# SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

**FINAL ENVIRONMENTAL IMPACT REPORT FOR THE EXXONMOBIL TORRANCE REFINERY RULE 1105.1 COMPLIANCE PROJECT**

SCH No. 2006091112

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# PREFACE

This document constitutes the Final Environmental Impact Report (EIR) for the ExxonMobil Rule 1105.1 Compliance Project. The Draft EIR was released for a 45-day public review and comment period from December 20, 2006 to February 2, 2007. One comment letter was received from a public agency relative to the Draft EIR. The comment was reviewed and evaluated. The comment letter and response to comments are included in Appendix D. Minor administrative modifications have been made to the text of the Draft EIR depicted using ~~strikethrough~~ or underline, denoting deletions or additions, respectively. These changes to the document are minor and do not alter any conclusions reached in the Draft EIR, increase the severity of an environmental impact analyzed in the Draft EIR, nor provide new information of substantial importance relative to the draft document that would require recirculation of the Draft EIR pursuant to CEQA Guidelines §15088.5. Therefore, this document is now a Final EIR.

# CHAPTER 1

# INTRODUCTION AND EXECUTIVE SUMMARY

# 1.0 INTRODUCTION AND EXECUTIVE SUMMARY

## 1.1 INTRODUCTION

On November 7, 2003, the South Coast Air Quality Management District (SCAQMD) adopted Rule 1105.1 - Reduction of PM10[1] and Ammonia Emissions from Fluid Catalytic Cracking Units, and certified the Final Environmental Assessment (EA) for the rule. The SCAQMD 2003 Final EA identified six refineries within the South Coast Air Basin (Basin) that operate fluidized catalytic cracking units (FCCUs) that would be subject to the requirements of Rule 1105.1; however, one of the six refineries was currently operating in compliance with the emission standards outlined in the rule. As a result, five of the six refineries in the Basin would be required to take additional actions to comply with the emission standards in Rule 1105.1. The ExxonMobil Torrance Refinery is one of the five refineries required to make modifications to meet the emission limits of Rule 1105.1.

ExxonMobil Oil Corporation proposes to comply with Rule 1105.1 at its Torrance Refinery by installing new air pollution control equipment (i.e., two new electrostatic precipitators [ESPs]) to control the exhaust of the existing FCCU regenerator downstream of the existing ESPs. These proposed modifications will comply with the requirements of SCAQMD Rule 1105.1 by reducing PM10 and ammonia emissions from the FCCU.

## 1.2 LEGAL AUTHORITY

According to §15121(a) of the California Environmental Quality Act (CEQA) Guidelines (California Administrative Code, Title 14, Division 6, Chapter 3), the purpose of an Environmental Impact Report (EIR) is to serve as an informational document that "will inform public agency decision-makers and the public generally of the significant environmental effect of a project, identify possible ways to minimize the significant effects, and describe reasonable alternatives to the project."

CEQA, Public Resources Code, §21000 et seq., requires that the environmental impacts of proposed projects be evaluated and that feasible methods to reduce, avoid, or eliminate significant adverse impacts of these projects be identified and implemented. The lead agency is the public agency that has the principal responsibility for carrying out or approving a project that may have a significant effect upon the environment (Public Resources Code, §21067). The proposed project requires discretionary approval from the SCAQMD for air quality permits associated with modifications to existing and new stationary source equipment and, therefore, it is subject to the requirements of CEQA (Public Resources Code, §21000 et seq.). Thus, the SCAQMD has the primary responsibility for supervising or approving the entire project as a whole and is the most appropriate public agency to act as lead agency (CEQA Guidelines §15051[b]).

To fulfill the purpose and intent of CEQA, the SCAQMD staff prepared and released for a 30-day public review and comment period a Notice of Preparation and Initial Study (NOP/IS) to address the potential environmental impacts associated with the ExxonMobil Rule 1105.1 Compliance Project (see Appendix A) from September 21, 2006, to October

[1] PM10 is particulate matter less than 10 microns in diameter.

20, 2006. The NOP/IS identified air quality as the only area that might be adversely affected by the proposed project. No comment letters were received on the NOP/IS.

A Draft EIR was prepared and circulated for a 45-day public review and comment period from December 20, 2006 to February 2, 2007. The Draft EIR concluded that project-specific operational and construction air quality impacts were not significant, project-specific toxic air contaminants were not significant, and cumulative construction air quality impacts were significant. One comment letter was received on the Draft EIR. Comments and responses to comments are included in this Final EIR as Appendix D.

## 1.3 PROJECT BACKGROUND

The SCAQMD adopted Rule 1105.1 – Reduction of PM10 and Ammonia Emissions from Fluid Catalytic Cracking Units on November 7, 2003. As part of the rule development process, the SCAQMD prepared a Final EA pursuant to its certified regulatory program (California Public Resources Code [PRC] §21080.5). California Public Resources Code §21080.5 allows public agencies with certified regulatory programs to prepare written CEQA documentation other than EIR or Negative Declaration (ND) documents.

The SCAQMD 2003 Final EA for Rule 1105.1 was prepared pursuant to CEQA Guidelines §15252 because it was a substitute document for an EIR, and pursuant to CEQA Guidelines §15187 because the analysis constituted the environmental review of a new rule.

As discussed in the SCAQMD 2003 Final EA, the implementation of Rule 1105.1 will produce a 0.5 ton per day reduction in filterable PM10, and 1.5 tons per day of condensable PM10 (or 1.5 tons per day of ammonia) by limiting the amount of ammonia slip to 10 ppmv as corrected for three percent oxygen." (SCAQMD 2003 Final EA, page 1-7)

The SCAQMD 2003 Final EA for Rule 1105.1 also evaluated construction-related air quality impacts from installing pollution control equipment to comply with the rule. The analysis assumed that refineries in the Basin would choose to either demolish their existing ESP equipment and install new equipment, or clean the plates on the existing ESP equipment and rebuild them. The analysis also assumed that five of the six refineries in the Basin would have to comply with Rule 1105.1 between the time of rule adoption and December 31, 2008 (one of the six refineries was currently operating in compliance with the emission standards outlined in the rule). Due to planning and permitting requirements, peak construction was assumed to occur over a 48-month period as worst case and two ESPs would be installed or rebuilt at any one time. The SCAQMD 2003 Final EA for Rule 1105.1 concluded that construction-related air quality impacts would be significant.

