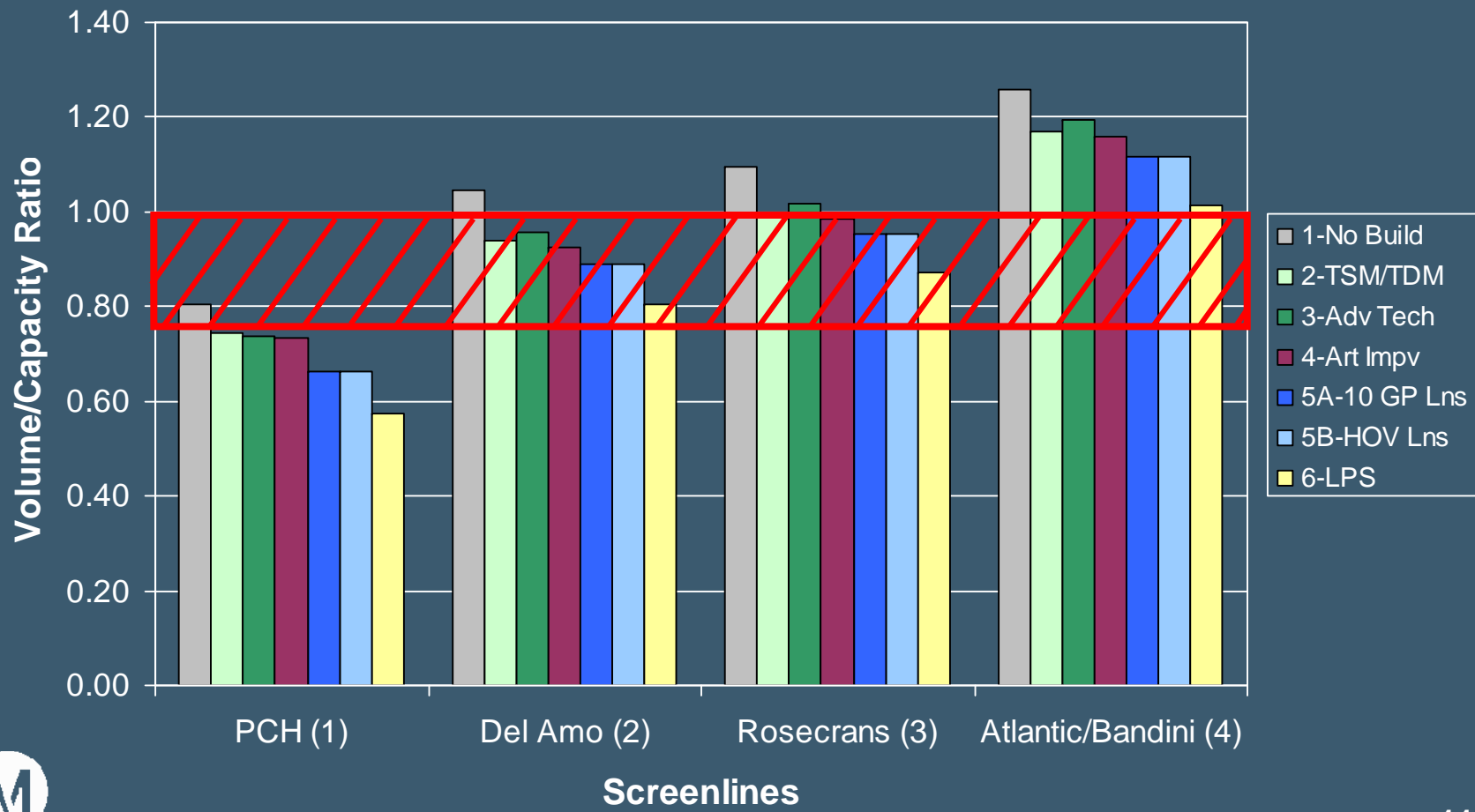
Mobility Screening Results

Year 2035 Screenline V/C Ratio on I-710 General Purpose Lanes by Time Period (PM Peak Period NB)



