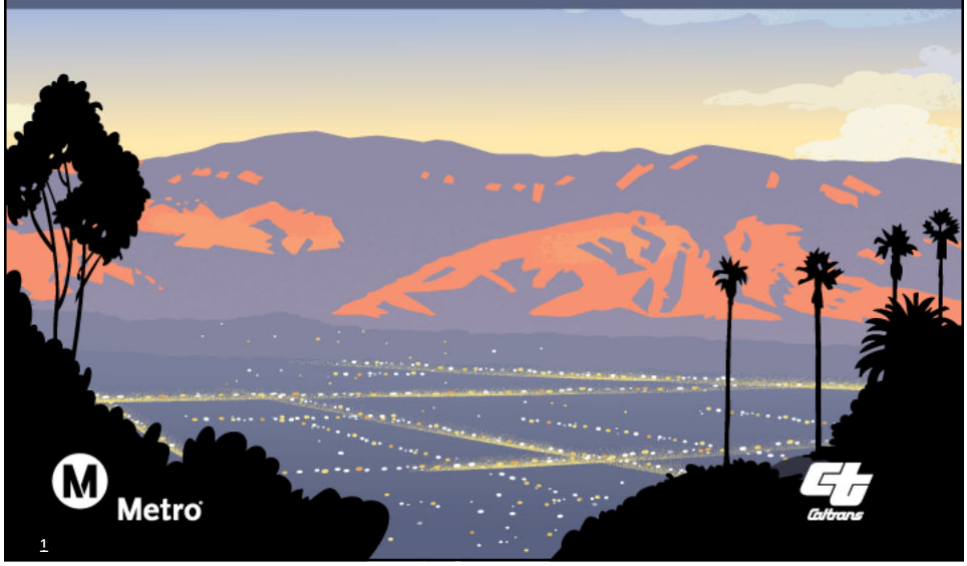
SR 710 North Study

Technical Advisory Committee Meeting No. 15 – May 14, 2014

Stakeholder Outreach Advisory Committee Meeting No. 11– May 15, 2014



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Agenda

- Public Outreach Activities
- Project Report and Environmental Studies Documentation Update
  - Recap of TAC No. 14 and SOAC No. 10
  - Update on Preliminary Engineering and Environmental Technical Studies

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Ground Rules

- Q&A after each section of the presentation
- Focus questions on information presented
- General comments and Q&A at the end

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Schedule Update

- Release date for Draft EIR/EIS – February 2015
- Circulation period extended from 45 days to 90 days

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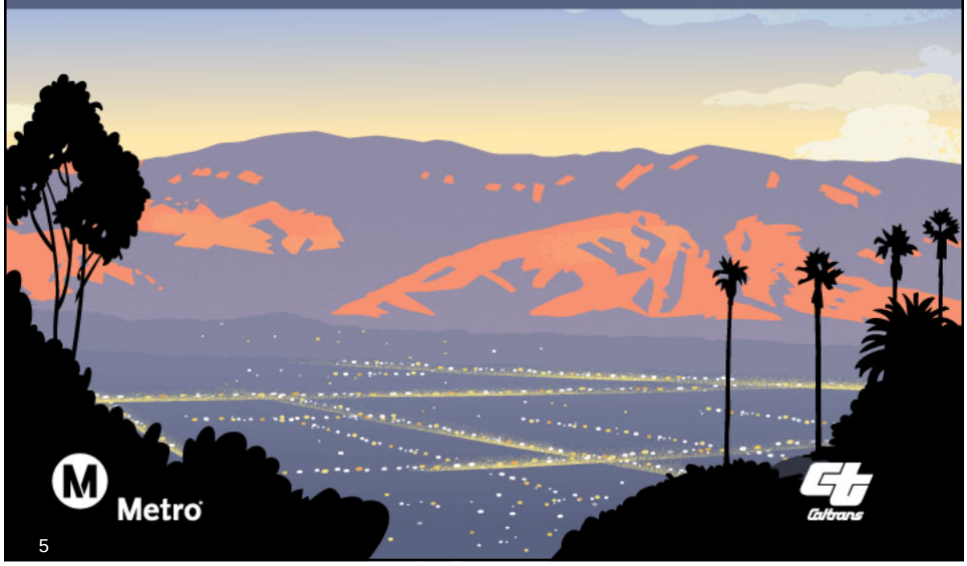
Public Outreach Activities



