



WESTSIDE SUBWAY EXTENSION PROJECT

Climate Change Memorandum



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1.0 INTRODUCTION

This memorandum supplements the *Westside Subway Extension Project Climate Change Technical Report* (the Report) dated August 2010 and supports the Final EIS/EIR. This memorandum updates the analysis in the Environmental Impact/Environmental Consequences Section of the Report to incorporate modifications to the LPA (Alternative 2) since the release of the Draft EIS/EIR. The analysis has been revised to reflect the LPA's right-of-way as described in the *Westside Subway Extension Acquisitions and Displacement Supplemental Report*. The analysis has been revised to reflect modifications to the LPA operating plan and refinements to construction methods. The analysis was also revised to incorporate an assessment of existing conditions. Only the LPA (Alternative 2) is included in this memorandum.

The LPA could either be constructed as a single phase under the America Fast Forward (30/10) Scenario (Concurrent Construction), or as three consecutive phases under the Metro Long Range Transportation Plan (LRTP) Scenario (Phased Construction). The opening of the LPA as a single phase or in three sequential phases does not substantially change the climate change analysis that was presented in the Draft EIS/EIR.

Information on regulatory framework, analysis methodology and existing conditions/affected environment can be found in the *Westside Subway Extension Project Climate Change Technical Report*. The regulatory framework, analysis methodology and existing conditions/affected environment for the LPA are the same whether the LPA is constructed under the Concurrent Construction Scenario or the Phased Construction Scenario.

2.0 PROJECT DESCRIPTION

On October 28, 2010, the Metro Board selected the Westwood/VA Hospital Extension (Alternative 2 in the Draft EIS/EIR) as the Locally Preferred Alternative (LPA) and authorized the preparation of the *Westside Subway Extension Final EIS/EIR* (the Final EIS/EIR) to analyze the LPA. This alternative would extend HRT, in subway, approximately nine-miles from the existing Metro Purple Line Wilshire/Western Station to a Westwood/VA Hospital Station. The extension would include a total of seven new stations:

- Wilshire/La Brea
- Wilshire/Fairfax
- Wilshire/La Cienega
- Wilshire/Rodeo
- Century City (Century City Santa Monica or Century City Constellation)
- Westwood/UCLA (Westwood/UCLA On-Street or Westwood/UCLA Off-Street)
- Westwood/VA Hospital (Westwood/VA Hospital South or Westwood/VA Hospital North)

The estimated one-way running time for the project would be approximately 15 minutes from the Wilshire/Western Station to the Westwood/VA Hospital Station. The extension would operate at headways of 4 minutes during peak periods and 10 minutes during off-peak periods. As part of the

project, Metro is also planning several enhancements to the Division 20 Maintenance and Storage Facility.

The construction schedule for the Project is partially dependent on the timing of Federal funding availability. Two LPA construction scenarios are considered. Both scenarios will contain the same elements with differences only in the timing of when they are built and operational. The first construction scenario assumes that under the America Fast Forward (30/10) Scenario (Concurrent Construction), the LPA would open in its entirety to the Westwood/VA Hospital Station in 2022 with the three construction segments built concurrently (Wilshire/Western to Wilshire/La Cienega, Wilshire/La Cienega to Century City and Century City to Westwood/VA Hospital). The second construction scenario assumes that under the Metro Long Range Transportation Plan (LRTP) Scenario (Phased Construction), the LPA would open in three consecutive phases (Phase 1 to Wilshire/La Cienega, Phase 2 to Century City, and Phase 3 to Westwood/VA Hospital), with the entire LPA operational to the Westwood/VA Hospital Station in 2036.

A detailed description of the LPA is provided in Chapter 2 of the Final EIS/EIR.

3.0 ENVIRONMENTAL IMPACT/ENVIRONMENTAL CONSEQUENCES

To ensure that the requirements set forth in the Governor's Office of Planning and Research (OPR) Technical Advisory on CEQA and Climate Change ("Advisory") and the incoming new CEQA Guidelines are met, a greenhouse gas emissions analysis was conducted for both the operational and construction phases of the project.