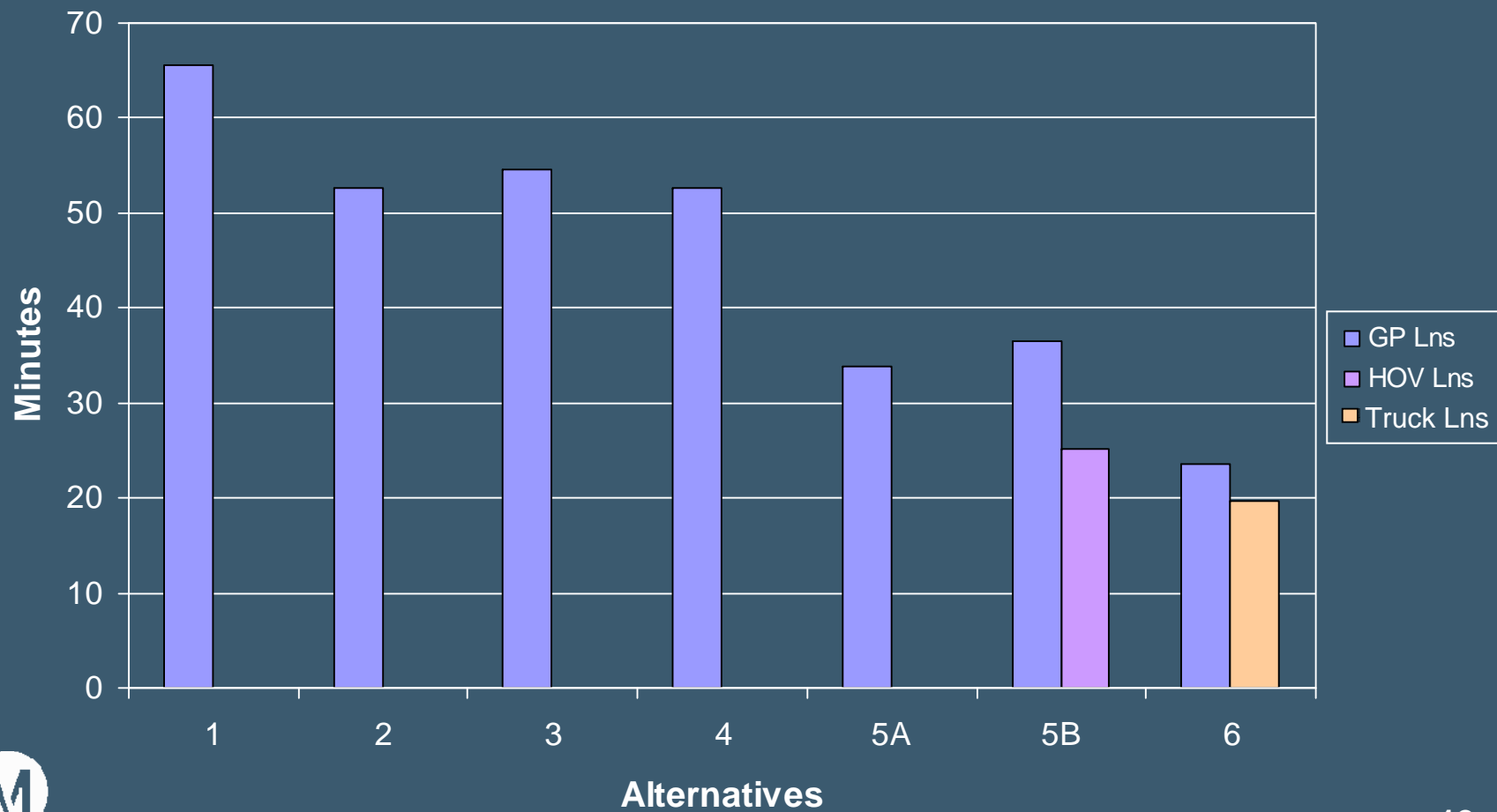
Mobility Screening Results

Year 2035 Total Screenline (I-710, I-110, I-605, Arterials) V/C Ratio (PM Peak NB)



Mobility Screening Results

Year 2035 I-710 PM Peak Travel Times in Northbound Direction (Ocean Blvd. to SR-60)



Mobility Screening Findings

- **Substantial need for new capacity in corridor demonstrated by No-Build V/C**
 - Only Alternative 6 provides sufficient capacity to reduce peak period I-710 V/C's below 1.0
 - Reduction in Alternative 6 total screenline V/C suggests potential for significant positive impacts on arterials as compared to other alternatives

Mobility Screening Findings

- Results at Screenline 1 (PCH) suggest Alternative 6 may have more capacity south of I-405 (14 lanes) on I-710 than needed
 - Alternatives 5A and 5B (10 lanes) also provide peak period speeds of 50 mph or higher at south end
- Only Alternative 6 has average end-to-end speed on I-710 GP lanes higher than 35 mph
- Top performing alternatives:
 - Alternative 6 (1st), Alternative 5A (2nd), Alternative 5B (3rd)

