

Table of Contents

Executive Summary	ES-1
ES.1 Introduction.....	ES-1
ES.2 Purpose and Need	ES-3
ES.3 Alternatives Considered.....	ES-7
ES.4 Comparison of Alternatives	ES-19
ES.5 Issues to Be Resolved and Areas of Controversy	ES-22
ES.6 Next Steps	ES-30
ES.7 Summary of Environmental Consequences and Mitigation Measures	ES-30
Chapter 1 Purpose and Need	1-1
1.1 History and Background.....	1-1
1.1.1 San Fernando Valley North-South Transit Corridor Regional Significant Transportation Investment Study (2003)	1-1
1.1.2 LADOT East San Fernando Valley North/South Transit Corridors Bus Speed Improvement Project (2008).....	1-1
1.1.3 East San Fernando Valley Transit Corridor Alternative Analysis (2013)	1-2
1.2 Description of Project Area/Corridor	1-3
1.2.1 Study Area Demographics	1-5
1.2.2 Demographic Estimates	1-6
1.2.3 Census Socioeconomic Variables	1-10
1.2.4 Employment Distribution	1-13
1.2.5 Transit Supportive Land Use	1-15
1.3 Transportation System and Performance.....	1-16
1.3.1 Existing Trip Patterns.....	1-17
1.3.2 Transit Passenger Activity.....	1-19
1.3.3 Bus Crowding Issues.....	1-21
1.3.4 Passenger Loads	1-22
1.3.5 Congestion Effects on Bus Speeds	1-24
1.3.6 Transit On-Time Performance and Reliability	1-28
1.4 Project Purpose, Need, and Objectives	1-31
1.4.1 Project Purpose.....	1-31
1.4.2 Project Need.....	1-31
1.4.3 Project Objectives	1-35
Chapter 2 Project Description/Alternatives Considered.....	2-1
2.1 Alternatives Screening and Selection Process.....	2-1
2.1.1 What Project Alternative Modes/Routes Are Included in This Analysis?	2-3
2.2 Alternatives	2-4
2.2.1 No-Build Alternative.....	2-4
2.2.2 TSM Alternative.....	2-4
2.2.3 BRT Alternatives.....	2-8
2.2.4 Rail Alternatives.....	2-20
2.2.5 Operations Summary	2-47
2.3 Alternatives Considered and Eliminated from Further Review.....	2-49
2.4 Construction Activities.....	2-49
2.5 Anticipated Permits and Approvals	2-51
2.6 Approach to Cumulative Impacts Analysis	2-53

Chapter 3	Transportation, Transit, Circulation, and Parking	3-1
3.1	Regulatory Framework and Methodology	3-1
3.1.1	Regulatory Framework	3-1
3.1.2	Methodology	3-2
3.1.3	Significance Thresholds	3-6
3.2	Affected Environment and Existing Conditions	3-9
3.2.1	Transit	3-9
3.2.2	Highway and Roads	3-9
3.2.3	Parking	3-13
3.2.4	Pedestrian Facilities	3-14
3.2.5	Bicycle Facilities	3-14
3.3	Environmental Consequences, Impacts, and Mitigation	3-17
3.3.1	Impact Overview	3-17
3.3.2	No-Build Alternative	3-28
3.3.3	TSM Alternative	3-31
3.3.4	BRT Alternatives (Alternatives 1 and 2)	3-36
3.3.5	LRT Alternatives (Alternatives 3 and 4)	3-61
Chapter 4	Affected Environment and Environmental Consequences	
4.1	Land Use	4.1-1
4.1.1	Regulatory Framework and Methodology	4.1-1
4.1.2	Affected Environment/Existing Conditions	4.1-7
4.1.3	Environmental Consequences, Impacts, and Mitigation Measures	4.1-18
4.2	Real Estate and Acquisitions	4.2-1
4.2.1	Regulatory Framework and Methodology	4.2-1
4.2.2	Affected Environment/Existing Conditions	4.2-3
4.2.3	Environmental Consequences, Impacts, and Mitigation Measures	4.2-3
4.3	Economic and Fiscal Impacts	4.3-1
4.3.1	Regulatory Framework and Methodology	4.3-1
4.3.2	Affected Environment/Existing Conditions	4.3-3
4.3.3	Environmental Consequences, Impacts, and Mitigation Measures	4.3-19
4.4	Communities and Neighborhoods	4.4-1
4.4.1	Regulatory Framework and Methodology	4.4-1
4.4.2	Affected Environment/Existing Conditions	4.4-6
4.4.3	Environmental Consequences, Impacts, and Mitigation Measures	4.4-27
4.5	Visual Quality and Aesthetics	4.5-1
4.5.1	Regulatory Framework and Methodology	4.5-1
4.5.2	Affected Environment/Existing Conditions	4.5-6
4.5.3	Environmental Consequences, Impacts, and Mitigation Measures	4.5-20
4.6	Air Quality	4.6-1
4.6.1	Regulatory Framework and Methodology	4.6-1
4.6.2	Affected Environment/Existing Conditions	4.6-6
4.6.3	Environmental Consequences, Impacts, and Mitigation Measures	4.6-13