Subsequent to the adoption of Rule 1105.1 and certification of the SCAQMD 2003 Final EA, the Western States Petroleum Association (WSPA) filed a lawsuit against the SCAQMD challenging the certification of the 2003 Final EA and approval of Rule 1105.1 (WSPA vs. SCAQMD et al, Superior Court of California, County of Los Angeles, Case No. BS087190). The lawsuit asserted, among other things, that emission reductions to be achieved from implementing Rule 1105.1 were technically not feasible, implementation of Rule 1105.1 would not be cost effective, and that the CEQA document failed to consider all environmental impacts of available emissions control technologies

to comply with the emission limits. The judge found that all the contentions made by WSPA were without merit. WSPA appealed this judgment (WSPA vs. SCAQMD et al., Court of Appeal of the State of California, Second Appellate District, Division Seven, Case No. B181303), and the court again concluded that WSPA's arguments were without merit. Further, the court concluded that the SCAQMD met its obligation under CEQA to conduct an environmental assessment of Rule 1105.1. Therefore, in accordance with California Public Resources Code §21167.3(b), the SCAQMD 2003 Final EA for Rule 1105.1 was determined to meet all relevant requirements of CEQA.

The analysis in this EIR relies upon the environmental analysis in the SCAQMD 2003 Final EA for Rule 1105.1. The analysis of environmental impacts in Chapter 4 of this EIR concludes that the ExxonMobil Rule 1105.1 Compliance Project will not create any new significant adverse project-specific effects on the environment that were not already evaluated and presented in the SCAQMD 2003 Final EA. The project-specific construction and operational air quality emissions will still fall within the scope of the adverse impacts disclosed in the SCAQMD 2003 Final EA for Rule 1105.1. There is, however, a potential for significant adverse regional cumulative air quality impacts due to the extent of overlapping Rule 1105.1 construction activities with other facilities affected by Rule 1105.1 that are now expected to be greater than originally estimated in the SCAQMD 2003 Final EA for Rule 1105.1. Based on the evaluation in this Final EIR, only ~~air quality during construction and~~ cumulative air quality during construction activities is expected to be significant.

## 1.4 SCOPE AND CONTENT

The NOP/IS for the proposed project was circulated for a 30-day comment period beginning on September 21, 2006 to neighboring jurisdictions, responsible agencies, other public agencies, and interested individuals in order to solicit input on the scope of the EIR. No comments were received on the NOP/IS during the public comment period. The environmental topics identified in the NOP/IS as potentially significant that are addressed in this document include:

- Air Quality
  - Construction-related air quality impacts; and
  - Cumulative construction-related air quality impacts.

The NOP/IS concluded that the proposed project would not create significant adverse environmental impacts beyond the scope of the analysis in the SCAQMD 2003 Final EA for Rule 1105.1 to the following environmental areas: aesthetics, agricultural resources, biological resources, cultural resources, energy, geology and soils, hazards and hazardous materials, hydrology and water quality, land use and planning, mineral resources, noise, population and housing, public services, recreation, solid and hazardous waste, and transportation/traffic. As a result, these environmental topic areas will not be further analyzed in this EIR.

The Alternatives chapter of the Final ~~Draft~~ EIR was prepared in accordance with §15126.6 of the CEQA Guidelines and describes a range of reasonable alternatives that could feasibly attain the basic objectives of the proposed project or are capable of eliminating or reducing some of the significant adverse environmental effects associated with the proposed project.

## 1.5 RESPONSIBLE AGENCIES

CEQA Guidelines §15381 defines a "responsible agency" as "a public agency which proposes to carry out or approve a project, for which a Lead Agency is preparing or has prepared an EIR or Negative Declaration. For purposes of CEQA, responsible agencies include all public agencies other than the lead agency that have discretionary approval authority over the project."

There are no public agencies that have discretionary authority over the proposed project, other than the SCAQMD. There are public agencies that may have ministerial permitting authority for certain actions associated with the proposed modifications at the ExxonMobil Torrance Refinery. These agencies, along with the public in general, were given an opportunity to review and comment on the NOP/IS, and were ~~will be~~ given an opportunity to review and comment on the Draft EIR. See Chapter 2, Table 2-2 for a list of both discretionary and ministerial permits and approvals that may be required to support the proposed project.

## 1.6 INTENDED USES OF THE EIR

The Final EIR is intended to be a decision-making tool that provides full disclosure of the environmental consequences associated with implementing the proposed project. Additionally, CEQA Guidelines §15124(d)(1) requires a public agency to identify the following:

- A list of the agencies that are expected to use the Final EIR in their decision-making;
- A list of permits and other approvals required to implement the project; and
- A list of related environmental review and consultation requirements required by federal, state, or local laws, regulations, or policies.

To the extent that local public agencies, such as cities, county planning commissions, etc., are responsible for making land use and planning decisions related to the proposed project, they could rely on this Final EIR during their decision-making process.

## 1.7 AREAS OF CONTROVERSY

In accordance with CEQA Guidelines §15123(b)(2), the areas of controversy known to the lead agency, including issues raised by agencies and the public, shall be identified in the CEQA document. After public notification and review of the NOP/IS, the SCAQMD received no comments. Consequently, there are no areas of controversy known to the lead agency.

## 1.8 EXECUTIVE SUMMARY – CHAPTER 2: PROJECT DESCRIPTION

### Project Location, Land Use and Zoning

The proposed project will affect operations at the ExxonMobil Refinery located at 3700 W. 190$^{th}$ Street, in the City of Torrance, County of Los Angeles. The Torrance Refinery was built in 1929, covers approximately 750 acres, and processes an average of 155,000

barrels of crude oil per day. The proposed project will not increase the maximum daily crude oil throughput at the ExxonMobil Torrance Refinery.

The Torrance Refinery occupies an irregularly-shaped parcel of land, between 190th Street to the north, Van Ness Avenue to the east, railroad tracks and Del Amo Boulevard to the south, and Prairie Avenue to the west. A small portion of the refinery is located on the west side of Prairie Avenue. All of the activities associated with the proposed project will occur within the boundaries of the existing refinery.

The closest residential area is across 190th Street to the north. Columbia Regional Park is located immediately across from the refinery in the northwest corner. Other land uses to the north, east, west, and south include industrial and commercial facilities, a BNSF railroad line, and a business park. The areas surrounding the refinery can be characterized as a blend of heavy and light industrial, commercial, medium and high-density residential, and industrial/manufacturing. The refinery property is zoned by the City of Torrance as Heavy Manufacturing (M-2). The proposed project will not require any modifications to the refinery's conditional use per

## Existing Refinery Operations

This section presents a brief overview of petroleum refining in general. Crude oil comes from the well as a mixture of hydrocarbon compounds and relatively small amounts of other materials, such as salt and water. Some of these hydrocarbon compounds also contain small amounts of nitrogen and sulfur. Petroleum refining is a coordinated arrangement of manufacturing processes designed to produce physical and chemical changes in the crude oil to remove most of the nitrogen and sulfur substances, break the crude oil into its various components, and blend them into various useful products. The overall refining process uses four kinds of techniques: (1) separation (e.g., distilling hydrocarbon liquids into gases, gasoline, diesel fuel, fuel oil, and heavier residual materials); (2) cracking (breaking large hydrocarbon molecules into smaller ones by thermal or catalytic processes); (3) reforming (using heat and catalysts to rearrange the chemical structure of a particular oil stream to improve its quality); and (4) combining (chemically combining two or more hydrocarbons to produce high-grade gasoline).[2]

## Proposed Project

The proposed project is described in this section. All components of the proposed project focus on modifications to the FCCU. Fluidized catalytic cracking is a major refinery process utilized for the purpose of converting heavy oils into more valuable, marketable petroleum-based products. A fluidized catalytic cracking unit or FCCU is the equipment that "cracks" the complex molecular structure of various hydrocarbons that exist in heavy oils, with the assistance of a catalyst, into gasoline and lighter petroleum products. A detailed overview of the FCCU process is included in Chapter 2.