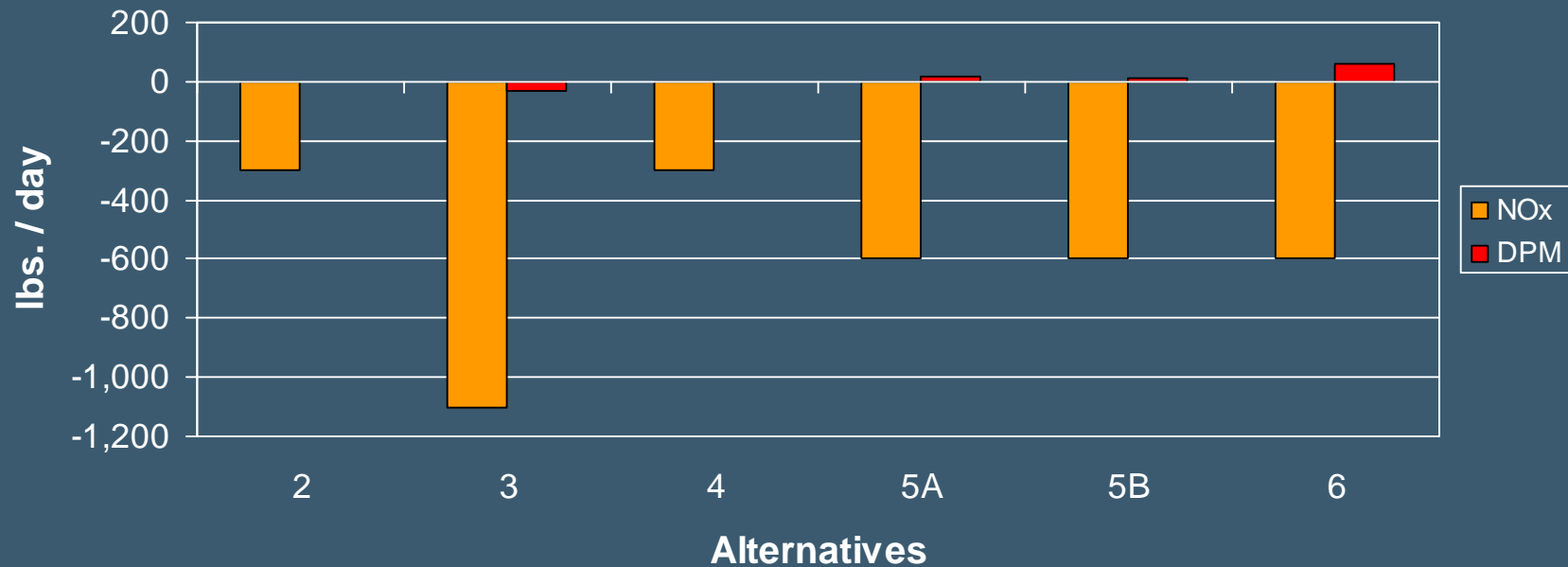
Air Quality Measures

Overview of Air Quality Screening Measures

- Screening analysis metrics:
 - Criteria pollutants (ozone, PM, NO₂):
Daytime Freeway Oxides of Nitrogen (NOx) Emissions
 - Air toxics: Daytime Freeway Diesel Particulate Matter (DPM) Emissions
- Emissions estimated using screenline information (vehicle volumes and average speed)
- Screening analysis: Year 2035 freeway (I-710, I-110, I-605) emissions *only*
 - 2035 per-vehicle emissions are 80 to 90% lower than 2008

Air Quality Screening Results

Daytime Freeway-only (I-710, I-110, I-605) Emissions
Compared to 2035 No Build (lbs)



- Screening level analysis does not account for future truck / car emission regulations beyond existing federal regulations
- Screening level analysis does not account for emission reductions if the alternative improves mobility on arterials
- Alternative 3 (fixed guideway) is estimated to reduce daily port truck trips by 20%

Air Quality Screening Results

- **NOx (regional ozone, PM and NO₂ metric)**
 - Alternative 3 shows greatest reductions compared to No Build alternative (-1,100 lbs)
 - Alternatives 5A, 5B, and 6 show appreciable reductions (~ 640 lbs)
 - Lower emissions at higher speeds (greater mobility)
- **DPM (air toxic metric)**
 - Alt 3 shows small reductions compared to No Build (-26 lbs)
 - All others show minor increases
 - Up to ~60 lbs for Alternative 6
 - Emissions less affected by speed, increase at > 30 mph
 - 2035 DPM emission factors are very low (control technologies, new engine standards and fleet turnover)

Air Quality Screening Findings

- All 2035 alternatives may show emission decreases compared to 2008 baseline (new standards/controls vs. VMT increases)
- Compared to the 2035 No Build Alternative:
 - Alternative 3 (fixed guideway) shows greatest reductions in NO_x, DPM
 - 22,400 daily truck trips (~20% of Port trucks) eliminated by fixed guideway container transport technology
 - Alternatives 5A, 5B, and 6 show appreciable reductions in NO_x with slight increases in DPM
 - DPM emissions could be reduced with alternative (zero-emission) technologies

Air Quality Screening Findings

- Screening analysis does not include effect of improved mobility on arterials (not feasible to include in screening analysis)
 - NO_x and DPM emissions would be reduced for alternatives that improve mobility on arterials
- Greenhouse gases (CO₂ – qualitative):
 - Expect similar response among alternatives as NO_x

