

3.6 GREENHOUSE GAS EMISSIONS

This chapter describes the proposed project's potential impact related to construction and operational greenhouse gas (GHG) emissions, as well as the proposed project's consistency with applicable GHG emissions and climate change legislation. The following analysis is based on the *Air Quality Impact Analysis, Los Angeles State Historic Park Master Development Plan*, prepared in November 2011, which is included as Appendix B of this EIR.

3.6.1 ENVIRONMENTAL SETTING

GREENHOUSE EFFECT

Certain gases in the Earth's atmosphere classified as GHGs, play a critical role in determining the Earth's surface temperature. Solar radiation enters the Earth's atmosphere from space; a portion of the radiation is absorbed by the Earth's surface, and a smaller portion of this radiation is reflected back toward space. This absorbed radiation is then emitted from the Earth as low-frequency infrared radiation. The frequencies at which bodies emit radiation are proportional to temperature. The Earth has a much lower temperature than the sun; therefore, the Earth emits lower frequency radiation. Most solar radiation passes through GHGs; however, infrared radiation is absorbed by these gases. As a result, radiation that otherwise would have escaped back into space is "trapped," resulting in a warming of the atmosphere. This phenomenon, known as the greenhouse effect, is responsible for maintaining a habitable climate on the Earth. Without the greenhouse effect, the Earth would not be able to support life.

Prominent GHGs contributing to the greenhouse effect are carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), chlorofluorocarbons (CFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF₆). Much of the scientific literature suggests that human-caused emissions of these GHGs in excess of natural ambient concentrations are responsible for intensifying the greenhouse effect and have led to a trend of unnatural warming of the Earth's climate, known as global climate change or global warming. While there is some debate regarding this issue, it is unlikely that global climate change of the past 50 years can be explained without contribution from human activities.

GHGs are global pollutants, unlike criteria air pollutants and TACs, which are pollutants of regional and local concern. Whereas pollutants with localized air quality effects have relatively short atmospheric lifetimes (about one day), GHGs have long atmospheric lifetimes (one year to several thousands of years). GHGs persist in the atmosphere for long enough time periods to be dispersed around the globe. Although the exact lifetime of any particular GHG molecule is dependent on multiple variables and cannot be pinpointed, it is understood that more CO₂ is emitted into the atmosphere than is sequestered by ocean uptake, vegetation, and other forms of sequestration. Approximately 54 percent of the total annual human-caused CO₂ emissions, is sequestered through ocean uptake, uptake by northern hemisphere forest regrowth, and other terrestrial sinks within one year. The remaining 46 percent of human-caused CO₂ emissions remain stored in the atmosphere.

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Similarly, impacts of GHGs are borne globally, as opposed to localized air quality effects of criteria air pollutants and TACs. The quantity of GHGs that it takes to ultimately result in climate change is not precisely known; however, the quantity is substantial, and no single project would measurably contribute to a noticeable incremental change in the global average temperature, or to global, local, or micro climates. For purposes of analyzing GHG emissions under CEQA, GHG impacts to global climate change are inherently cumulative.

Greenhouse Gas Emissions Sources

GHGs contributing to global climate change are attributable, in large part, to human activities associated with transportation, industrial/manufacturing, utility, residential, commercial, and agricultural sectors. In 2004, the transportation sector accounted for 38 percent of total GHG emissions in the state. This sector was followed by the electric power sector, including both in-state and out-of-state sources, accounting for approximately 19 percent, and the industrial sector, accounting for 23 percent. Emissions of CO₂ are byproducts of fossil fuel combustion. CH₄, a highly potent GHG, results from off-gassing (the release of chemical from nonmetallic substances under ambient or greater pressure conditions) and is largely associated with agricultural practices and landfills. N₂O is also largely attributable to agricultural practices and soil management. CO₂ sinks, or reservoirs, include vegetation and the ocean, which absorb CO₂ through sequestration and dissolution, respectively, two of the most common processes of CO₂ sequestration.