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Outreach Activities

- Adjusting Outreach Schedule to reflect new release date
- Retooling outreach efforts to ensure regional focus

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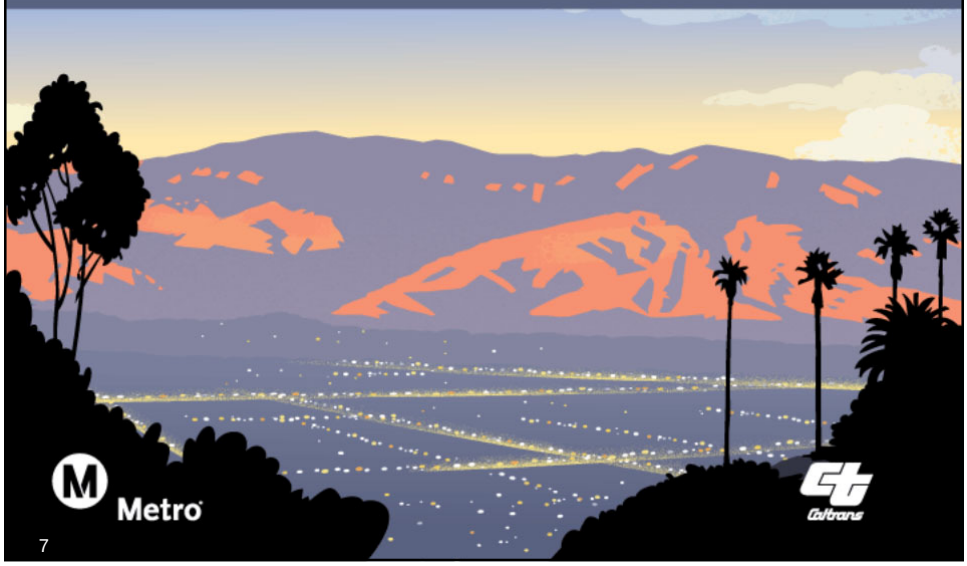
Project Report and Environmental Studies Documentation Update



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Recap of TAC No. 14 and SOAC No.10

- Public Outreach Activities
- Project Report and Environmental Studies Documentation Update
  - Recap of previous TAC/SOAC meetings
  - Vehicle Miles Traveled (VMT) Growth (Research, Forecasts and Trends)
  - Update on Preliminary Engineering and Environmental Technical Studies

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Feedback Received During TAC No. 14/ SOAC No. 10

- Does the construction schedule for the SR 710 North Study take into account the Devil's Gate Dam (silt removal) project in Pasadena?
- What is the relationship between the Draft EIR/EIS and the Draft Project Report?
- How many public hearings will there be and where? How long will the comment period be?
- Will you be doing a Health Impact Assessment?
- When will the cost-benefit analysis be released?
- Will you be using any physical barriers to prevent trucks from entering the tunnel?

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Feedback Received During TAC No. 14/ SOAC No. 10

- Who decides trucks or no trucks? When will this decision be made?
- Will the Draft EIR/EIS address how the tunnel will be paid for?
- Will the Draft EIR/EIS be available in Spanish?
- Would hard copies of the Draft EIR/EIS be provided at designated libraries?
- How will SB743 potentially effect evaluations in the Draft EIR/EIS?