4.7	Climate Change	4.7-1
4.7.1	Regulatory Framework and Methodology.....	4.7-1
4.7.2	Affected Environment/Existing Conditions	4.7-3
4.7.3	Environmental Consequences, Impacts, and Mitigation Measures	4.7-6
4.8	Noise and Vibration	4.8-1
4.8.1	Regulatory Framework and Methodology.....	4.8-1
4.8.2	Affected Environment/Existing Conditions	4.8-6
4.8.3	Environmental Consequences, Impacts, and Mitigation Measures	4.8-10
4.9	Geology, Soils, and Seismicity.....	4.9-1
4.9.1	Regulatory Framework and Methodology.....	4.9-1
4.9.2	Affected Environment/Existing Conditions	4.9-3
4.9.3	Environmental Consequences, Impacts, and Mitigation Measures	4.9-13
4.10	Hazardous Waste and Materials	4.10-1
4.10.1	Regulatory Framework and Methodology.....	4.10-1
4.10.2	Affected Environment/Existing Conditions	4.10-4
4.10.3	Environmental Consequences, Impacts, and Mitigation Measures	4.10-8
4.11	Energy	4.11-1
4.11.1	Regulatory Framework and Methodology.....	4.11-1
4.11.2	Affected Environment/Existing Conditions	4.11-5
4.11.3	Environmental Consequences, Impacts, and Mitigation Measures	4.11-8
4.12	Ecosystems and Biological Resources.....	4.12-1
4.12.1	Regulatory Framework and Methodology.....	4.12-1
4.12.2	Affected Environment/Existing Conditions	4.12-6
4.12.3	Environmental Consequences, Impacts, and Mitigation Measures	4.12-10
4.13	Water Resources/Hydrology and Water Quality.....	4.13-1
4.13.1	Regulatory Framework and Methodology.....	4.13-1
4.13.2	Affected Environment/Existing Conditions	4.13-4
4.13.3	Environmental Consequences, Impacts, and Mitigation Measures	4.13-14
4.14	Safety and Security	4.14-1
4.14.1	Regulatory Framework and Methodology.....	4.14-1
4.14.2	Affected Environment/Existing Conditions	4.14-3
4.14.3	Environmental Consequences, Impacts, and Mitigation Measures	4.14-10
4.15	Parklands and Community Facilities.....	4.15-1
4.15.1	Regulatory Framework and Methodology.....	4.15-1
4.15.2	Affected Environment/Existing Conditions	4.15-4
4.15.3	Environmental Consequences, Impacts, and Mitigation Measures	4.15-14
4.16	Historic, Archaeological, and Paleontological Resources.....	4.16-1
4.16.1	Regulatory Framework and Methodology.....	4.16-1
4.16.2	Affected Environment/Existing Conditions	4.16-8
4.16.3	Environmental Consequences, Impacts, and Mitigation Measures	4.16-31

4.17	Environmental Justice.....	4.17-1
4.17.1	Regulatory Framework and Methodology.....	4.17-1
4.17.2	Affected Environment/Existing Conditions	4.17-2
4.17.3	Environmental Consequences, Impacts, and Mitigation Measures	4.17-10
4.18	Growth-Inducing Impacts	4.18-1
4.18.1	Regulatory Framework and Methodology.....	4.18-1
4.18.2	Affected Environment/Existing Conditions	4.18-3
4.18.3	Environmental Consequences, Impacts, and Mitigation Measures	4.18-5
4.19	Construction Impacts	4.19-1
4.19.1	Regulatory Framework and Methodology.....	4.19-1
4.19.2	Description of Construction Methods, Techniques, and Equipment.....	4.19-1
4.19.3	Environmental Consequences, Impacts, and Mitigation Measures	4.19-39
4.20	Irreversible and Irretrievable Commitments of Resources.....	4.20-1
Chapter 5	Section 4(f) Evaluation	5-1
5.1	Regulatory Framework and Methodology	5-1
5.1.1	Regulatory Framework.....	5-1
5.1.2	Methodology	5-4
5.2	Affected Environment/Existing Conditions	5-5
5.2.1	Parks, Recreation Areas, and Wildlife and Waterfowl Refuges	5-5
5.2.2	Historic Sites.....	5-12
5.3	Environmental Consequences.....	5-15
5.3.1	No-Build Alternative.....	5-15
5.3.2	TSM Alternative.....	5-16
5.3.3	Build Alternatives 1, 2, 3, and 4.....	5-17
5.4	Maintenance and Storage Facility Sites.....	5-19
5.4.1	MSF Site-Options A, B, and C.....	5-19
5.5	Agency Coordination and Consultation	5-20
Chapter 6	Evaluation of Alternatives	6-1
6.1	Introduction.....	6-1
6.2	Capital Costs and Funding	6-1
6.2.1	Capital Costs	6-1
6.2.2	Operating and Maintenance Costs	6-4
6.2.3	Capital Funding Sources.....	6-4
6.3	Comparison of Alternatives.....	6-8
6.3.1	Evaluation Methodology.....	6-8
6.3.2	Evaluation Results	6-8
6.4	Environmentally Superior Alternative	6-12
6.5	Alternatives Considered But Eliminated	6-12
6.6	Selection of a Locally Preferred Alternative.....	6-14
6.6.1	BRT Alternatives.....	6-14
6.6.2	Rail Alternatives.....	6-14
Chapter 7	Public and Agency Outreach.....	7-1
7.1	Introduction and Summary of Outreach Efforts.....	7-1
7.2	Background.....	7-1
7.3	Public Participation Plan	7-1
7.4	Government and Other Agency Consultation.....	7-2