3.1 Existing with Project

Per CEQA requirements, an EIR must include a description of the existing physical environmental conditions in the vicinity of the project. Those conditions, in turn, "will normally constitute the baseline physical conditions by which a lead agency determines whether an impact is significant." (CEQA Guidelines §15125[a])

For a project such as the Westside Subway project that would not commence operation for approximately 10 years and would not reach design year until 2035, use of only existing conditions as a baseline for energy impacts would be misleading. It is more likely that existing background traffic volumes (and background roadway changes from other programmed traffic improvement projects) and vehicle emission factors would change between today and 2035 than it is that existing conditions would remain unchanged over the next 25 years. For example, Regional Transportation Plans (RTP) include funded transportation projects that are programmed to be constructed by 2035. To ignore that these projects would be in place before the project reaches maturity (i.e., the point/year at which project-related traffic emissions reach their maximum) and to evaluate the project's impacts ignoring that these RTP improvements would change the underlying background conditions to which project traffic would be added, would be misleading because it would represent a hypothetical comparison.

Therefore, the analysis uses a dual baseline approach. That is, the project's impacts are evaluated both against existing conditions and against background (i.e., No Project) conditions as they are expected to be in 2035. This approach complies with CEQA. (See *Woodwark Park Homeowners Ass'n v. City of Fresno* (2007), 150 Cal.App.4th 683, 707 and *Sunnyvale West Neighborhood Assn. v. City of Sunnyvale* (2010), 190 Cal.App.4th 1351). Therefore, results for both baselines are presented.

3.2 Operational Assessment

See Section 4.1 of the *Westside Subway Extension Project Climate Change Technical Report*.

3.2.1 Roadways

Under either the Concurrent Construction Scenario or the Phased Construction Scenario the LPA's impact on roadway traffic is reflected in changes in the region's vehicle miles traveled (VMT) and associated vehicular speed. This methodology is in agreement with draft inventory guidance being developed by the Greenhouse Gas CEQA Significance Threshold Stakeholder Working Group #9, presented at their working group meeting on March 19, 2009. The "region" is defined as Los Angeles County, and GHG emission burdens are estimated based on the on-road fleet's GHG emission factors multiplied by VMT. The current version of the California Air Resources Board's (CARB) emission factor program, referred to as the EMISSION FACTOR model (EMFAC), was used to estimate on-road GHG mobile source emission factors. The current version of the EMFAC program is EMFAC2007. EMFAC2007 GHG emission factors are based on speed, vehicle mix and analysis year. It should be noted that, according to the current version of EMFAC2007, the future fuel economy factors are forecast to improve only slightly between the year 2008 and year 2035. However, this conclusion is an artifact of the current version of EMFAC2007, which does not consider recent regulatory actions. Two recent sets of regulatory actions will almost certainly result in substantial future improvements in fuel economy and CO₂ emission factors:

- The State of California recently enacted legislation requiring dramatic improvements in vehicle fuel economy for all vehicles sold in California.
- EPA recently updated the Corporate Average Fuel Economy (CAFE) fuel standards, which require substantial improvements in fuel economy for all vehicles sold in the United States.

However, the current version of the EMFAC2007 model does not yet account for either of these two important factors. As a result, the current version of EMFAC2007 almost certainly under-estimates the actual fuel economy and overestimates CO₂ emissions in future years.

The results for the region are shown in Table 3-1. Significance thresholds have not yet been established for transportation-related GHG emissions. As such, the predicted emission burden levels have been compared to the emission burden levels calculated for Existing conditions and the No Build Alternative. As shown in Table 3-1, the Project is predicted to slightly lower all regional GHG emission burden levels for the Existing with LPA, Concurrent Construction Scenario and all phases of the Phased Construction Scenario, as compared to Existing and No Build conditions.