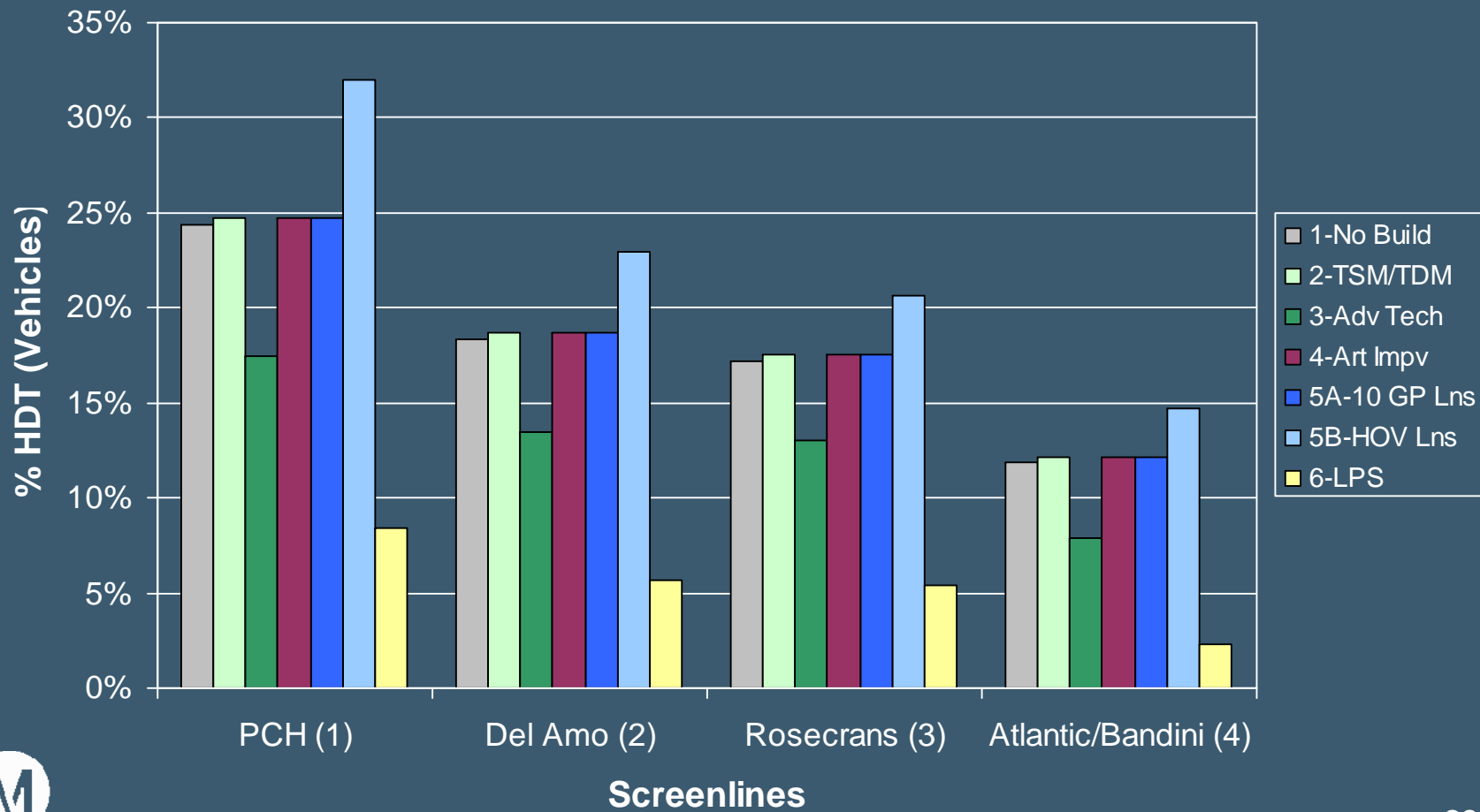
Traffic Safety Measures

Overview of Traffic Safety Measures

- **Percentage of PM Peak Period Traffic on I-710 General Purpose Lanes Consisting of Heavy Duty Trucks**
 - Reflects the significant mix of trucks and passenger vehicles
- **Number of Existing Highway Design Deficiencies Eliminated**

Traffic Safety Screening Results

Heavy Duty Trucks as a Percent of Total Traffic in GP Lanes
(PM Peak NB)



Traffic Safety Screening Results

Number of Existing Physical Design Deficiencies Eliminated

- Examples of design deficiencies are:
 - Poor weaving and merging conditions
 - Poor sight distance
 - Sharp curvature of ramp alignments

Alternatives						
1	2	3	4	5A	5B	6
0	0	0	135	420	420	420

Over 500 existing deficiencies throughout the corridor

Traffic Safety Screening Findings

- Proposed design improvements and Heavy Duty Truck reductions should substantially reduce accident rates
- Alternative 6 has the lowest percentage of HDT on the GP lanes as it separates cars and trucks
 - This percentage could be reduced further through the inclusion of alternative technology
- Alternative 6 plus Alternative 3 are best for traffic safety
- Alternatives 5A and 5B provide safety benefits

Right of Way Measures

Overview of Right of Way Measures

- **Number of Impacted Residential Properties**
- **Number of Impacted Non-Residential Buildings**
- **Potential Relocations of Regionally Significant Utilities – Power Transmission**