California is the 12th to 16th largest emitter of CO₂ in the world. California produced 484 million gross metric tons of CO₂ equivalent (CO₂e) in 2004. CO₂e is a measurement used to account for the difference in potential of the various GHGs to retain infrared radiation in the atmosphere and contribute to the greenhouse effect. Expressing emission in CO₂e takes the contributions to the greenhouse effect of all GHG emission and converts them to the equivalent effect that would occur if only CO₂ were being emitted. This measurement, known as the global warming potential of a GHG, is dependent on the lifetime, or persistence, of the gas molecule in the atmosphere. For example, as described in Appendix C, Calculation References, of the General Reporting Protocol of the California Climate Action Registry, one ton of CH₄ has the same contribution to the greenhouse effect as approximately 21 tons of CO₂. Therefore, CH₄ is a much more potent GHG than CO₂.

3.6.2 REGULATORY SETTING

FEDERAL

The U.S. Environmental Protection Agency (USEPA) is the federal agency responsible for implementing the Clean Air Act. The U.S. Supreme Court ruled on April 2, 2007, that CO₂ is an air pollutant as defined under the Clean Air Act, and that the USEPA has the authority to regulate emissions of GHGs. However, there are no federal regulations or policies regarding GHG emissions applicable to the proposed project.

STATE

The California Air Resources Board (CARB) is the agency responsible for coordination and oversight of state and local air pollution control programs and for implementing the California Clean Air Act, which was adopted in 1988. Various statewide and local initiatives to reduce the state's contribution to GHG emissions have raised awareness that, even though the various contributors to and consequences of global climate change are not yet fully understood, global climate change is under way, and there is a real potential for severe adverse environmental, social, and economic effects in the long term.

Global Warming Solutions Act of 2006

In September 2006, Governor Arnold Schwarzenegger signed AB 32, the California Global Warming Solutions Act of 2006. AB 32 establishes regulatory, reporting, and market mechanisms to achieve quantifiable reductions in GHG emissions and a cap on statewide GHG emissions. AB 32 requires that statewide GHG emissions be reduced to 1990 levels by 2020. This reduction will be accomplished through an enforceable statewide cap on GHG emissions that will be phased in starting in 2012. To effectively implement the cap, AB 32 directs CARB to develop and implement regulations to reduce statewide GHG emissions from stationary sources. AB 32 specifies that regulations adopted in response to AB 1493 should be used to address GHG emissions from vehicles. In 2002, Governor Gray Davis signed AB 1493. AB 1493 requires that CARB develop and adopt, by January 1, 2005, regulations that achieve “the maximum feasible reduction of greenhouse gases emitted by passenger vehicles and light-duty trucks and other vehicles determined by CARB to be vehicles whose primary use is noncommercial personal transportation in the state.” AB 32 includes language stating that if AB 1493 regulations cannot be implemented, the CARB should develop new regulations to control vehicle GHG emissions under the authorization of AB 32.

AB 32 requires that CARB adopt a quantified cap on GHG emissions representing 1990 emissions levels and disclose how it arrived at the cap; institute a schedule to meet the emissions cap; and develop tracking, reporting, and enforcement mechanisms to ensure that the state achieves the reductions in GHG emissions necessary to meet the cap. AB 32 also includes guidance to institute emissions reductions in an economically efficient manner and conditions to ensure that businesses and consumers are not unfairly affected by the reductions.

In December 2008, CARB adopted its Climate Change Scoping Plan (Scoping Plan), which contains the main strategies California will implement to achieve reduction of approximately 169 million metric tons of CO₂e, or approximately 30 percent from the State's projected 2020 emission level of 596 million metric tons of CO₂e under a business-as-usual scenario (this is a reduction of 42 million metric tons CO₂e, or almost 10 percent from 2002 to 2004 average emissions). The Scoping Plan also includes CARB-recommended GHG reductions for each emissions sector of the State's GHG inventory. The Scoping Plan calls for the largest reductions in GHG emissions to be achieved by implementing the following measures and standards:

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- Improved emissions standards for light-duty vehicles (estimated reductions of 31.7 million metric tons CO₂e),
- The Low-Carbon Fuel Standard (15.0 million metric tons CO₂e), and
- A renewable portfolio standard for electricity production (21.3 MMT CO₂e).