Table 3-1: Regional Roadway CO₂e Emission Burden Assessment (Metric Tons/Day)

Alternative	VMT		CO ₂ e	
	Daily Vehicle Miles Traveled (millions)	Change from Existing/No Build	Emission Burden (Metric Tons/day)	Change from No Build (Metric Tons/day)
Existing	354,994,812	—	176,403	—
Existing w/LPA	354,718,551	-276,261	176,254	-149
No Build	532,661,000	—	405,431	—
Concurrent Construction Scenario				
LPA with Century City	532,343,000	-318,000	402,782	-2,649

Alternative	VMT		CO ₂ e	
	Daily Vehicle Miles Traveled (millions)	Change from Existing/No Build	Emission Burden (Metric Tons/day)	Change from No Build (Metric Tons/day)
Santa Monica				
LPA with Century City Constellation	532,080,000	-581,000	402,578	-2,854
Phased Construction Scenario				
Phase 1	532,447,000	-214,000	405,258	-173
Phase 2 with Century City Santa Monica	532,514,000	-147,000	405,323	-108
Phase 2 with Century City Constellation	532,267,000	-394,000	405,117	-314
Phase 3 with Century City Santa Monica	532,343,000	-318,000	402,782	-2,649
Phase 3 with Century City Constellation	532,080,000	-581,000	402,578	-2,854

3.2.2 Power Requirement

The proposed project will require electrical power for vehicle propulsion and station operation. The generation of this power will result in increased GHG emissions. To determine the increased GHG burden, emission factors from EPA's egrid program were obtained for the state of California and multiplied by the estimated power demand calculated as part of the Energy Technical Report for this project. The estimated GHG emission burden generated due to the increased power usage is shown in Table 3-2. The Existing with Project, Concurrent Construction Scenario, and all phases of the Phased Construction Scenario are predicted to require more energy than the Existing and No Build Alternatives and, therefore, will result in an increase in CO₂e emissions. It should be noted that the energy profile for the state of California reflects the current energy generation mix. It is expected that these levels will be lower in the future due to the State's policy to increase the use of green energy sources.



Table 3-2: CO_{2e} Emission Burdens from Rail Power Requirements (Metric Tons/Day)

Alternative	Emission Factor CO _{2e} (Metric Tons/MWH)	Estimated Electric Usage	Total CO _{2e} (Metric Tons/Day)
Existing	0.31	—	0
Existing w/ LPA	0.31	497	154
No Build	0.31	502	156
Concurrent Construction Scenario			
LPA with Century City Santa Monica	0.31	826	256
LPA with Century City Constellation	0.31	834	259
Phased Construction Scenario			
Phase 1	0.31	672	208
Phase 2 with Century City Santa Monica	0.31	742	230
Phase 2 with Century City Constellation	0.31	750	233
Phase 3 with Century City Santa Monica	0.31	826	256
Phase 3 with Century City Constellation	0.31	834	259

3.2.3 Total Operational GHG Emissions

As shown in Table 3-3, combining the emission burdens from the reduced roadway VMT (Table 3-1) with the emission burdens due to power usage (Table 3-2) for each alternative, the Existing with Project alternative is predicted to have a slight, though barely measurable, increase in overall CO_{2e} emissions, as compared to Existing conditions without the project. The Concurrent Construction Scenario and all phases of the Phased Construction Scenario are predicted to have a slightly beneficial impact on overall CO_{2e} emissions, as compared to No Build conditions. The values presented in Table 3-3, however, are conservative estimates due to the CO_{2e} emission factors applied to the power requirements. The CO_{2e} emission factors represent the current energy profile of California. In the future, it is anticipated that the energy profile of California will reflect a larger percentage of clean energy sources, which would result in a lower CO_{2e} emission rate per kilowatt hour. As such, it is anticipated that the CO_{2e} emissions from future power requirements for the system will be lower than those used in this analysis.