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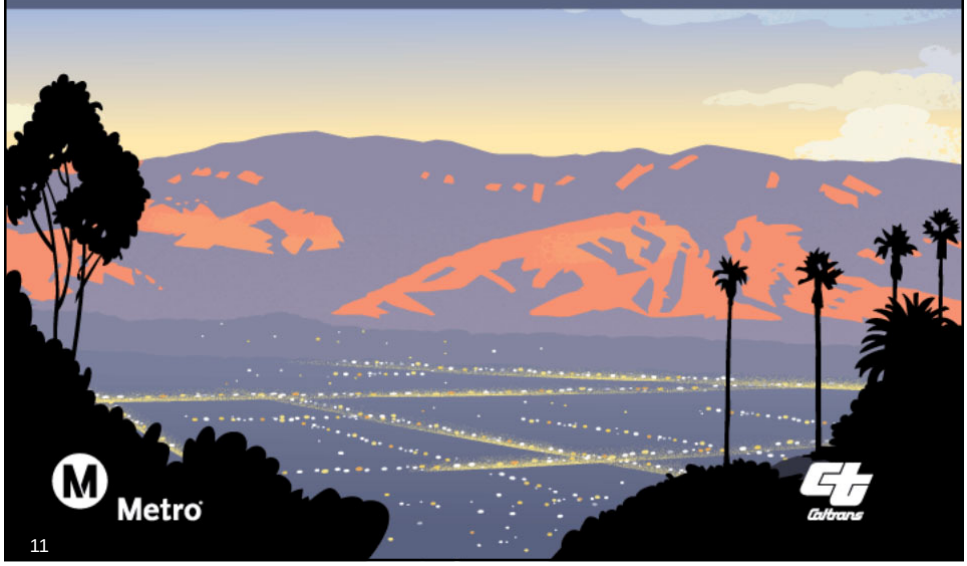
Update on Preliminary Engineering and Environmental Technical Studies



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Travel Forecasting Approach for Alternatives Analysis (AA) and PA/ED

- AA: 2008 SCAG RTP Model (2035 Horizon Year) and Metro Model
- PA/ED: 2012 SCAG RTP Model (2035 Horizon Year) and Metro Model
- Integrated/Blended Approach
  - SCAG (Highway) and Metro (Transit)
  - SCAG Heavy Duty Truck Model
  - Toll procedures
- Technical Stakeholders (Modelers)
  - Metro, SCAG, Caltrans
  - December 2011 Workshop

Presented at TAC No. 2

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Travel Demand Modeling Steps

- Obtain and review model inputs and processes (scripts)
- Replicate base model results
- Prepare for validation ("match reality")
- Validation (iterative) of existing conditions model
- Scenario analysis
- Summarize results

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Travel Demand Modeling History

Dates	Model Version	Activities
June-December 2012	6.0	Obtain new model, test features, match SCAG results (while finishing AA phase)
January– March 2013		Initial validation (partially complete)
March-June 2013	6.1	Obtain new model, update scripts, and test for SCAG results match
March-July 2013	"SR 710 North" model, based on the SCAG 2012 RTP v6.1 model	Validation: update tools and processes, and conduct iterative runs until results were within targets
June-August 2013		Future (2035) baseline – apply validation changes and test model runs (especially for tolling)
July-October 2013		Future (2035) alternatives analysis - coding, testing, toll iterations, and model output
October 2013-February 2014		Opening year (2020/2025) alternatives analysis model runs

Preliminary Engineering Update

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SR 710 North Study
Build Alternatives

- Transportation System Management (TSM)/Transportation Demand Management (TDM)
- Bus Rapid Transit (BRT) with TSM/TDM
- Light Rail Transit (LRT) with TSM/TDM
- Freeway Tunnel with TSM/TDM*
  - No Toll (Dual Bore Tunnel)
  - Tolled (Single and Dual Bore Tunnel)
  - Tolled with Express Bus (Single and Dual Bore Tunnel)

* All variations will be evaluated with and without trucks inside the tunnel

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Preliminary Engineering Update

- Addressing Metro and Caltrans comments
- Refined elements of TSM/TDM Alternative
- Completed tunnel drainage system design
- Completed stage construction overview
- Evaluating construction schedule & equipment needs
- Coordinating with environmental team for technical studies
- Developing construction and O&M cost estimates

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TSM/TDM Update

- Removed I-4, I-5, I-7, I-20 locations
  - I-4 and I-5 not compatible with T-1 option
  - I-7 proposed ITS solutions already being considered by South Pasadena
    - Reversible lanes covered in L-8
  - I-20 improvements included in L-5
- Moved I-17 to ITS-6
- Moved I-12, I-34, I-35 to ITS-12
- I-13, I-14, I-15 are combined into a single improvement