3.6.3 ENVIRONMENTAL IMPACTS

METHODOLOGY

The methodology used in this report to analyze the proposed project's contribution to global climate change includes a calculation of GHG emissions and a discussion regarding the context in which these emissions can be evaluated. The purpose of calculating the proposed project's GHG emissions is for informational and comparison purposes, because at the time of this analysis, neither CARB nor the South Coast Air Quality Management District (SCAQMD) have adopted a quantifiable threshold for evaluating whether project-generated GHGs would be considered a significant impact. Pursuant to full disclosure and according to the CEQA Guidelines that state, "a lead agency should make a good-faith effort, based to the extent possible on scientific and factual data, to describe, calculate or estimate the amount of GHG emissions resulting from a project," the construction and operational emissions associated with the proposed project have been quantified using the methods described below.

Construction-related GHG emissions were estimated using similar methodology to that described in Chapter 3.2, Air Quality, for criteria air pollutants. URBEMIS (urban emissions) 2007 Version 9.2.4 software also estimates CO₂ emissions associated with construction-related GHG sources such as off-road construction equipment, material delivery trucks, soil haul trucks, and construction worker vehicles.

Operational emissions of GHGs, including GHGs generated by direct and indirect sources, are estimated according to the recommended methodologies from CARB and California Climate Action Registry. Direct sources include emissions such as vehicle trips, natural gas consumption, and landscape maintenance. Indirect sources include off-site emissions occurring as a result of the project's operations such as electricity and water consumption. Direct emissions associated with area and mobile sources were estimated using URBEMIS 2007. Modeling was based on project-specific data and vehicle trip information from the transportation impact analysis prepared for the proposed project.

Indirect emissions associated with energy consumption were estimated using electricity consumption rates at similar facilities. GHG emission factors associated with electricity production were obtained from the California Climate Action Registry General Reporting Protocol. Indirect GHG emissions associated with the consumption of water were calculated based on the estimated level of electricity required to convey, treat, and distribute the proposed project's estimated water usage and the aforementioned emission factors for electricity production from California Climate Action Registry. Water demand for the project was obtained from the Bay Area Air Quality Management District's estimate of water consumption for a similar facility in the absence of information from the SCAQMD.

The project site is not part of the Los Angeles River channel, which is located east of the project site. However, it is anticipated that at project buildout the river would be utilized as a water source for the proposed wetland area on the project site and water would be piped onto the project site from a location upstream. Electricity use associated with water consumption was estimated using an electricity consumption rate from the California Energy Commission's Refining Estimates of Water-Related Energy Use in California report.

Guidance from the Bay Area Air Quality Management District is used occasionally where SCAQMD or CARB provide no information. The Bay Area Air Quality Management District CEQA Air Quality Guidelines provides recommended procedures for evaluating potential air quality impacts during the environmental review process consistent with CEQA requirements.

THRESHOLDS OF SIGNIFICANCE

In accordance with the CEQA Guidelines, the proposed project would have a significant impact on GHG emissions if it would:

- Generate GHG emissions, either directly or indirectly, that may have a significant effect on the environment; or
- Conflict with any applicable plan, policy, or regulation of an agency adopted for the purpose of reducing the emissions of GHGs.

Due to the lack of a numerical threshold established by the SCAQMD or CARB, the following thresholds are used for the purposes of this EIR analysis:

- Facilities (i.e., stationary, continuous sources of GHG emissions) that generate greater than 25,000 metric tons of CO₂ per year are mandated to report their GHG emissions to CARB pursuant to AB 32 and the USEPA's General Reporting Protocol;
- Stationary sources that generate greater than 10,000 metric tons of CO₂ per year may be required to participate in the cap-and-trade program through the Western Climate Initiative;
- SCAQMD's significance screening level of 3,000 metric tons of CO₂ per year; and
- Bay Area Air Quality Management District significance threshold for operational emissions of 1,100 metric tons of CO₂e per year in its adopted CEQA Air Quality Guidelines.