7.4.1	Section 6002 of SAFETEA-LU	7-2
7.4.2	Section 106 Consultation	7-4
7.4.3	Tribal Coordination	7-4
7.5	Community Outreach	7-5
7.5.1	Alternatives Analysis Phase	7-5
7.5.2	Draft EIS/EIR Phase	7-6
7.5.3	Post-Scoping	7-6
7.6	Public Hearings.....	7-7
7.7	Accommodations for Minority, Low-Income, and Persons with Disabilities	7-8

List of Appendices

Appendix A	List of Acronyms and Abbreviations
Appendix B	List of Preparers
Appendix C	List of Draft EIS/EIR Recipients
Appendix D	References
Appendix E	Purpose and Need Report
Appendix F	Alternatives Analysis Report
Appendix G	Transportation Impacts Report
Appendix H	Land Use Impacts Report
Appendix I	Real Estate and Acquisitions
Appendix J	Community and Neighborhoods Impacts Report
Appendix K	Visual and Aesthetics Impacts Report
Appendix L	Air Quality Technical Report
Appendix M	Noise and Vibration Impacts Report
Appendix N	Ecosystems and Biological Resources Impacts Report
Appendix O	Geotechnical Report
Appendix P	Hazardous Materials Technical Report
Appendix Q	Water Resources Technical Report
Appendix R	Energy Technical Report
Appendix S	Cultural Resources Impacts Report
Appendix T	Parklands and Community Facilities Impacts Report
Appendix U	Section 4(f) Report
Appendix V	Economic and Fiscal Impacts Report
Appendix W	Safety and Security Impact Report
Appendix X	Construction Methods and Impacts Report
Appendix Y	Growth-Inducing Impacts
Appendix Z	Cumulative Impacts Report
Appendix AA	Environmental Justice Impacts Report
Appendix BB	Climate Change Technical Report
Appendix CC	Scoping Outreach Documentation Report
Appendix DD	Agency Coordination and Public Involvement
Appendix EE	Tree Inventory Report
Appendix FF	Operating and Maintenance Costs Report
Appendix GG	Detailed Capital Costs Report
Appendix HH	Preliminary Engineering Drawings
Appendix II	Historic Property & Cultural Resources Report - SHPO
Consultation	

List of Tables

ES-1	Summary of Environmental Impacts	ES-31
1-1	Population, Households, and Employment (2010).....	1-10
1-2	Transit-Dependent Populations (2010).....	1-11
1-3	Distribution of Employment by Sector (2010)	1-14
1-4	Employment by Sector as Percent of Study Area (2010)	1-14
1-5	Job-Generating and Residential Land Uses by Density (2010)	1-15
1-6	Loading Standards with Approximate Passengers per Seat Equivalence.....	1-21
2-1	Alternatives Comparison: Bus and Rail Headways during Peak and Off-Peak Hours	2-47
2-2	Anticipated Permits and Approvals	2-52
2-3	Cumulative Projects	2-54
3-1	Level of Service Definitions – HCM Signalized Intersection Analysis	3-3
3-2	Significance Thresholds	3-7
3-3	Existing Intersection Operations at LOS E or F	3-11
3-4	Existing Pedestrian Activity at Proposed Station Locations	3-15
3-5	Build Alternatives Attributes	3-18
3-6	Potential Traffic Impacts by Alternative	3-21
3-7	Project Performance – VMT and VHT by Alternative (Year 2040).....	3-22
3-8	Project Performance – Average Traffic Speeds by Alternative (Year 2040)	3-22
3-9	Transit Performance by Alternative (Year 2040).....	3-24
3-10	Van Nuys Boulevard Parking Impacts by Alternative	3-26
3-11	Future (2040) Baseline Conditions – Intersections Operating at LOS E or F.....	3-29
3-12	TSM Alternative – Intersections at LOS E or F in 2040	3-35
3-13	Alternative 1 – Intersections at LOS E or F and/or Significantly Affected in 2040	3-39
3-14	Alternative 1 – Parallel Corridors – Intersections at LOS E or F and/or Significantly Affected in 2040	3-42
3-15	Alternative 2 – Intersections at LOS E or F and/or Significantly Affected in 2040	3-51
3-16	Alternative 2 – Parallel Corridors – Intersections at LOS E or F and/or Significantly Affected in 2040	3-56
3-17	Alternative 3 – Intersections at LOS E or F and/or Significantly Affected in 2040	3-64
3-18	Alternative 3 – Parallel Corridors - Intersections Operating at LOS E or F and/or Significantly Affected under Existing with Project Conditions	3-66
3-19	Alternative 3 – Intersections at LOS E or F and/or Significantly Affected in 2040	3-72
3-20	Alternative 3 – Parallel Corridors – Intersections at LOS E or F and/or Significantly Affected in 2040	3-78
3-21	Alternative 4 – Intersections at LOS E or F and/or Significantly Affected in 2040	3-84
3-22	Alternative 4 – Parallel Corridors – Intersections at LOS E or F and/or Significantly Affected in 2040	3-88
4.2-1	Typical Causes of Displacement during Construction	4.2-2
4.2-2	Alternative 3 Property Acquisitions – Guideway and TPSS.....	4.2-7
4.2-3	MSF Option A ROW Acquisitions	4.2-18
4.2-4	Alternative 3 MSF Option A ROW Acquisitions for Access	4.2-26
4.2-5	MSF Option B ROW Acquisitions	4.2-26
4.2-6	MSF Option C ROW Acquisitions	4.2-34
4.2-7	Summary of Acquisitions by Alternative.....	4.2-41