ExxonMobil Oil Corporation proposes modifications to the FCCU at its Torrance Refinery to comply with new PM10 and ammonia emission limits set by SCAQMD Rule 1105.1. The proposed project includes the installation of new air pollution control equipment (i.e., two new ESPs) downstream of the two existing ESPs to control the PM10 emissions generated from the existing FCCU's regenerator, an L-shaped building

[2] Mobil CARB Phase 3 Reformulated Gasoline Project Final EIR, October 2001, SCH 2000081105, page 2-11.

for electrical and control gear (20 feet ~~x~~ by 70 feet) with associated underground electrical lines, and the relocation of a sewer line.

The proposed project will also include new anhydrous ammonia injection piping (aboveground) from the existing storage tanks to the new facilities. There are currently two existing bypass emergency stacks on the FCCU regenerator exhaust at the Torrance Refinery. The stack height of these existing emergency stacks will be cut off and capped. They will then be replaced with new emergency bypass duct around the SCR unit, waste heat boiler and ID fan equipment as part of the proposed project.

The Initial Study (IS) stated that the proposed project was going to include the removal of a small boiler (7 feet ~~x~~ by 10 feet) that has been out of service and the installation of a pneumatic conveyance system and storage silo that would collect the particulates from the new ESPs and allow increased onsite storage of the spent FCC catalyst. Based on additional detailed engineering, these components are no longer a part of the proposed project.

In addition to the equipment described above, the applications submitted for Permits to Construct also include a series of ESP maintenance options for consideration. These include:

- Operate one train of the new ESPs during maintenance;
- Operate the existing ESPs as needed to maintain the total power input of the new ESPs; and
- Operate the carbon monoxide (CO) boiler in waste heat mode during maintenance of the new ESPs.

The purpose of these maintenance options is to allow optimal operational flexibility. The new ESP facilities will consist of two parallel ESP trains that will be constructed to comply with Rule 1105.1 at the maximum flue gas rate. The new ESP facilities will include membrane type guillotine valves on the inlet and outlet of each of the ESP boxes to allow one ESP train to be isolated in the event that on-line maintenance of the other ESP train is required.

As previously mentioned, ExxonMobil Oil Corporation proposes to maintain the operation of the existing ESPs as needed during the maintenance of the new ESPs. In addition, it is proposed that the existing ESPs be operated as needed to maintain the total input power levels of the new ESPs. Operation of the existing ESPs may be necessary if the new ESPs were to malfunction or during maintenance of the new ESPs. Once the proposed project is complete, the existing ESPs will be shut off, with the exception of the mechanical rappers, unless needed as indicated above.

The environmental benefits of the proposed project include:

- Reduced PM10 emissions from the FCCU due to the installation of new air pollution control equipment (i.e., ESPs); and
- A reduction in the use of anhydrous ammonia as a flue gas conditioner to improve ESP performance (i.e., from approximately 3,225 to 1,035 pounds per day).

**Construction Activities**

The construction schedule for the ExxonMobil Rule 1105.1 Compliance Project is currently estimated to be 21.5 months, beginning on April 1, 2007 and ending on January

16, 2009. There will be four phases: (1) Site Preparation/Excavation; (2) Erection and Installation; (3) Quality Assurance/Quality Control (QA/QC) Punchout; and (4) FCCU Tie-In. The construction workday is planned to be 20 hours per day (two 10-hour shifts) in Phases 1, 2 and 3; and 24 hours per day (two 12-hour shifts) in Phase 4. Construction will take place six days a week in Phases 1 and 2, five days a week in Phase 3, and seven days a week in Phase 4.

### Operation

Operational conditions at the Torrance Refinery will not change once the proposed project is complete and the permanent work force at the Refinery will not increase. The proposed modifications to the FCCU will reduce PM10 and ammonia emissions and reduce the volume of anhydrous ammonia required to be used in a process associated with the FCCU.

The proposed project will also affect the number of truck trips per day delivering anhydrous ammonia to the refinery and the number of truck trips per year transporting spent FCC catalyst offsite for recycling to facilities such as California Portland Cement. Currently, there is one truck trip per day of anhydrous ammonia delivery to the refinery and used in the FCCU process (i.e., 365 truck trips per year). Similarly, there are 234 truck trips per year transporting spent FCC catalyst offsite for recycling[3]. This means that the maximum number of truck trips per day related to anhydrous ammonia deliveries and spent catalyst transportation offsite is two truck trips per day. The proposed project is expected to reduce the number of anhydrous ammonia truck trip deliveries from one per day to one every three days, or from 365 truck trips to 122 truck trips per year. Alternatively, the number of truck trips to transport spent catalyst may increase slightly from 234 to 260 per year.

The net effect of the proposed project is that there could be days throughout the year without any anhydrous ammonia deliveries or spent catalyst transportation offsite, thereby no truck trips per day. However, on potentially 122 days per year there could possibly be a maximum of two truck trips per day, the same as the baseline situation. As a result, on an annual basis there will be a net reduction in truck trips and associated mobile source emissions. However, on a peak daily basis, there will be no net change in truck trips or associated mobile source emissions.

As a result of the above, operational air quality impacts associated with the proposed project are less than significant, and are expected to have an overall beneficial impact on air quality.

### Permits and Approvals

The proposed project may require ministerial permits and approvals from a variety of regulatory agencies in addition to the discretionary air permits from the SCAQMD. Table 2-2 in Chapter 2 summarizes some of the ministerial permits and approvals that may be required at the Torrance Refinery for the ExxonMobil Rule 1105.1 Compliance Project in addition to the discretionary permits required by the SCAQMD.

[3] FCC spent catalyst is designated as a recyclable material, not a hazardous waste.