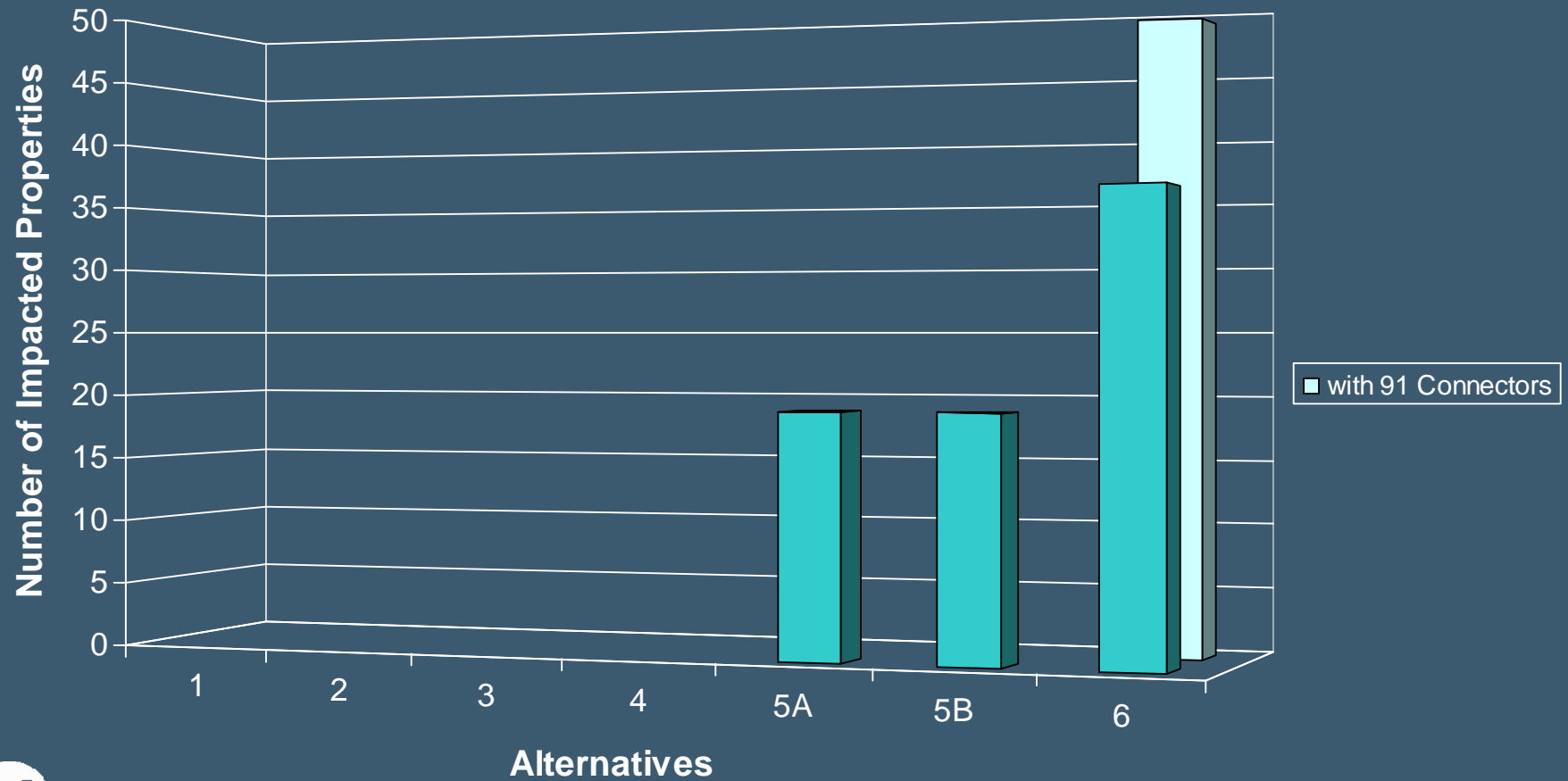
Overview of Right of Way Measures

Right of Way Requirement Assumptions

- LPS from Major Corridor Study required approval of some non-standard designs to avoid residential impacts
- Designs of current alternatives have been updated
- Requirements are based upon standard designs and protocols