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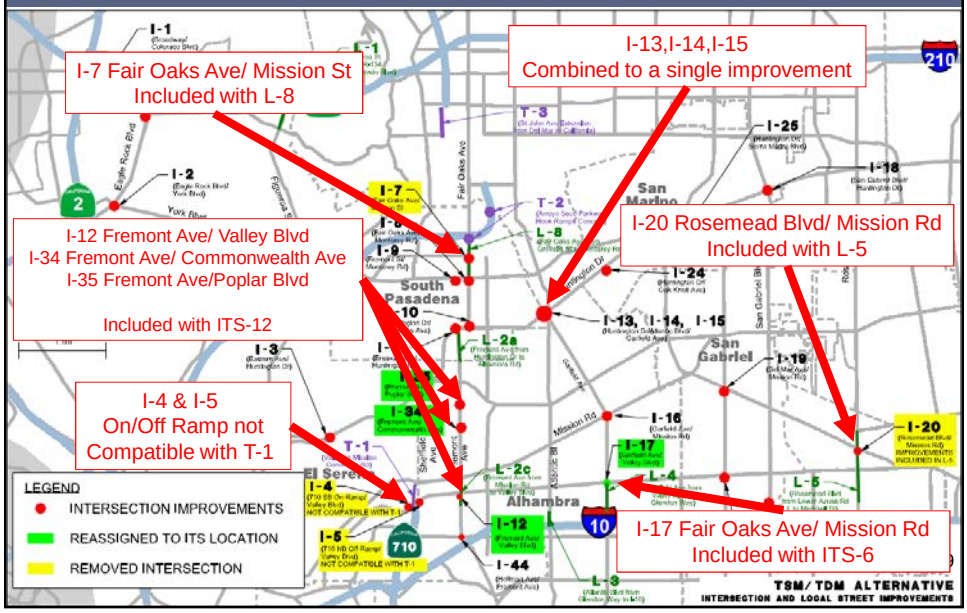
TSM/TDM Alternative



Freeway Tunnel Update

- Added right turn lane on NB SR 710 off-ramp to Valley Blvd
- Refined geometrics of north portal area
  - Union Avenue and Colorado Boulevard bridges will remain and not be impacted
- Refined St John Ave alignment for Single Bore option

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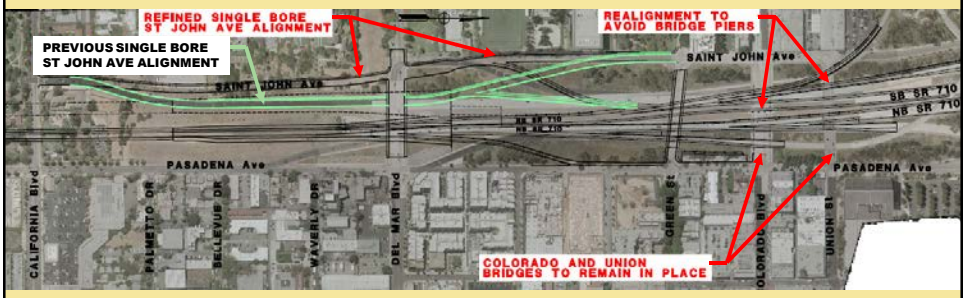
Freeway Tunnel Update



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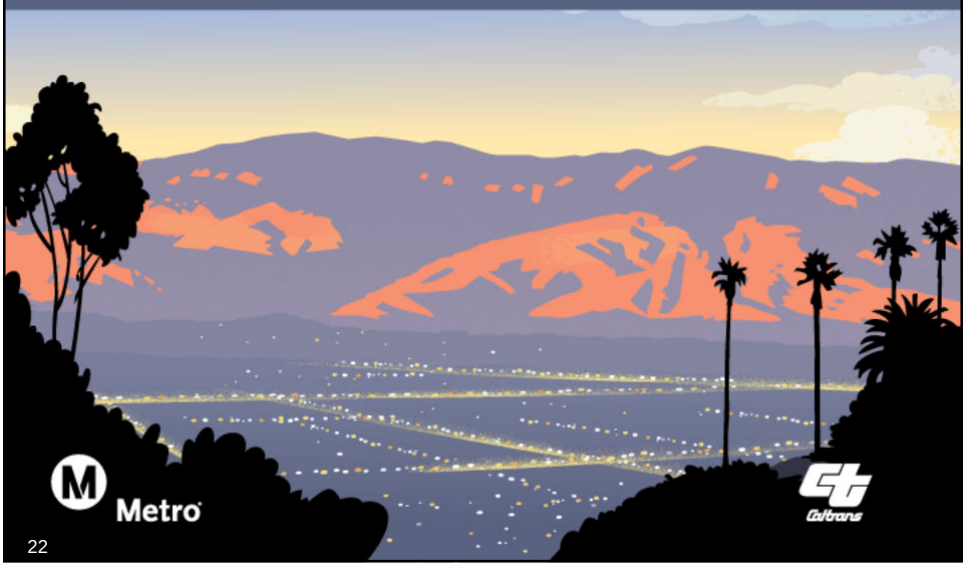
Environmental Study Update