4.2-8	Alternative 4 Property Acquisitions – Guideway, Stations, and TPSS	4.2-44
4.2-9	Alternative 4 MSF Option A – ROW Acquisitions for Access	4.2-59
4.2-10	Alternative 4 MSF Option B – ROW Acquisitions for Access.....	4.2-60
4.2-11	Alternative 4 MSF Option C – ROW Acquisitions for Access	4.2-61
4.3-1	Population, Households, and Employment (2010).....	4.3-8
4.3-2	Transit-Dependent Populations (2010).....	4.3-9
4.3-3	Distribution of Employment by Sector (2010)	4.3-12
4.3-4	Employment by Sector as Percent of Study Area (2010)	4.3-12
4.3-5	Los Angeles County Annual Average Wages (2010).....	4.3-14
4.3-6	Total Payroll Distribution (2010).....	4.3-14
4.3-7	Property Valuation (2014).....	4.3-15
4.3-8	Job-Generating and Residential Land Uses by Density (2010)	4.3-19
4.3-9	Alternative 3 – Summary of Assessed Valuation and Parcel Acquisition Statistics	4.3-25
4.3-10	Alternative 3 – Summary of Total Parcel Square Footage and Estimated Acquired Square Footage.....	4.3-25
4.3-11	Alternative 3 – Summary of Estimated Employment and Fiscal Impacts	4.3-26
4.3-12	Alternative 4 – Summary of Assessed Valuation and Parcel Acquisition Statistics	4.3-31
4.3-13	Alternative 4 – Summary of Total Parcel Square Footage and Estimated Acquired Square Footage.....	4.3-31
4.3-14	Alternative 4 – Summary of Estimated Employment and Fiscal Impacts	4.3-32
4.3-15	Summary of Potential Economic and Fiscal Impacts.....	4.3-35
4.4-1	Population Change (2000 to 2010).....	4.4-18
4.4-2	Racial and Ethnic Characteristics (2000)	4.4-18
4.4-3	Racial and Ethnic Characteristics (2010)	4.4-19
4.4-4	Age Characteristics (2000)	4.4-19
4.4-5	Age Characteristics (2010)	4.4-19
4.4-6	Sex Characteristics (2000).....	4.4-20
4.4-7	Sex Characteristics (2010).....	4.4-20
4.4-8	Median Household Income (2000)	4.4-20
4.4-9	Median Household Income (2010)	4.4-20
4.4-10	Housing Units (2000)	4.4-21
4.4-11	Housing Units (2010)	4.4-21
4.4-12	Household Size (2000).....	4.4-21
4.4-13	Household Size (2010).....	4.4-22
4.4-14	Mode of Transportation to Work (2000)	4.4-22
4.4-15	Mode of Transportation to Work (2010)	4.4-23
4.4-16	Transportation Dependency by Age (2000)	4.4-23
4.4-17	Transportation Dependency by Age (2010)	4.4-24
4.4-18	Transportation Dependency by Vehicle Ownership (2000)	4.4-24
4.4-19	Transportation Dependency by Vehicle Ownership (2010)	4.4-24
4.5-1	Visual Quality Numerical Ratings	4.5-2
4.6-1	Air Quality Data from Burbank-West Palm Avenue Station (CARB 70069)	4.6-11
4.6-2	Baseline Conditions (Year 2013) at Congested Intersections— Local Area Carbon Monoxide Concentrations	4.6-12
4.6-3	No-Build Alternative Regional Criteria Pollutant Emissions (2012 and 2040)	4.6-14
4.6-4	No-Build Alternative MSAT Emissions	4.6-15
4.6-5	TSM Alternative Regional Criteria Pollutant Emissions.....	4.6-17
4.6-6	TSM Alternative MSAT Emissions	4.6-18

4.6-7 Alternative 1 – Estimated Worst-case Regional Construction Mass Emissions (pounds per day)..... 4.6-19

4.6-8 Alternative 1 – Estimated Maximum Localized Construction Mass Emissions (pounds per day)..... 4.6-20

4.6-9 Alternative 1 – Regional Criteria Pollutant Emissions 4.6-21

4.6-10 Alternative 1 – MSAT Emissions 4.6-23

4.6-11 Alternative 1 – Estimated Mitigated Maximum Localized Construction Mass Emissions (pounds per day)..... 4.6-25