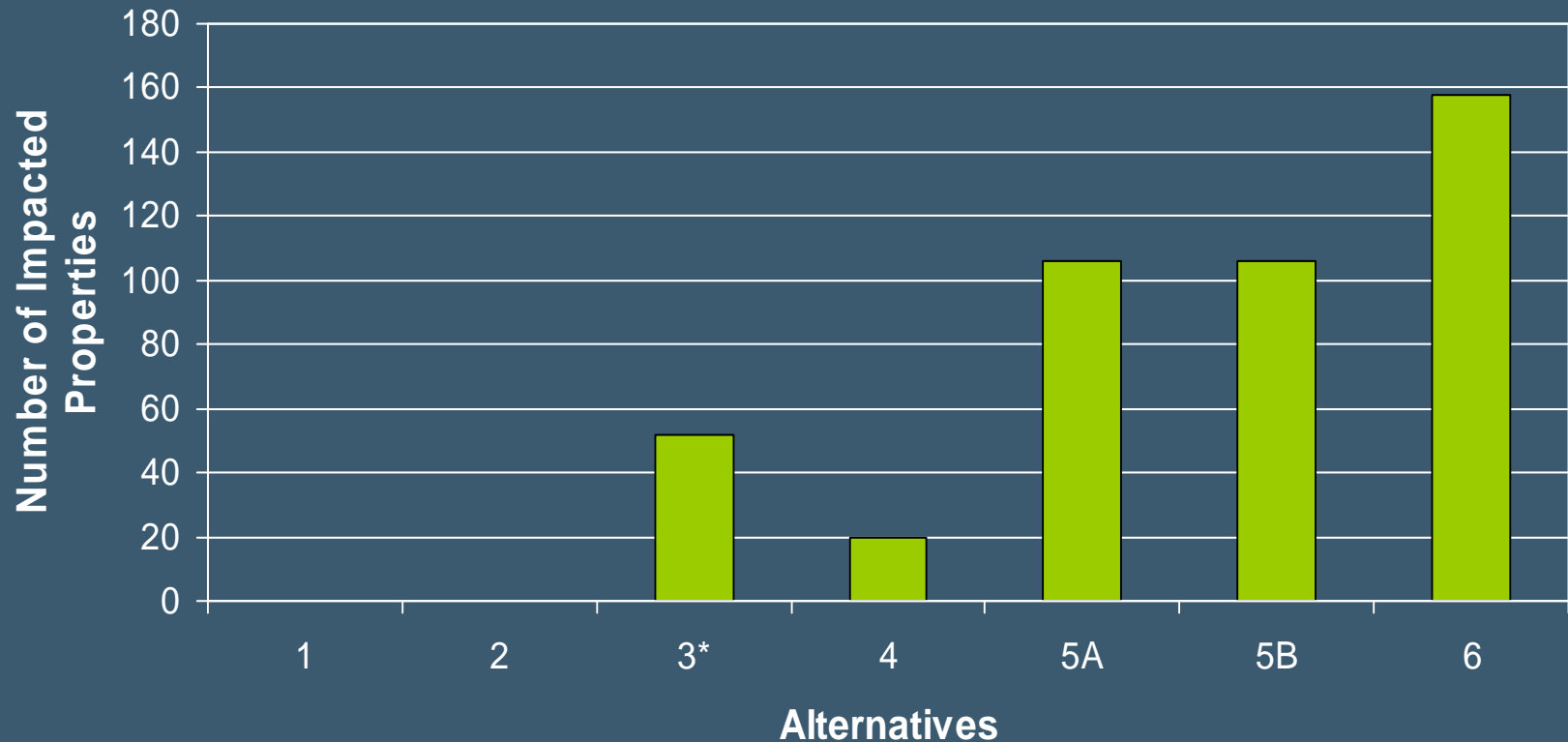
Right of Way Screening Results

Number of Impacted Residential Properties



Right of Way Screening Results

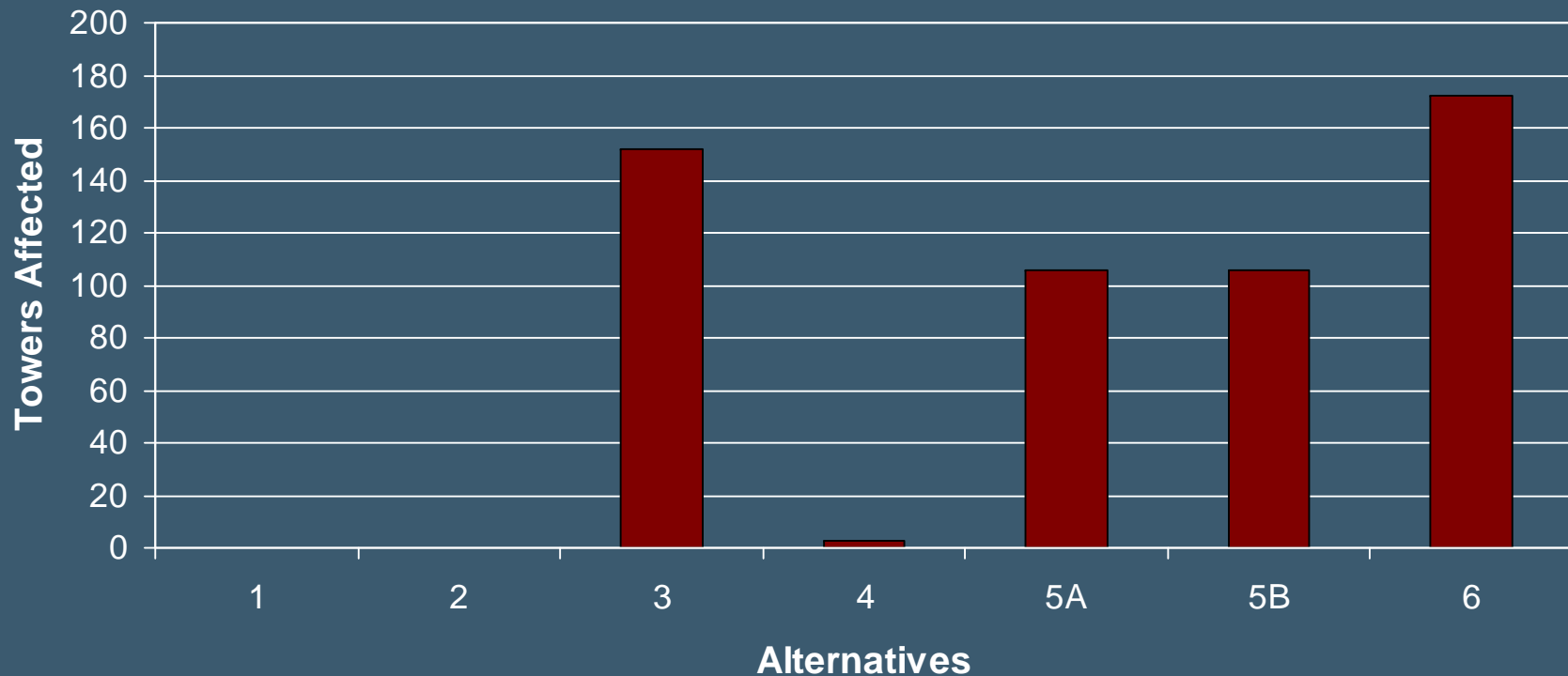
Number of Impacted Non-Residential Buildings



*Alternative 3 results do not include land required for fixed guideway terminals and terminal connectors (approx. 3 acres/marine terminal)

Right of Way Screening Results

Potential Relocations of Power Transmission Utilities



- Electric facility relocation may require acquisition of replacement rights-of-way
- The utility acquisition process may include condemnation, or purchases
- The existing affected Edison right-of-way involves 233 acres, and replacement right-of-way may involve more acreage depending on the relocation