## 1.9 EXECUTIVE SUMMARY – CHAPTER 3: EXISTING ENVIRONMENTAL SETTING

Chapter 3 presents the existing environmental setting for the proposed project and compares it to the potential impacts that have been previously evaluated in the SCAQMD 2003 Final EA. This Final EIR focuses only on the environmental topics identified in the NOP/IS that could be significantly adversely affected by the proposed project. The reader is referred to the NOP/IS for discussion of environmental topics not considered in this Final EIR, and the rationale for exclusion of each environmental topic. The NOP/IS can be found in Appendix A.

### AIR QUALITY

The air pollution problem within the Basin is a consequence of the combination of emissions from the second largest urban area in the nation and especially adverse meteorological conditions relative to air quality. The Basin is currently designated "severe-17" nonattainment for the federal eight-hour ozone ambient air quality standard and has until 2021 to achieve the national standard. For PM10, the Basin is designated "serious" nonattainment, and is required to meet the national standard by 2006. The Basin is also in nonattainment for PM2.5[4] and has until 2010 to achieve the national standard, but will be filing for a five-year extension to 2015. For nitrogen dioxide (NO2), the Basin is in attainment. The Basin has met the federal standards and the SCAQMD has applied for reclassification for CO, but has not been officially redesignated in attainment.[5]

Chapter 3 provides a brief description of the existing air quality setting for each criteria pollutant.

## 1.10 EXECUTIVE SUMMARY – CHAPTER 4: IMPACTS AND MITIGATION MEASURES

Chapter 4 assesses the potential significant environmental impacts associated primarily with the construction of the ExxonMobil Rule 1105.1 Compliance Project, and briefly about operational impacts. The purpose of the proposed project is to reduce PM10 emissions from the existing Torrance Refinery FCCU. Environmental impacts could occur in connection with implementing the proposed project. An impact is considered significant under CEQA (Public Resources Code §21068) when a substantial, or potentially substantial, adverse change in the environment occurs.

### AIR QUALITY

#### Construction Emissions

Construction emissions for the proposed project are summarized in Table 4-3, together with the SCAQMD's daily significance thresholds for construction. The summary of project-specific construction emissions for the ExxonMobil Rule 1105.1 Compliance Project illustrates that peak daily emissions will be generated in Phase 1. These peak daily emissions are expected to be less than the peak daily emissions calculated in the SCAQMD 2003 Final EA for Rule 1105.1 for all pollutants. As a result, Table 4-4 shows

[4] Particulate matter less than 2.5 microns in diameter.
[5] Per SCAQMD AQMP/Special Projects Program Supervisor Ed Eckerle, June 2006.

that the ExxonMobil Rule 1105.1 Compliance Project does not generate any new significant adverse regional construction air quality impacts that were not already evaluated and presented in the SCAQMD 2003 Final EA for Rule 1105.1. Therefore, on a regional level, project-specific air quality impacts associated with construction activities are not considered significant. At the time the SCAQMD 2003 Final EA for Rule 1105.1 was prepared, localized air quality impacts were not required to be analyzed. As a result, an analysis of the localized air quality impacts related to the ExxonMobil Rule 1105.1 Compliance Project was performed. The localized significance threshold (LST) analysis determined that the project construction emissions were less than significant.

**Operational Emissions**

Overall, the proposed project is expected to have a net air quality benefit because PM10 and ammonia emissions will be reduced in accordance with Rule 1105.1. In addition, the proposed project is also expected to provide emission reduction benefits associated with the reduction in mobile source emissions associated with truck trips related to anhydrous ammonia deliveries (which will be reduced from 365 to 122 truck trips per year). While there will be a slight increase in the number of truck trips to transport FCC spent catalyst off site for recycling (which will increase from 234 to 260 truck trips per year), the overall impact from the project will be a net reduction in the current number of truck trips to the Torrance Refinery (which will be reduced from 599 to 382 truck trips per year). Further, the slight increase in the number of truck trips to transport FCC spent catalyst off site for recycling to facilities such as California Portland Cement will not exceed any of the applicable operational significance thresholds. Therefore, operational air quality impacts associated with the proposed project are less than significant, and are expected to have an overall beneficial impact on air quality.

**Toxic Air Contaminants**

The ExxonMobil Rule 1105.1 Compliance Project will result in overall emission reductions of PM10 and ammonia following project completion. Ammonia is considered to be a toxic air contaminant (TAC). Therefore, overall the proposed project is expected to have a beneficial impact on public health. The proposed project will only result in a short-term increase in emissions related to construction activities. These emissions will cease following completion of construction. The main contaminant of concern associated with construction activities is diesel exhaust particulate that has been listed as a TAC by CARB. While carcinogenic and chronic non-carcinogenic health risk values have been established for diesel exhaust particulates, no acute diesel exhaust health risk values have been established to evaluate acute (i.e., short-term) health effects related to diesel particulates.

Since construction for the proposed project is considered to be short term (i.e., lasts less than two years) and does not require a substantial number of construction equipment, no health risk assessment (HRA) is required to be prepared. Further, the proposed project is expected to result in long-term health benefits by reducing PM10 and ammonia emissions from the refinery. Therefore, no significant adverse health effects are expected from the proposed project.

### Mitigation Measures

Since no new significant adverse project-specific regional operation or construction air quality impacts are anticipated, no mitigation measures over and above what was included in the SCAQMD 2003 Final EA for Rule 1105.1 are required.

### Level of Significance after Mitigation

Construction and operational emissions for the proposed project are considered to be within the scope of the analysis in the SCAQMD 2003 Final EA for Rule 1105.1 and, therefore are considered to be less than significant. The localized significance threshold (LST) analysis determined that the project construction emissions were also less than significant.

## 1.11 EXECUTIVE SUMMARY – CHAPTER 5: CUMULATIVE IMPACTS

CEQA Guidelines §15130(a) requires an EIR to discuss cumulative impacts of a project when the project's incremental effect is cumulatively considerable, as defined in §15065(a)(3). At the time this Final EIR was prepared, there were two concurrent projects proposed for construction in the Basin at the same time as the proposed project, which will contribute to cumulative impacts, as compared to the impacts expected to be generated by the proposed ExxonMobil Rule 1105.1 Compliance Project. These include the BP Carson Refinery Safety, Compliance and Optimization Project and the Shell Rule 1105.1 Compliance Project.

### AIR QUALITY

Cumulative impacts refer to two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts.

### Construction Impacts

Chapter 5 includes the available cumulative construction emissions data for the concurrent projects and for the proposed project. As noted previously, construction air quality impacts from overlapping Rule 1105.1 compliance projects were concluded to be significant in the SCAQMD 2003 Final EA. Further, because of delays caused by a variety of reasons, the Rule 1105.1 compliance schedule is compressed so that more affected facilities will be installing air pollution control equipment, and thereby engaging in construction activities, at the same time. As a result, cumulative construction air quality impacts exceed the construction air quality impacts evaluated in the SCAQMD 2003 Final EA for Rule 1105.1 and, therefore exceed the scope of the analysis in that document. Consequently, cumulative construction-related air quality impacts are considered significant.