4.6-12 Alternative 2 – Estimated Worst-case Regional Construction Mass Emissions (pounds per day)..... 4.6-27

4.6-13 Alternative 2 – Estimated Maximum Localized Construction Mass Emissions (pounds per day)..... 4.6-27

4.6-14 Alternative 2 – Regional Criteria Pollutant Emissions 4.6-28

4.6-15 Alternative 2 – MSAT Emissions 4.6-30

4.6-16 Alternative 2 – Estimated Mitigated Maximum Localized Construction Mass Emissions (pounds per day)..... 4.6-30

4.6-17 Alternative 3 – Estimated Worst-case Regional Construction Mass Emissions (pounds per day)..... 4.6-32

4.6-18 Alternative 3 – Estimated Maximum Localized Construction Mass Emissions (pounds per day)..... 4.6-33

4.6-19 Alternative 3 – Regional Criteria Pollutant Emissions (2012)..... 4.6-34

4.6-20 Alternative 3 – Regional Criteria Pollutant Emissions (2040)..... 4.6-34

4.6-21 Alternative 3 – MSAT Emissions (2012)..... 4.6-36

4.6-22 Alternative 3 – MSAT Emissions (2040)..... 4.6-36

4.6-23 Alternative 3 – Estimated Mitigated Worst-Case Regional Construction Mass Emissions (pounds per day)..... 4.6-37

4.6-24 Alternative 3 – Estimated Mitigated Maximum Localized Construction Mass Emissions (pounds per day)..... 4.6-38

4.6-25 Alternative 4 – Estimated Worst-case Regional Construction Mass Emissions (pounds per day)..... 4.6-39

4.6-26 Alternative 4 – Estimated Maximum Localized Construction Mass Emissions (pounds per day)..... 4.6-40

4.6-27 Alternative 4 – Regional Criteria Pollutant Emissions 4.6-41

4.6-28 Alternative 4 – MSAT Emissions 4.6-42

4.6-29 Alternative 4 – Estimated Mitigated Worst-case Regional Construction Mass Emissions (pounds per day)..... 4.6-44

4.6-30 Alternative 4 – Estimated Maximum Localized Construction Mass Emissions (pounds per day)..... 4.6-45

4.7-1 Baseline Conditions – GHG Emissions 4.7-6

4.7-2 TSM Alternative – GHG Emissions in Year 2040 4.7-8

4.7-3 Alternative 1 – GHG Emissions in Year 2040..... 4.7-10

4.7-4 Alternative 2 – GHG Emissions in Year 2040..... 4.7-13

4.7-5 Alternative 3 – GHG Emissions in Year 2012..... 4.7-15

4.7-6 Alternative 3 – GHG Emissions in Year 2040..... 4.7-16

4.7-7 Alternative 4 – GHG Emissions in Year 2040..... 4.7-19

4.8-1 FTA Vibration Impact Thresholds 4.8-5

4.8-2 Construction Vibration Damage Criteria 4.8-5

4.8-3 Summary of Short-Term Noise Measurement Results 4.8-7

4.8-4 Summary of Long-Term Noise Measurement Results..... 4.8-8

4.9 1 Major Fault Characterization in the Project Vicinity..... 4.9-7

4.11-1 Existing (2012) and Future (2040) Baseline Operational Energy Consumption – Bus Lines 233 and 761..... 4.11-8

4.11-2 TSM Alternative – Operational Energy Consumption 4.11-10

4.11-3 Alternative 1 – Construction Energy Consumption 4.11-13

4.11-4 Alternative 1 – Operational Energy Consumption..... 4.11-14

4.11-5 Alternative 2 – Construction Energy Consumption 4.11-16

4.11-6 Alternative 2 – Operational Energy Consumption..... 4.11-17

4.11-7 Alternative 3 – Construction Energy Consumption 4.11-18

4.11-8 Alternative 3 – Operational Energy Consumption (2012) 4.11-19

4.11-9 Alternative 3 – Operational Energy Consumption (2040) 4.11-20

4.11-10 Alternative 4 – Construction Energy Consumption 4.11-21

4.11-11 Alternative 4 – Operational Energy Consumption..... 4.11-22

4.14-1 Vehicle Collisions within or Adjacent to Proposed Alignment, 2010 and 2011 4.14-5

4.14-2 Los Angeles County Sheriff’s Department, Transit Services Bureau, Incidents Reported for Metro Train/Bus Facilities and Rights-of-Way 4.14-8

4.16-1 Previously Recorded Individual Historic Properties 4.16-13

4.16-2 SurveyLA Findings within the APE 4.16-14

4.16-3 Known Fossils in Quaternary Older Alluvium 4.16-29

4.16-4 Paleontological Sensitivity Rankings 4.16-31

4.16-5 FTA Construction Vibration Damage Criteria..... 4.16-40

4.16-6 Construction Vibration Predictions for General Construction Equipment..... 4.16-41

4.16-7 Construction Vibration Predictions for Pile Drivers 4.16-79

4.18-1 Regional Population, Housing, and Employment Growth..... 4.18-3

4.18-2 Project Study Area – Cities of Los Angeles and San Fernando Population Growth 2008–2035..... 4.18-4

4.18-3 Project Study Area – Cities of Los Angeles and San Fernando Household Growth 2008–2035 4.18-4