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Environmental Technical Studies

Draft Review by CT/Metro	Revision by CH2M HILL	Final Review by CT/Metro	Ready for Draft EIR/EIS
Air Quality	Energy	Hazardous Materials	Paleontological
Cumulative Impacts	Visual Impact Assessment	Wetland Resources	Drainage
	Noise	Biological Resources	Location Hydraulics
	Vibration	Relocation Impacts	Floodplain
	Community Impact	Archaeological Survey	Geologic Hazards
	Economic and Fiscal Impacts	Water Quality	
	Historic Property Survey Report		
	Section 4(f)		
	Health Risk Assessment		
	Traffic		

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Technical Studies Update
Air Quality

- Analyzes construction and operational emissions for Existing (2012), Opening Year (2020/2025), and Design Year (2035)
  - Criteria Pollutants (carbon monoxide, particulate matter, ozone, reactive organic gases, and nitrogen oxide)
  - Considers both Federal and State air quality standards
  - Greenhouse Gas Emissions

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Technical Studies Update
Air Quality

- The South Coast Air Basin (SCAB) is a nonattainment area for the following criteria pollutants standards:
  - Ozone (O_3) for Federal and State
  - PM_{10} for State
  - $PM_{2.5}$ for Federal and State
  - Nitrogen Dioxide (NO_2) for State
  - Lead (Pb) for Federal and State (LA County only)

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Technical Studies Update
Air Quality

- Analyzes conformity with the State Implementation Plan for air quality
  - Regional emissions analysis
- Analyzes effects on sensitive receptors
  - Localized PM and CO emissions analysis
- Analyzes Greenhouse Gas emissions
  - CO_2 emissions

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Technical Studies Update
Health Risk Assessment

- Defines emission sources (vehicle exhaust emissions from highways, arterials, and freeway tunnel ventilation towers)
- Quantifies mobile source air toxic emissions (MSATs) from each source, 8 types of MSAT emissions
    1) Benzene
    2) Acrolein
    3) Acetaldehyde
    4) Formaldehyde
    5) 1-3 Butadiene
    6) Naphthalene
    7) Polycyclic organic matter (POM)
    8) Diesel particulate Matter (DPM)

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Technical Studies Update
Health Risk Assessment

- Uses dispersion model (AERMOD) to estimate ground level concentrations at sensitive receptors; types of receptors include:
    - Residential and sensitive receptors
    - Worker receptors
    - Student receptors

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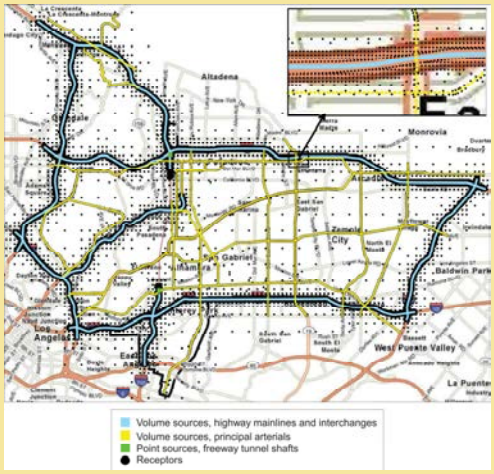
Technical Studies Update
Health Risk Assessment

- AERMOD Sources and Receptor Setup



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Technical Studies Update
Health Risk Assessment