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IMPACT ANALYSIS

GHG-1 *The proposed project would not generate GHG, either directly or indirectly, that may have a significant impact on the environment. The impact would be less than significant.*

The construction and operation of the proposed project would generate GHG emissions. Construction-related emissions would be generated from off-road equipment and on-road vehicle exhaust. Operational emissions would be generated from vehicles trips to and from the proposed project, and area sources such as landscape maintenance equipment. In addition, the proposed project would consume electricity and water, both of which would generate GHG emissions associated with electricity production.

GHG emissions generated by the proposed project would predominantly be in the form of CO₂e. While emissions of other GHGs, such as CH₄ and N₂O, are important with respect to global climate change, the emission levels of these other GHGs for the sources considered for the proposed project are relatively small compared with CO₂e emissions. Table 3.6-1 shows the construction and operational GHG emissions associated with the proposed project.

As shown in Table 3.6-1, estimated GHG emissions from proposed project construction would be approximately 700 metric tons of CO₂e. GHG emissions would be greater during the later portion of the construction phase in 2014 due to the higher intensity of construction activities (equipment use, finishes and coatings, etc) as compared to 2013. Note that construction emissions are reported as a finite quantity, since construction would occur over a finite period of time. Estimated GHG emissions associated with operation of the proposed project would be approximately 1,000 metric tons of CO₂e per year. The proposed project's annual construction and operational emissions would be below all of the thresholds previously discussed. Therefore, project impacts related to direct and indirect GHG emissions would be less than significant.

**TABLE 3.6-1
SUMMARY OF MODELED GREENHOUSE GAS EMISSIONS (CO₂e)**

Source	CO ₂ e Emissions ^a
<i>Construction Emissions (metric tons)</i>	
2013	334
2014	349
Total Construction Emissions	683
<i>Operational Emissions at Full Buildout (Year 2035) (metric tons/year)</i>	
Area Sources	0.5
Mobile Sources	959
Electricity Consumption	46
Water Consumption	29
Total Operational Emissions	1,035

Notes: CO₂e = carbon dioxide equivalent

^a The values presented do not include the full life cycle of GHG emissions that would occur over the production/transport of materials used during the construction of development envisioned under the project or used during the operational life of the project, solid waste that would be generated over the life of the proposed project, of the end of life for the materials and processes that would occur as an indirect result of the project. Estimating the GHG emissions associated with these processes would be too speculative for meaningful consideration, would require analysis beyond the current state of the art in impact assessment, and may lead to a false or misleading level of precision in reporting operational GHG emissions. Furthermore, indirect emissions associated with in-state energy production and generation of solid waste would be regulated under AB 32 directly at the source or facility that would handle these processes. The emissions associated under AB 32 and CARB programs, as recommended by CARB’s Scoping Plan. Therefore, it is assumed that GHG emissions associated with these life-cycle stages would be consistent with AB 32 requirements.

Source: Modeling performed by AECOM, 2011. Detailed modeling assumptions are provided in Appendix B to this EIR.

GHG-2 *The proposed project would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs. The impact would be less than significant.*

As previously mentioned, one of the responsibilities of CARB is the reduction of GHG emissions in California. As discussed in GHG-1 above and shown in Table 3.6-1, the proposed project’s GHG emissions would fall well below all the available numerical thresholds. As such, the proposed project would not conflict with California’s GHG reduction goals or the strategies of AB 32. As a result, the construction and operation of the proposed project would also not conflict with the California Global Warming Solutions Act of 2006 and the Scoping Plan, administered by CARB. The proposed project would entail the construction and operation of a 32-acre park including various event spaces, observation and interpretive areas, recreation areas and pathways, parking, constructed wetlands and habitat area, as well as park furnishings and infrastructure. Although additional vehicles and trucks would travel to and from the project site, both during construction and operation, which would result in additional GHG emissions compared to existing conditions, the proposed project would largely remain an undeveloped site with only a few buildings and would be located nearby several heavily used modes of public transportation. As such, the proposed project would comply with the applicable plans, policies, or regulations adopted for the purpose of reducing the emissions of GHGs. Impacts would be less than significant.

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3.6.4 MITIGATION MEASURES

No mitigation measures are required.

3.6.5 LEVEL OF SIGNIFICANCE AFTER MITIGATION

Impacts related to greenhouse gas emissions would be less than significant without mitigation.