### Operational Impacts

The ExxonMobil Rule 1105.1 Compliance Project operational emissions are within the scope of the analysis in the SCAQMD 2003 Final EA for Rule 1105.1 and are therefore not significant. The proposed project does not contribute to any operational cumulative air quality impacts, so Chapter 5 does not include an analysis of cumulative operational impacts. As a result, the proposed project's contribution to significant adverse cumulative operational impacts is not considered to be cumulatively considerable as

defined in CEQA Guidelines §§15065(c) and 15130(a)(3) and, therefore, is not significant.

**Toxic Air Contaminants**

The ExxonMobil Rule 1105.1 Compliance Project will result in overall emission reductions of PM10 and ammonia following project completion. Since ammonia is considered to be a TAC, the long-term impacts of the proposed project are expected to be a beneficial impact on public health. As a result, the proposed project's contribution to any significant adverse cumulative TAC impacts is not considered to be cumulatively considerable, and, therefore, is not significant.

**Mitigation Measures**

Mitigation measures to reduce construction-related air emissions are primarily associated with controlling emissions from heavy construction equipment and worker commutes. No additional feasible mitigation measures, other than those proposed for the project in the SCAQMD 2003 Final EA for Rule 1105.1, have been identified that would reduce cumulative impacts to a less than significant level. The mitigation measures identified in the SCAQMD 2003 Final EA for Rule 1105.1 have been or will be imposed on all projects expected to occur at the same time as the proposed project to reduce cumulative emissions.

**Level of Significance after Mitigation**

The cumulative adverse construction-related air quality impacts are expected to exceed the scope of the analysis for all Rule 1105.1 compliance projects contained in the SCAQMD 2003 Final EA and are considered to be cumulatively considerable and significant after mitigation. Operational air quality impacts are not expected to exceed the scope of the analysis for all Rule 1105.1 compliance projects contained in the SCAQMD 2003 Final EA and are not considered to be cumulatively considerable and significant after mitigation. Because the proposed project is expected to reduce TAC emissions, TAC health impacts are not expected to be cumulatively considerable and, therefore, are not significant.

## 1.12 EXECUTIVE SUMMARY – CHAPTER 6: ALTERNATIVES

This Final EIR identifies and compares the relative merits of a range of reasonable alternatives to the proposed project as required by the CEQA Guidelines. According to the CEQA Guidelines, alternatives should include realistic measures to attain the basic objectives of the proposed project and provide a means for evaluating the comparative merits of each alternative. In addition, though the range of alternatives must be sufficient to permit a reasoned choice, they need not include every conceivable project alternative [CEQA Guidelines, §15126.6(a)]. The key issue is whether the selection and discussion of alternatives foster informed decision-making and public participation.

Alternatives to the proposed project include Alternative 1 - No Project Alternative and Alternative 2 – Reduced Construction Work hours. Based on the analysis in this Final EIR, no feasible alternatives were identified that would reduce or eliminate the potentially significant adverse cumulative construction air quality impacts related to the proposed project and still achieve the objectives of the proposed project.

Alternative 1 would eliminate cumulative construction air quality impacts; however, it would prevent ExxonMobil from complying with SCAQMD Rule 1105.1, thereby not meeting the primary objective of the proposed project.

Alternative 2 reduces the construction work hours from 20 to 10 hours per day. This alternative would reduce peak daily construction-related air quality emissions, but would not reduce cumulative construction emissions to levels within the scope of the SCAQMD 2003 Final EA for Rule 1105.1. In addition, this alternative would also prevent ExxonMobil from meeting Rule 1105.1 compliance deadlines and meeting the objectives of the project.

## 1.13 EXECUTIVE SUMMARY – CHAPTER 7: REFERENCES

Information on references cited, organizations and persons consulted, and the list of EIR preparers is presented in Chapter 7.

# CHAPTER 2

# PROJECT DESCRIPTION

Introduction
Project Objectives
Project Location, Land Use and Zoning
Existing Refinery Operations
Proposed Project
Construction Activities
Operation of the Proposed Project
Permits and Approvals

# 2.0 PROJECT DESCRIPTION

## 2.1 INTRODUCTION

On November 7, 2003, the SCAQMD adopted Rule 1105.1 - Reduction of PM10 and Ammonia Emissions from Fluid Catalytic Cracking Units, and certified the SCAQMD 2003 Final EA for the rule. The SCAQMD 2003 Final EA identified six refineries within the Basin that operate FCCUs subject to the requirements of Rule 1105.1; however, one of the six refineries was currently operating in compliance with the emission standards outlined in the rule. As a result, only five of the six refineries in the Basin are required to take additional actions to comply with the emission standards in Rule 1105.1. The ExxonMobil Torrance Refinery is one of the five refineries required to take additional measures to meet the emission limits of Rule 1105.1.

ExxonMobil Oil Corporation proposes to comply with Rule 1105.1 by installing new air pollution control equipment (i.e., two new ESPs) on the exhaust of the existing FCCU regenerator downstream of the existing ESPs at its Torrance Refinery. These proposed modifications will comply with the requirements of SCAQMD Rule 1105.1 by reducing PM10 and ammonia emissions from the FCCU. The proposed project will not increase or decrease

crude throughput capabilities or otherwise affect existing operations at the refinery.