4.18-4 Project Study Area – Cities of Los Angeles and San Fernando Employment Growth 2008–2035 4.18-4

4.18-5 Project Study Area – Cities of Los Angeles and San Fernando Housing Type (2011)..... 4.18-5

4.19-1 Summary of Construction Scenarios for Project Alternatives 4.19-3

4.19-2 Summary of Acquisitions for Alternative 3 MSF Options 4.19-11

4.19-3 Summary of Acquisitions for Alternative 4 4.19-16

4.18-4 Alternative 1 – Estimated Worst-case Regional Construction Mass Emissions (pounds per day)..... 4.19-53

4.19-5 Alternative 1 – Estimated Maximum Localized Construction Mass Emissions (pounds per day)..... 4.19-54

4.19-6 Alternative 1 – Estimated Mitigated Maximum Localized Construction Mass Emissions (pounds per day)..... 4.19-55

4.19-7 Alternative 2 – Estimated Worst-case Regional Construction Mass Emissions (pounds per day)..... 4.19-77

4.19-8 Alternative 2 – Estimated Maximum Localized Construction Mass Emissions (pounds per day)..... 4.19-78

4.19-9 Alternative 2 – Estimated Mitigated Maximum Localized Construction Mass Emissions (pounds per day)..... 4.19-79

4.19-10 Alternative 2 – GHG Emissions in Year 2040..... 4.19-79

4.19-11 Alternative 3 – Summary of Estimated Employment and Fiscal Impacts 4.19-88

4.19-12 Alternative 3 – Estimated Worst-Case Regional Construction Mass Emissions (pounds per day)..... 4.19-92

4.19-13	Alternative 3 – Estimated Maximum Localized Construction Mass Emissions (pounds per day).....	4.19-92
4.19-14	Alternative 3 – Estimated Mitigated Worst-Case Regional Construction Mass Emissions (pounds per day).....	4.19-94
4.19-15	Alternative 4 - Summary of Estimated Employment and Fiscal Impacts	4.19-107
5-1	Parks, Recreation Areas, and Wildlife Refuges.....	5-7
6-1	Capital Cost Estimates in 2014 and YOE Dollars (\$ in Millions)	6-2
6-2	Capital Cost Estimates by Alternative	6-3
6-3	O&M Costs by Alternative	6-4
6-4	Alternatives Evaluation Results.....	6-9

List of Figures

ES-1	Existing and Proposed Regional BRT and Rail Lines	ES-2
ES-2	Existing Bus Boarding Distribution for Van Nuys Boulevard Corridor	ES-5
ES-3	TSM Alternative	ES-9
ES-4	Alternative 1 – Curb-running BRT	ES-11
ES-5	Alternative 2 – Median-running BRT	ES-13
ES-6	Alternative 3 – Low-Floor LRT/Tram.....	ES-15
ES-7	Alternative 4 – LRT	ES-18
ES-8	Comparison of Alternatives.....	ES-20
ES-9	Possible California High Speed Rail Planned within the Study Area	ES-24
ES-10	Sepulveda Pass Transit Connection.....	ES-25
1-1	Population Concentrations in Transit Corridor (2010)	1-7
1-2	Households Concentrations in Transit Corridor (2010)	1-8
1-3	Employment Concentrations in Transit Corridor (2010)	1-9
1-4	Transit-Dependent Population (TDP) (2010)	1-12
1-5	Transit-Dependent Population per Acre (2010)	1-13
1-6	Study Area Bicycle Facilities.....	1-18
1-7	Existing Transit Boardings	1-20
1-8	Total Passenger Loading – Van Nuys Boulevard	1-22
1-9	Total Passenger Loading – San Fernando Road	1-23
1-10	Scheduled Runtimes and Speeds – Van Nuys Boulevard – Southbound	1-25
1-11	Scheduled Runtimes and Speeds – Van Nuys Boulevard – Northbound	1-26
1-12	Scheduled Runtimes and Speeds – San Fernando Road – Southbound.....	1-27
1-13	Scheduled Runtimes and Speeds – San Fernando Road – Northbound.....	1-28
1-14	On-Time Performance – Van Nuys Boulevard - Southbound	1-29
1-15	On-Time Performance – Van Nuys Boulevard - Northbound	1-29
1-16	On-Time Performance – San Fernando Road - Southbound.....	1-30
1-17	On-Time Performance – San Fernando Road - Northbound.....	1-30
2-1	Existing Conditions under No-Build Alternative	2-5
2-2	TSM Alternative	2-6
2-3	BRT Alternatives – Alternative 1: Curb-Running BRT	2-9
2-4	BRT Alternatives – Alternative 1: Curb-Running BRT (Typical Curb-Running BRT Station)	2-11
2-5	Example of Metro 60-Foot Articulated Bus	2-12
2-6	BRT Alternatives – Alternative 2: Median-Running BRT	2-15
2-7	BRT Alternatives – Alternative 2: Median-Running BRT (Typical Median-Running BRT Station)	2-17
2-8	Rail Alternatives – Alternative 3: Low-Floor LRT/Tram	2-21
2-9	Examples of Low-Floor LRT/Tram Vehicle Types	2-23
2-10	Rail Alternatives – Alternative 3: Low-Floor LRT/Tram (Typical Low-Floor LRT/Tram Station).....	2-25
2-11	Typical MSF Facility for Tram/LRT.....	2-27
2-12	Locations of Potential MSF Sites along Alignment.....	2-28
2-13	Typical OCS for Tram/LRT	2-29
2-14	Typical TPSS for Tram/LRT.....	2-30
2-15	Rail Alternatives – Alternative 4: LRT.....	2-35
2-16	Example of Metro LRT Vehicle	2-36
2-17	Rail Alternatives – Alternative 4: LRT (Typical At-Grade LRT Station).....	2-39