Table 3-3: Regional CO₂e Emission Burden Assessment (Metric Tons/Day)

Alternative	Roadways Contribution (Metric Tons/Day)	Power Contribution (Metric Tons/Day)	Total (Metric Tons/Day)	% Change from No Build
Existing	176,403	0	176,403	
Existing w/ LPA	176,254	154	176,408	0.00%
No Build	405,431	156	405,587	—
Concurrent Construction Scenario				
LPA with Century City Santa Monica	402,782	256	403,038	-0.6%
LPA with Century City Constellation	402,578	259	402,836	-0.7%
Phased Construction Scenario				
Phase 1	405,258	208	405,467	0.0%
Phase 2 with Century City Santa Monica	405,323	230	405,347	-0.1%
Phase 2 with Century City Constellation	405,117	233	405,556	0.0%
Phase 3 with Century City Santa Monica	402,782	256	403,038	-0.6%
Phase 3 with Century City Constellation	402,578	259	402,836	-0.7%

3.3 Construction Assessment

An assessment of the GHG construction impacts was conducted. The assessment utilized SCAQMD OFFROAD 2007 and EMFAC2007 emission factors, both of which are key elements in the URBEMIS2007, Version 9.2.4 program. SCAQMD OFFROAD2007 was used to develop emission factors from off-road construction equipment. Worker and delivery trip emission factors were estimated using the EMFAC2007 emission factor model. Using these various data sources, daily construction emission levels were developed for the project design elements.

America Fast Forward (30/10) Scenario (Concurrent Construction)

It is estimated that construction of the LPA under the Concurrent Construction Scenario will generate approximately 164 metric tons of CO₂e per day, which is approximately 180,000 metric tons of CO₂e over the full 10-year construction duration. This estimate includes the CO₂e generated due to the use of construction equipment, worker trips, delivery trips, and hauling of material. In comparison, under existing conditions (without the Project), regional CO₂e emission is estimated to be 178,000 metric tons per day. Therefore, compared to existing regional CO₂e emissions, the construction of the LPA under the Concurrent Construction Scenario will increase daily CO₂e emissions by less than 0.1 percent, which is not considered an adverse effect. Over the course of 10 years, construction of the LPA under the Concurrent Construction Scenario will result in emissions that are roughly equivalent to the present-day regional CO₂e emissions in a single day.

In addition, in the long-run, the Concurrent Construction Scenario will reduce regional CO₂e emissions, off-setting the short-term increase in emissions during construction and complying with policies to reduce emissions of greenhouse gases. It is estimated that once operational, the LPA will reduce regional CO₂e emissions by 35,000 metric tons a year compared to the No Build Alternative in 2035. Therefore, within approximately five years of operation, the regional CO₂e emissions will be reduced by nearly 180,000 metric tons, off-setting the short-term CO₂e emissions during construction.

Metro Long Range Transportation Plan (LRTP) Scenario (Phased Construction)

It is estimated that construction of each phase of the LPA under the Phased Construction Scenario will generate approximately 102 metric tons of CO₂e per day. This results in approximately 65,000 metric tons of CO₂e over the construction duration for Phase 1, 49,000 metric tons of CO₂e over the construction duration for Phase 2 and approximately 66,000 metric tons of CO₂e over the construction duration for Phase 3. This estimate includes the CO₂e generated due to the use of construction equipment, worker trips, delivery trips, and hauling of material. In comparison, under existing conditions (without the Project), regional CO₂e emission is estimated to be 178,000 metric tons per day. Therefore, compared to existing regional CO₂e emissions, the construction of the LPA under the Phased Construction Scenario will increase daily CO₂e emissions by less than 0.1 percent, which is not considered an adverse effect.

In addition, in the long-run, the Phased Construction Scenario will reduce regional CO₂e emissions, off-setting the short-term increase in emissions during construction and complying with policies to reduce emissions of greenhouse gases. It is estimated that Phase 1 will reduce regional CO₂e emissions by approximately 61,000 metric tons a year compared to the No Build Alternative in 2035. Phase 2 will reduce regional CO₂e emissions by 74,000 metric tons a year compared to the No Build Alternative in 2035. Once fully operational, Phase 3 will reduce regional CO₂e emissions by 95,000 metric tons a year compared to the No Build Alternative in 2035. Therefore, within approximately five years of operation, the regional CO₂e emissions will be off-setting the short-term CO₂e emissions generated during construction.

3.4 Project Consistency with GHG Regulations

See Section 4.3 of the *Westside Subway Extension Project Climate Change Technical Report*.

3.4.1 Cumulative Impacts

See Section 4.3.1 of the *Westside Subway Extension Project Climate Change Technical Report*.