## 2.2 PROJECT OBJECTIVES

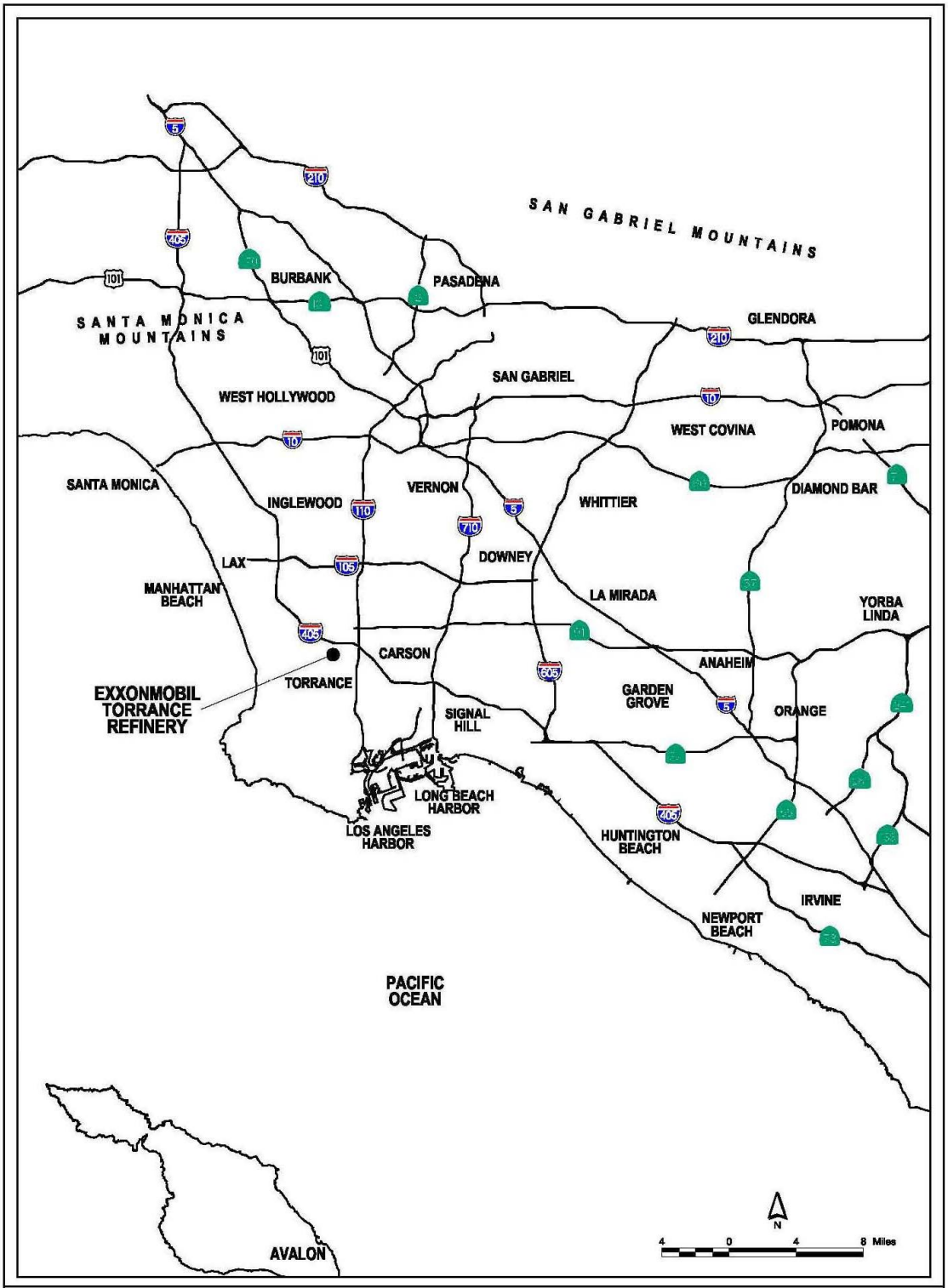
The objective of the proposed project is to comply with SCAQMD Rule 1105.1 by reducing PM10 and ammonia emissions from the existing FCCU at the Torrance Refinery by the final compliance date specified in Rule 1105.1.

## 2.3 PROJECT LOCATION, LAND USE AND ZONING

The proposed project will affect operations at the ExxonMobil Refinery located at 3700 W. 190$^{th}$ Street, in the City of Torrance, County of Los Angeles. The Torrance Refinery was built in 1929, covers approximately 750 acres, and processes an average of 155,000 barrels of crude oil per day. The proposed project will not increase the maximum daily crude oil throughput. Figure 2-1 illustrates the regional setting, and Figure 2-2 shows the site location of the Torrance Refinery.

The Torrance Refinery occupies an irregularly-shaped parcel of land, between 190$^{th}$ Street to the north, Van Ness Avenue to the east, railroad tracks and Del Amo Boulevard to the south, and Prairie Avenue to the west. A small portion of the refinery is located on the west side of Prairie Avenue. All of the activities associated with the proposed project will occur within the boundaries of the existing refinery.

The closest residential area is across 190$^{th}$ Street to the north. Columbia Regional Park is located immediately across from the refinery in the northwest corner. Other land uses to the north, east, west, and south include industrial and commercial facilities, a BNSF railroad line, and a business park. The areas surrounding the refinery can be characterized as a blend of heavy and light industrial, commercial, medium and high-density residential, and industrial/manufacturing. The refinery property is zoned by the City of Torrance as Heavy Manufacturing (M-2). The proposed project will not require any modifications to the refinery's conditional use permit.




**REGIONAL SETTING**

| 2007 | EXXONMOBIL RULE 1105.1 COMPLIANCE PROJECT - TORRANCE REFINERY | FIGURE 2-1 |
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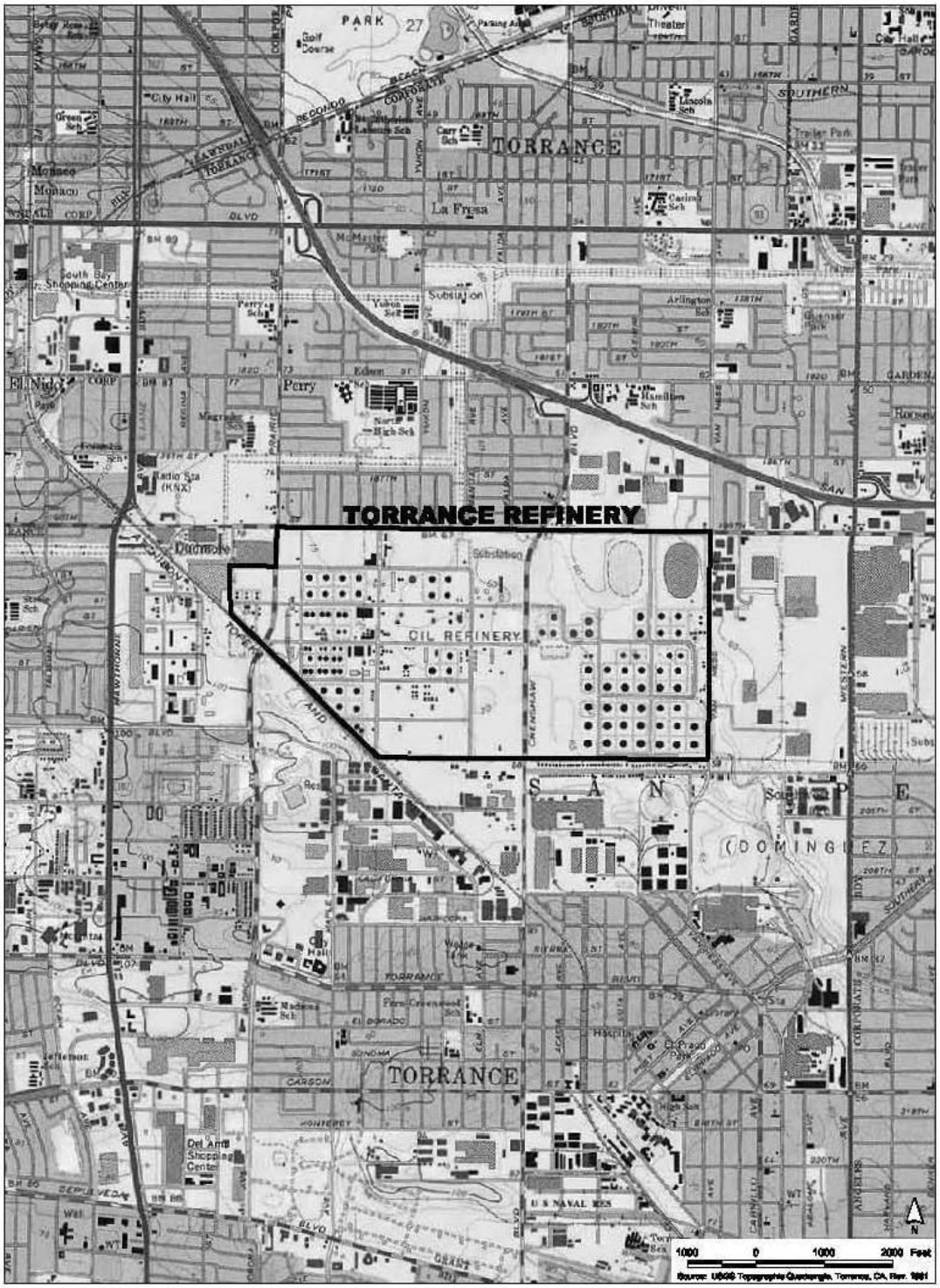