- Exposure assessment of potential health effects using the Hotspots Analysis Reporting Program developed for each type of receptor:
  - Residential and sensitive receptors:
  - 70-year continual exposure duration
  - Worker receptors: 40-year, 5-day-per-week, 8-hour-per-day exposure duration
  - Student receptors: adjusted 9-year exposure duration

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Technical Studies Update
Visual Impact Assessment

- Six step process to analyze visual impacts:
  1) Define project setting and viewshed
  2) Identify Key Views (i.e., representative views)
  3) Analyze existing visual resources and viewer response
  4) Depict visual appearance of project alternatives (i.e., visual simulations)
  5) Assess the visual impacts of project alternatives
  6) Identify methods to mitigate adverse visual impacts

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Technical Studies Update
Visual Impact Assessment

- ***Preparation of the Visual Simulations - Example***
  - Photograph of Existing Condition

Northbound I-215 looking toward the Cajalco/Ramona Exit

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Technical Studies Update
Visual Impact Assessment

- ***Simulation Rendering - Example***
  - Completion of Key View Simulation

Mid County Parkway and the I-215 interchange

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CEQA/NEPA Process

- Technical Study review/approval (in progress)
- Draft EIR/EIS review/approval (in progress)
- Draft EIR/EIS circulated for public review
- Public Hearings held during public review period
- Public Participation-provide comments during public review period and at Public Hearings

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CEQA/NEPA Process

- Final EIR/EIS
  - Response to Comments
  - Identification of Preferred Alternative
- Final EIR/EIS distributed
- Notice of Determination (CEQA)
- Record of Decision (NEPA)

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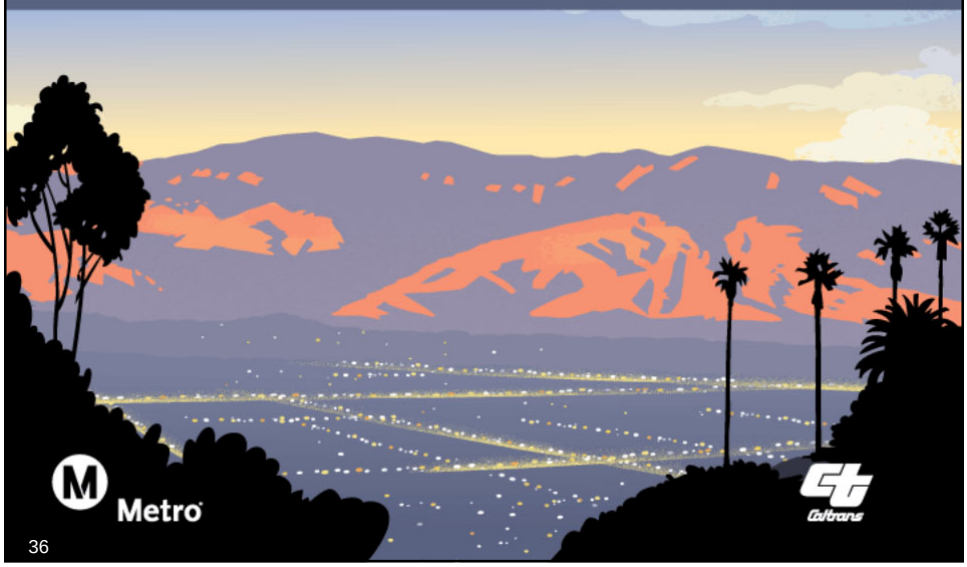
Cost-Benefit Analysis (CBA) Methodology



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Cost-Benefit Discussion Topics

- Background on CBA
- CBA process for SR 710 North Study
- Approach
- Draft results format
- CBA Status

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General Overview of Cost-Benefit Analysis

- A CBA is
  - A method of economic appraisal to determine value of a project
  - A way of comparing the costs of a project with the benefits that it will deliver
- CBA is used by governments and funding agencies to
  - Provide indicators and metrics of value for money
  - Aid the process of screening and comparisons across modes and policy mixes
  - Help refine a large number of options to a manageable short-list
  - Help refine design

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Cost-Benefit Analysis: Opportunities and Challenges