2-18	Rail Alternatives – Alternative 4: LRT (Typical Below-Grade LRT Station)	2-40
2-19	Rail Alternatives – Alternative 4: LRT (Examples of Typical Cross Sections for Underground Guideway and Portal)	2-41
2-20	Comparison of Alternatives.....	2-48
2-21	Cumulative Projects	2-57
3-1	Existing Transit Boardings	3-10
3-2	Existing Study Area AM and PM LOS Map	3-12
3-3	Illustration of Class I, II, and III Bikeways	3-16
3-4	Future (2040) Baseline Study Area AM and PM LOS Map.....	3-30
3-5	TSM Alternative	3-33
3-6	Alternative 1 – Study Area AM/PM LOS Map	3-41
3-7	Alternative 2 – Study Area AM/PM LOS Map	3-55
3-8	Alternative 3 – Study Area AM/PM LOS Map	3-65
3-9	Alternative 3 – Study Area AM/PM LOS Map	3-76
3-10	Alternative 4 – Study Area AM/PM LOS Map	3-86
4.1-1	Community Plan Area Boundaries.....	4.1-3
4.1-2	Special Districts and Targeted Neighborhood Initiatives.....	4.1-4
4.1-3	General Plan Land Use Map (All Segments)	4.1-5
4.1-4	Map Segment 1	4.1-10
4.1-5	Map Segment 2	4.1-12
4.1-6	Map Segment 3	4.1-13
4.1-7	Map Segment 4	4.1-14
4.1-8	Map Segment 5	4.1-16
4.1-9	Map Segment 6	4.1-17
4.2-1	Build Alternative 3 – Low-Floor LRT/Tram Alternative Acquisitions	4.2-9
4.2-2	MSF Option A Acquisitions	4.2-21
4.2-3	MSF Option B Acquisitions	4.2-29
4.2-4	MSF Option C Acquisitions	4.2-36
4.2-5	Build Alternative 4 –LRT Alternative Acquisitions.....	4.2-48
4.3-1	Population Concentrations in Transit Corridor (2010)	4.3-5
4.3-2	Households Concentrations in Transit Corridor (2010)	4.3-6
4.3-3	Employment Concentrations in Transit Corridor (2010).....	4.3-7
4.3-4	Transit-Dependent Population (TDP)a (2010)	4.3-11
4.3-5	Transit-Dependent Population per Acre (2010)	4.3-11
4.3-6	Assessed Valuation (2014).....	4.3-16
4.3-7	Distribution of Land Use Acres (2014)	4.3-16
4.3-8	Assessed Valuation per Acre (2014).....	4.3-17
4.3-9	Assessed Valuation of Residential Development (2014)	4.3-18
4.4-1	City of Los Angeles Community Planning Areas in the Study Area	4.4-7
4.4-2	Neighborhoods in the Study Area.....	4.4-9
4.4-3	Special Districts, TNIs, and Special Zones in the Study Area	4.4-11
4.4-4	Median Household Income in the Study Area	4.4-25
4.4-5	Transportation Dependency by Age in the Study Area	4.4-26
4.5-1	Landscape Unit Overview	4.5-3
4.5-2	Representative Viewpoint 1	4.5-7
4.5-3	Representative Viewpoint 2	4.5-8