**SITE LOCATION**

| 2007 | EXXONMOBIL RULE 1105.1 COMPLIANCE PROJECT - TORRANCE REFINERY | FIGURE 2-2 |
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## 2.4 EXISTING REFINERY OPERATIONS

This section presents a brief overview of petroleum refining in general. Crude oil comes from the well as a mixture of hydrocarbon compounds and relatively small amounts of other materials, such as salt and water. Some of these hydrocarbon compounds also contain small amounts of nitrogen and sulfur. Petroleum refining is a coordinated arrangement of manufacturing processes designed to produce physical and chemical changes in the crude oil to remove most of the nitrogen and sulfur substances, break the crude oil into various components, and blend them into various useful products. The overall refining process uses four kinds of techniques: (1) separation (e.g., distilling hydrocarbon liquids into gases, gasoline, diesel fuel, fuel oil, and heavier residual materials); (2) cracking (breaking large hydrocarbon molecules into smaller ones by thermal or catalytic processes); (3) reforming (using heat and catalysts to rearrange the chemical structure of a particular oil stream to improve its quality); and (4) combining (chemically combining two or more hydrocarbons to produce high-grade gasoline).[6]

The following discussion of fluidized catalytic cracking, the formation of particulates and ammonia slip, and filterable vs. condensable particulates was taken from the SCAQMD Final EA for Rule 1105.1 at pages 2-4 through 2-6 and is provided herein as background for the FCC process.

### Fluidized Catalytic Cracking

Fluidized catalytic cracking is a major refinery process utilized for the purpose of converting heavy oils into more valuable, marketable petroleum-based products. A fluidized catalytic cracking unit or FCCU is the equipment that "cracks" the complex molecular structure of various hydrocarbons that exist in heavy oils, with the assistance of a catalyst, into gasoline and lighter petroleum products. Each FCCU consists of three main components: a reaction chamber, a catalyst regenerator and a fractionator.

The cracking process begins in the reaction chamber where fresh catalyst is mixed with pre-heated heavy oils known as the fresh feed. The catalyst typically used for cracking is a fine powder, often comprised of synthetic or amorphous silica-alumina, made up of tiny particles with surfaces covered by several microscopic pores. A high heat-generating chemical reaction occurs that converts the heavy oil liquid into a cracked hydrocarbon vapor mixed with catalyst. As the cracking reaction progresses, the cracked hydrocarbon vapor is routed to a distillation column or fractionator for further separation into lighter hydrocarbon components such as light gases, gasoline, light gas oil, and cycle oil.

Towards the end of the reaction, the catalyst surface becomes inactive or spent because the pores are gradually coated with a combination of heavy oil liquid residue and solid carbon (coke), thereby reducing its efficiency or ability to react with fresh heavy liquid oil in the feed. To prepare the spent catalyst for re-use, the remaining oil residue is removed by steam stripping. The spent catalyst is later cycled to the second component of the FCCU, the regenerator, where hot air burns the coke layer off of the surface of each catalyst particle to produce reactivated or regenerated catalyst. Subsequently, the regenerated catalyst is cycled back to the reaction chamber and mixed with more fresh heavy liquid oil feed. Thus, as the heavy oils enter the cracking process through the reaction chamber and exit the fractionator as lighter components, the catalyst continuously circulates between the reaction chamber and the regenerator.

[6] Mobil CARB Phase 3 Reformulated Gasoline Project Final EIR, October 2001, SCH 2000081105, page 2-11.

## Formation of Particulates and Ammonia Slip

During the regeneration cycle in the FCCU, large quantities of primary particulate emissions, comprised mostly of catalyst fines, are found in the flue gas. As in the case with catalyst, primary particulate emissions are solid or liquid particles emitted directly from sources. However, primary particulates can also be gaseous precursor compounds that don't change their chemical composition but physically convert to a solid or liquid particulate shortly after the exhaust gas is released into the atmosphere. Primary particulates from FCCU regenerators mostly consist of sulfates (referred to as 'primary sulfates'), nitrates (referred to as 'primary nitrates') and other organic particulates. The gaseous precursor compounds that form primary sulfates are sulfur dioxide, sulfur trioxide, and ammonia, while the gaseous precursors that form nitrates are nitrogen oxide and ammonia. Primary sulfates are formed in the flue gas as a combination of sulfuric acid, ammonium bisulfate, and ammonium sulfate. Primary nitrates are formed in the flue gas from the nitrogen dioxide reacting with water vapor to form nitric acid, which eventually is neutralized by ammonia to form ammonium nitrate.

FCCUs are also considered major sources of secondary particulate emissions. Secondary particulate emissions are formed in the atmosphere as a result of one or several chemical reactions that cause physical transformations of their gaseous precursors. In contrast to primary condensable particulates, which are formed within a few seconds after the exit gas plume leaves the stack, secondary particulates require several minutes, hours, or days to form in the atmosphere. Again, sulfates and nitrates are the two most common secondary particulates in the atmosphere. Secondary sulfates are formed and exist as a combination of sulfuric acid, ammonium bisulfate, and ammonium sulfate. Most of the secondary nitrates formed are ammonium nitrate, though a small portion forms sodium nitrate from the reaction of nitric acid with sodium chloride in sea salt. Other typical emissions from FCCUs are sulfur dioxide (SO2), sulfur trioxide (SO3), nitrogen dioxide (NO2), nitric oxide (NO), and ammonia slip (NH3). In addition, other by-products that result from combustion, such as carbon monoxide (CO), carbon dioxide (CO2), oxygen and water vapor, are produced during 'coke burn-off,' when the FCCU regenerator burns off the remaining carbon that is suspended on the catalyst particles.