- Opportunities:
  - Allows different alternatives to be compared
  - Assesses impacts in a commonly understood (monetary) unit
  - Provides several monetized measures of value
  - Assesses impacts arising at different times in a comparable way (through the use of a discount rate)
- Challenges:
  - Requires a direct comparison of benefits to costs
  - Reduces impacts to dollar units only
  - Does not address impacts that cannot be monetized reasonably
  - May not be sufficient or ideal for comparing very different options

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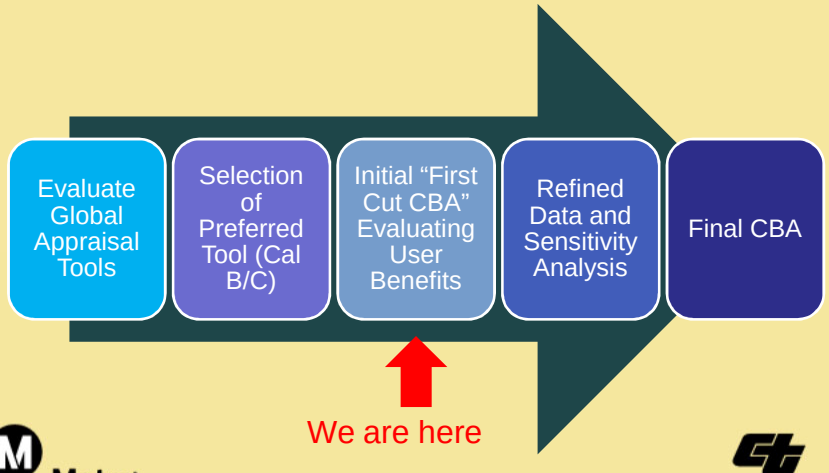
Process for CBA Analysis of SR 710 Alternatives



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Cal-B/C CBA Tool

- California Life-Cycle Benefit/Cost Analysis Model (Cal-B/C)
- Excel application developed for Caltrans
- Simple practical method for preparing economic appraisal of prospective highway and transit improvement projects
- Covers auto, truck, rail, light rail, bus

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Cal-B/C CBA Tool (continued)

- Advantages
  - Multimodal
  - Specific to the region
  - Well-documented and easy to use

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Cal-B/C CBA Tool (continued)

- Limitations
  - Not all user and non-user benefits are measured or monetized:
    - Reliability
    - Resiliency
    - Economic productivity
    - Health

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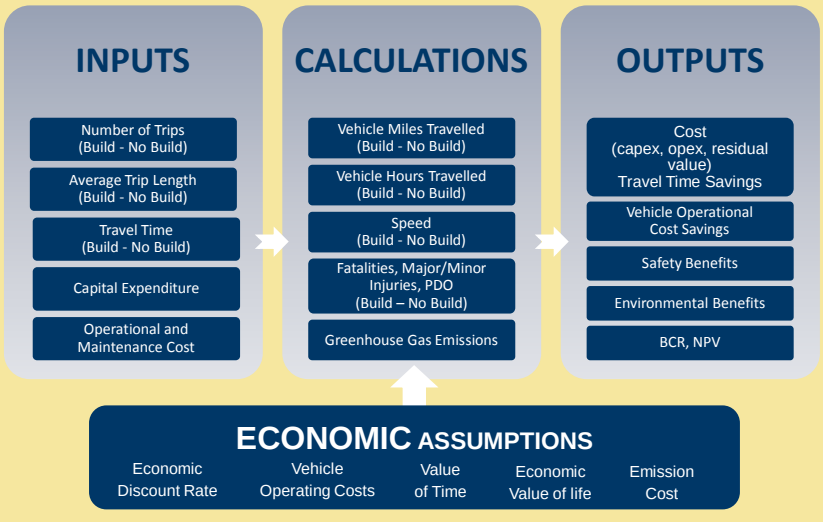
Approach to Calculating Cost-Benefit Ratios



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Approach to Calculating Cost-Benefit Ratios

- Time Saving Benefits:
  - Change in the time a user spends travelling from an origin to a destination
  - Using the 2025 and 2035 projected trips from the regional demand model, we estimate future annual trips, for the No Build and SR 710 North Study alternatives within a “Capture Area”
  - Annual trips are multiplied by the travel time for No Build and each alternative (also taken from regional demand model)
  - Time savings are difference between alternative and No Build
  - Annual travel time savings are multiplied by the value of time and average vehicle occupancy for each mode to convert travel time savings into dollar values