4.5-4	Representative Viewpoint 3	4.5-9
4.5-5	Representative Viewpoint 4	4.5-11
4.5-6	Representative Viewpoint 5	4.5-12
4.5-7	Representative Viewpoint 6	4.5-13
4.5-8	Representative Viewpoint 7	4.5-14
4.5-9	Representative Viewpoint 8	4.5-15
4.5-10	Representative Viewpoint 9	4.5-16
4.5-11	Illustrative View of Curb-Running BRT Alternative.....	4.5-24
4.5-12	Illustrative View of Median-Running BRT Alternative	4.5-29
4.5-13	Illustrative View of Low-Floor LRT/Tram Alternative.....	4.5-33
4.5-14	Example of a Typical Pedestrian Bridge	4.5-33
4.5-15	Example of a Typical MSF	4.5-34
4.5-16	Example of a Typical TPSS	4.5-34
4.5-17	Photograph before Implementation of Alternative 3 at RV-2	4.5-36
4.5-18	Visual Simulation after Implementation of Alternative 3 at RV-2	4.5-36
4.5-19	Photograph before Implementation of Alternative 3 at RV-4	4.5-37
4.5-20	Visual Simulation after Implementation of Alternative 3 at RV-4	4.5-37
4.5-21	Illustrative View of LRT Alternative.....	4.5-43
4.5-22	Photograph before Implementation of Alternative 4 at RV-1	4.5-45
4.5-23	Visual Simulation after Implementation of Alternative 4 at RV-1	4.5-45
4.5-24	Photograph before Implementation of Alternative 4 at RV-3	4.5-46
4.5-25	Visual Simulation after Implementation of Alternative 4 at RV-3	4.5-46
4.5-26	Photograph before Implementation of Alternative 4 at RV-5	4.5-47
4.5-27	Visual Simulation after Implementation of Alternative 4 at RV-5	4.5-47
4.5-28	Photograph before Implementation of Alternative 4 at RV-6	4.5-48
4.5-29	Visual Simulation after Implementation of Alternative 4 at RV-6	4.5-48
4.5-30	Photograph before Implementation of Alternative 4 at RV-9	4.5-49
4.5-31	Visual Simulation after Implementation of Alternative 4 at RV-9	4.5-49
4.8-1	FTA Noise Impact Criteria for Residential Land Uses	4.8-4
4.8-2	Map of Noise and Vibration Measurement Sites.....	4.8-9
4.8-3	Map of Predicted Operational Impacts for Low-Floor LRT/Tram Alternative	4.8-20
4.8-4	Map of Predicted Operational Impacts for LRT Alternative	4.8-27
4.9-1	Fault Map.....	4.9-5
4.9-2	Seismic Hazard Zones.....	4.9-9
4.9-3	Flood Plain Area.....	4.9-10
4.9-4	Inundation Areas	4.9-11
4.10-1	UST and LUSTs	4.10-6
4.10-2	DOGGR Wells	4.10-7
4.11-1	California Energy Consumption Estimates by Source, 2012	4.11-5
4.11-2	California Energy Consumption by End-Use Sector, 2012	4.11-6
4.11-3	Share of Energy Use in South Coast Basin in 2008.....	4.11-7
4.12-1	Locations of Related Projects.....	4.12-15
4.13-1	Watersheds and Subwatersheds within the Project Vicinity	4.13-5
4.13-2	Hydrological Features within the Project Vicinity	4.13-7
4.13 3	FEMA Flood Zones within the Project Vicinity	4.13-11
4.13 4	Inundation Areas within the Project Vicinity	4.13-12

4.14-1	Existing Pedestrian Infrastructure	4.14-4
4.14-2	Examples of Existing Obstructions to Pedestrian Accessibility	4.14-4
4.14-3	LAFD Stations Located in the Project Study Area	4.14-7
4.14-4	Police Stations Located in the Project Study Area	4.14-9
4.16-1	14601-3 Aetna Street, View Looking Northeast.....	4.16-15
4.16-2	130 N. Brand Boulevard, Auditorium, View Looking Southwest	4.16-16
4.16-3	San Fernando Road at Pinney Street, Looking South	4.16-17
4.16-4	Geology of Project Study Area Map 1	4.16-27
4.16-5	Geology of Project Study Area Map 2	4.16-28
4.16-6	Illustrative Design Details for Curb-Running BRT Alternative	4.16-44
4.16-7	Architectural Rendering for Curb-Running BRT Alternative.....	4.16-45
4.16-8	Illustrative Design Details for Median-Running BRT Alternative	4.16-54
4.16-9	Architectural Rendering for Median-Running BRT Alternative.....	4.16-55
4.16-10	Illustrative Design Details for Low-Floor LRT/Tram Alternative	4.16-64
4.16-11	Architectural Rendering for Low-Floor LRT/Tram Alternative	4.16-65
4.16-12	Illustrative Design Details for LRT Alternative	4.16-77
4.16-13	Architectural Rendering for LRT Alternative.....	4.16-78
4.17-1	Project Vicinity	4.17-3
4.17-2	Environmental Justice Study Area	4.17-4
4.17-3	Census Tracts in the Environmental Justice Study Area	4.17-6
4.17-4	Census Block Groups in the Environmental Justice Study Area	4.17-7
4.17-5	Environmental Justice Regional Areas	4.17-8
4.19-1	Roadway Bed Grading and Paving.....	4.19-7
4.19-2	Concrete Pour for Bus Lane Surface	4.19-8
4.19-3	Concrete Finishing for Bus Lane Surface	4.19-8
4.19-4	Example of Temporary Traffic Control at Intersections During Construction	4.19-13
4.19-5	MSF Option A Acquisitions	4.19-17
4.19-6	MSF Option B Acquisitions	4.19-22
4.19-7	MSF Option C Acquisitions	4.19-27
4.19-8	Example of Street Median LRT Station Construction	4.19-33
4.19-9	Example of In-Street Excavation.....	4.19-34
4.19-10	Example of Tunnel Portal Beam Installation	4.19-35
4.19-11	Example of Tunnel Portal Decking.....	4.19-35
4.19-12	Alternative 4 (Typical Below-Grade LRT Station)	4.19-36
4.19-13	Inundation Areas within the Project Vicinity	4.19-68
5-1	Area of Potential Effect Overview Map.....	5-6
5-2	Map of Parks, Recreation Areas, and Wildlife Refuges.....	5-9