Right of Way Screening Findings

- All alternatives are consistent with the project objective of minimizing right of way impacts, notably residential acquisitions
- Mobility and traffic safety benefits are trade-offs to residential impacts
- Alternatives 3, 5 and 6 have a substantially greater impact to regional transmission utilities
- Alternatives 1, 2 and 4 have the least impacts

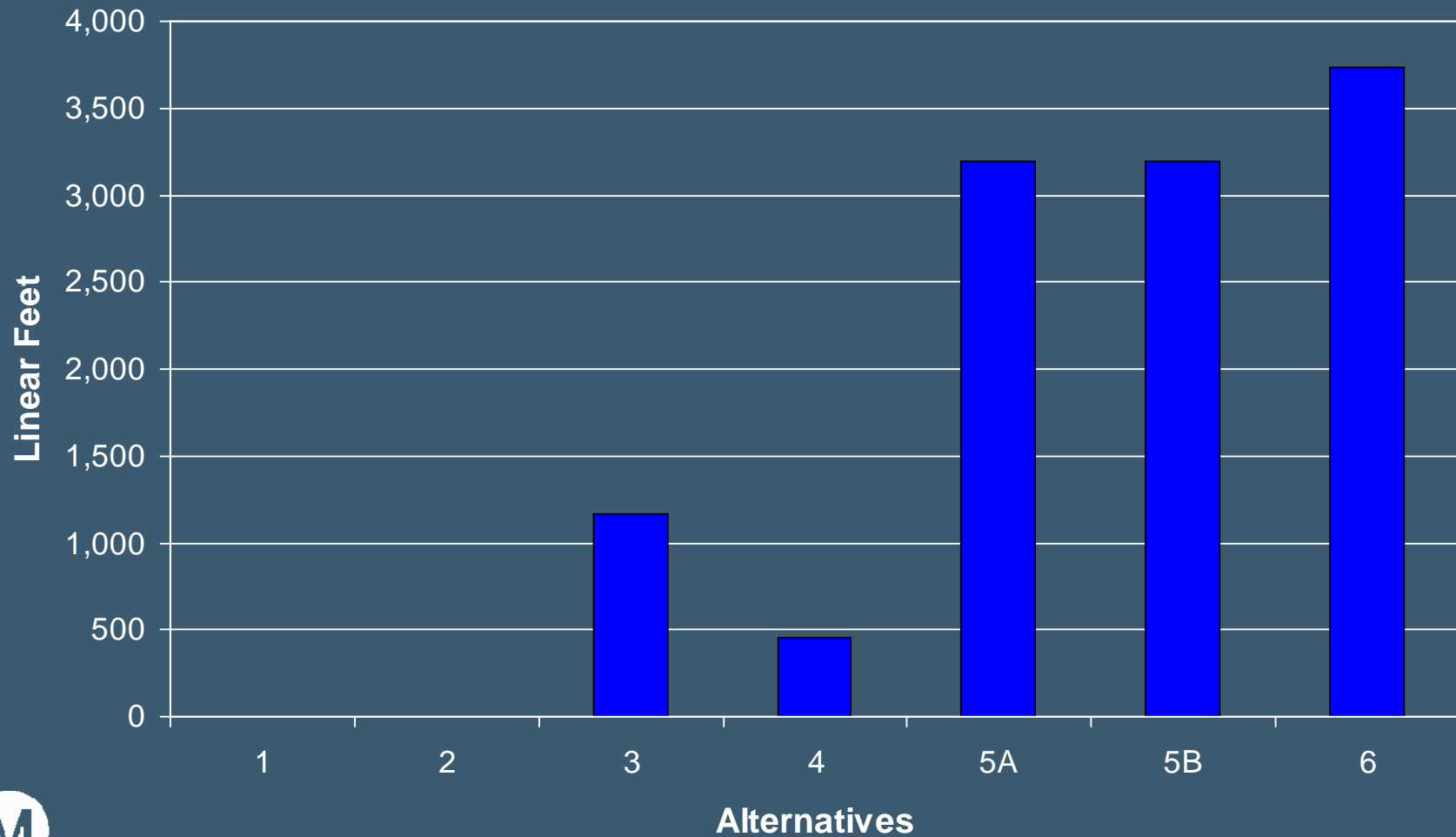
Environmental Impact Measures

Overview of Environmental Impact Screening Measures

- Right of Way Impacts on Waters of the U.S.
- Right of Way Impacts on Section 4(f) Properties
 - Examples of Section 4(f) properties are publicly owned parks, recreational areas, wildlife refuges, or public and private historical sites
- Environmental Justice Assessment

Environmental Impact Screening Results

Right of Way Impacts on Waters of the U.S.