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Approach to Calculating Cost-Benefit Ratios

- Vehicle Operating Cost
  - Change in costs associated with operating the vehicle over the road segments involved in the SR 710 North Study capture area, compared with the no build.
  - Captures fuel consumption and non-fuel operating costs (e.g. vehicle wear and tear)
- Safety Benefits
  - Detailed safety analysis predicted volume and type of crashes for different alternatives
  - These are monetized using the economic cost of a fatality
- Emissions
  - Emissions of pollutants vary by vehicle hours travelled and speed of travel
  - Volumes of gases emitted are estimated for each alternative and incremental difference to No Build monetized

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Approach to Calculating Cost-Benefit Ratios

- Costs
  - Capital expenditure
  - Right-of-way cost
  - Operating and maintenance expenditure
- Residual Value
  - A residual value has been included at the end of the 20-year appraisal period for the tunnel alternatives as they are assumed to have a 100-year asset life
  - This includes the tunnel elements of the LRT alternative
- Tolls/Fares
  - Tolls/fares have not been taken into account because it is a transfer of cost/benefit as per USDOT guidance

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CBA Draft Results Format

Discounted, Present Value	Alternative
Capital Cost (millions)	$x
Operational Cost (millions)	$y
Residual Value (millions)	$z
Net Project Cost (millions)	$x+y-z
Time saving benefits (millions)	$a
Vehicle operating cost savings (millions)	$b
Accident savings (millions)	$c
Change in emissions (millions)	$d
Total Benefit	a+b+c+d
Net Present Value (millions)	$(a+b+c+d)-(x+y-z)
Benefit to Cost Ratio	$\frac{a+b+c+d}{x+y-z}$

Notes:
(1) Values are in 2012 prices, adjusted to start of the construction period

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CBA Status

- Conduct refined technical analysis
- Review default parameters in Cal-B/C (e.g., annualization factors)
- Sensitivity testing
- Documentation

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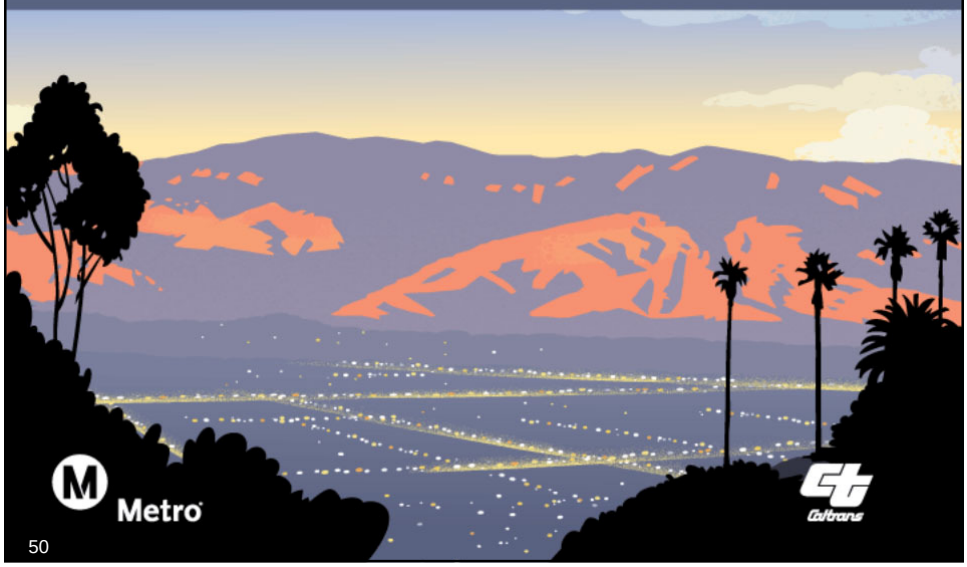
Next Steps



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Next Steps

- Finalize technical studies
- Finalize preliminary engineering and reports
- Continue preparation of Draft Environmental Document
- Expected release of Draft EIR/EIS – February 2015

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Tentative Meeting Dates for TAC/SOAC

2014 TAC/SOAC Meeting Schedule:

- July 9/10
- October 8/9

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Open Discussion
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