Environmental Impact Screening Results

Right of Way Impacts on Section 4(f) Properties

- **Cesar Chavez Park**
 - Full acquisition is not necessary (would be impacted by Alternatives 4, 5 and 6; possibly Alternative 3)
 - Benefits of Proposed Project:
 - Increase park size by 40%
 - Improved public access to park
- **No other 4(f) properties impacted**

Environmental Impact Screening Results

Environmental Justice Assessment

- Analysis performed using demographic data
 - Did not distinguish meaningfully between alternatives at the screening level of analysis
 - Did not account for potential benefits as a result of project implementation at the screening level

Environmental Impact Screening Findings

- Alternative 6 has the highest impact to Waters of the U.S.
 - May be the only practicable alternative as it meets the Purpose and Need of the project
- Only 1 Section 4(f) property affected by Alternatives 3, 4, 5A, 5B, and 6
 - May experience benefits from project implementation
- Environmental Justice measure as defined did not distinguish differences among the alternatives

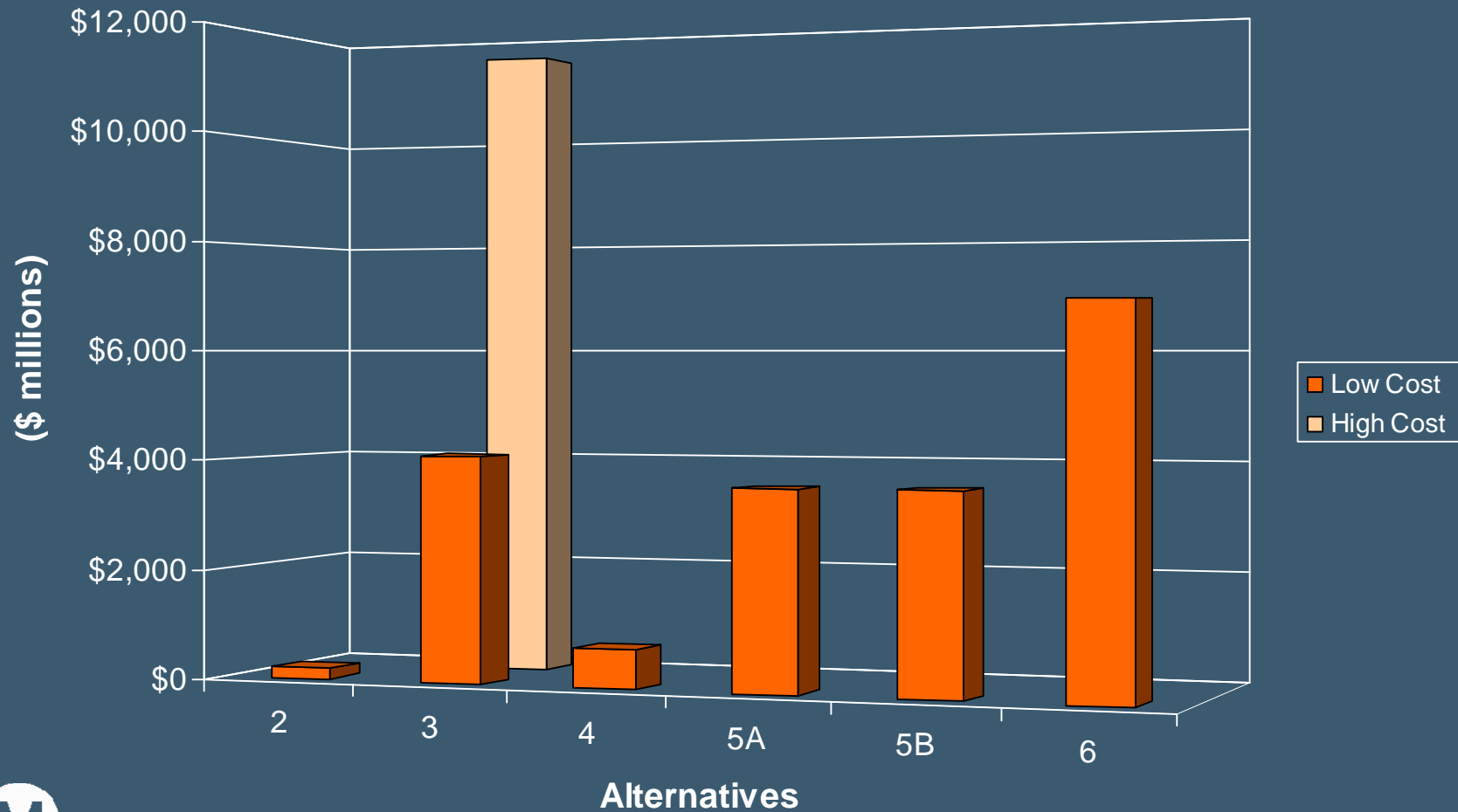
Capital Cost Measure

Overview of Capital Cost Screening Measure

- **Total Capital Cost**
 - Freeway Improvements
 - Interchanges
 - Arterials
 - ITS
 - Transit
 - Alternative Technology

Capital Cost Screening Results

Estimated Capital Costs Above No Build



Capital Cost Screening Findings

- Alternatives 3 and 6 have the highest cost
 - Alternative 6 and Alternative 3 provide the greatest benefits

Screening Results Summary

- Alternative 6 (Updated Hybrid LPS) is only one to meet Mobility element of Purpose and Need
- Alternative 5A (10 General Purpose Lanes) is second best performer on Mobility element of Purpose and Need
- Alternative 6 is best performer on Traffic Safety
- Alternative 6 reduces NOx but slightly increases freeway daytime DPM compared to No Build
 - Additional emission reductions could be achieved by combining Alt. 6 with Alt. 3 alternative (zero-emission) technologies
- Alternative 6 impacts (affected properties, waters of the US, cost) are highest compared to other alternatives
 - Directly related to mobility and safety improvement features
- Alternative 3 (Alternative Technology) is highest capital cost followed by Alternative 6

CAC Screening Recommendations

Discussion