## Filterable vs. Condensable Particulates

To quantify emissions from FCCU regenerators, devices called sample trains are equipped with filter media and impingers and are used to capture a portion of flue gas. Specifically, primary particulates are measured by using SCAQMD Method 5.2, or EPA Methods 5, 17, 201, 201A, and 202. With respect to the distribution of primary particulates in the sample taken, primary particulates are analyzed and classified as either 'filterable' or 'condensable' particulates. Filterable particulates are solid and liquid particulates at stack temperature and at temperatures above the filter's temperature in accordance with a reference test method, they are captured on the filter media in a stack sampling train. Typically, the majority of filterable particulates exiting from an FCCU regenerator is smaller than 10 microns in diameter.

Condensable particulates are defined by the EPA as particles that are in a gaseous phase at stack temperature and then they transform into a liquid or solid by condensation, nucleation, and coagulation immediately after exiting the stack. In the gaseous state, the particulates pass through the filter media, until they condense into a liquid or solid and

get captured in the impinger solution of the sampling train. Most condensable particulates are smaller than 2.5 microns in diameter.

## 2.5 PROPOSED PROJECT

The proposed project is described in this section. All components of the proposed project focus on modifications to the FCCU.

ExxonMobil Oil Corporation proposes modifications to its Torrance Refinery to comply with new PM10 and ammonia emission limits set by SCAQMD Rule 1105.1. Figure 2-3 shows the location of the existing FCCU and the new ESPs within the refinery. The proposed project includes the installation of new air pollution control equipment (i.e., two new ESPs) downstream of the two existing ESPs to control the PM10 emissions generated from the existing FCCU's regenerator, an L-shaped building for electrical and control gear (20 feet ~~x~~ by 70 feet) with associated underground electrical lines, and the relocation of a sewer line.

The proposed project will also include new anhydrous ammonia injection piping (aboveground) from the existing storage tanks to the new facilities. There are currently two existing bypass emergency stacks on the FCCU regenerator exhaust at the Torrance Refinery. The stack height of these existing emergency stacks will be cut off and capped. They will then be replaced with new emergency bypass duct around the SCR unit, waste heat boiler and ID fan equipment as part of the proposed project.

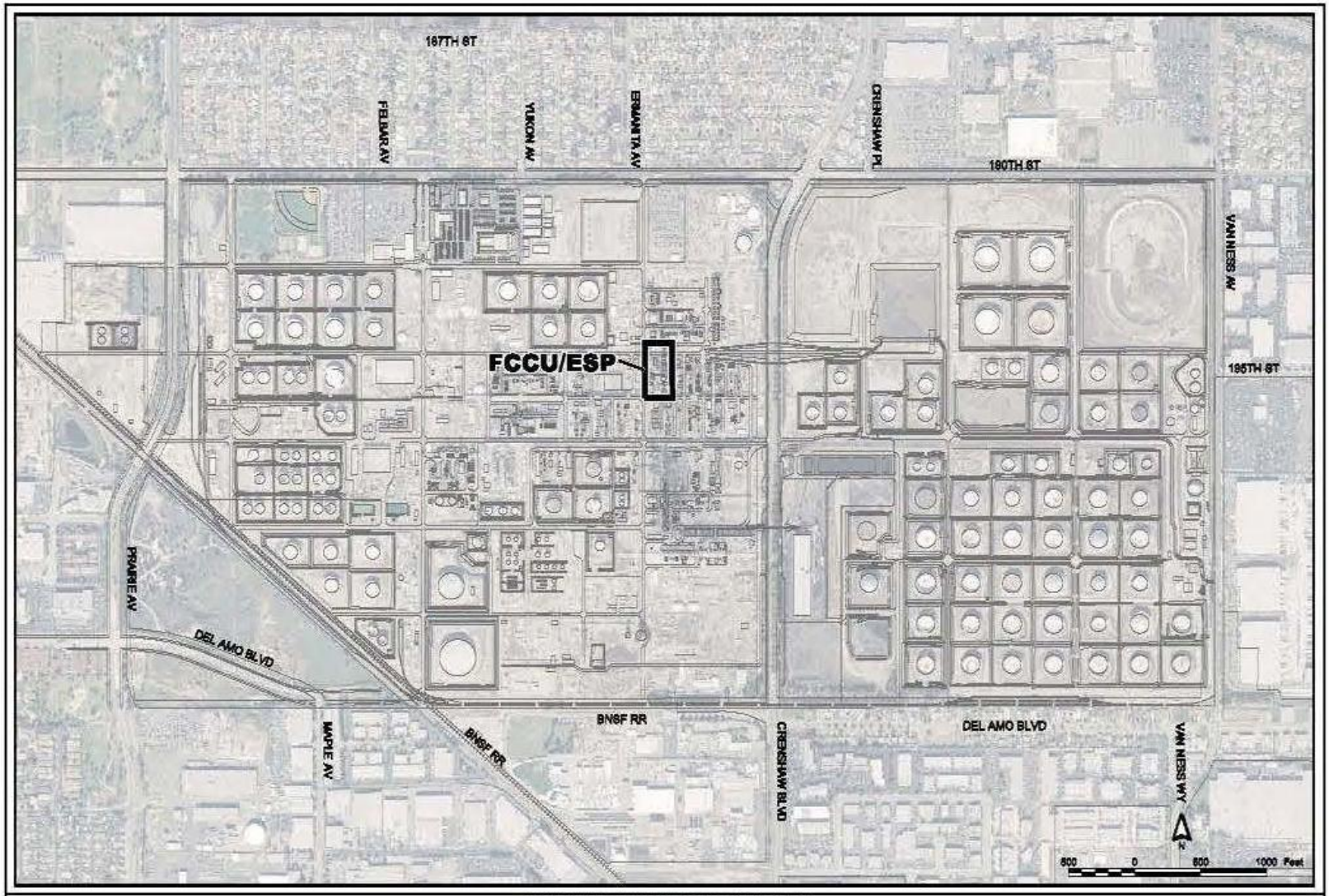
The Initial Study (IS) stated that the proposed project was going to include the removal of a small boiler (7 feet ~~x~~ by 10 feet) that has been out of service and the installation of a pneumatic conveyance system and storage silo that would collect the particulates from the new ESPs and allow increased onsite storage of the spent FCC catalyst. Based on additional detailed engineering, these components are no longer a part of the proposed project.

In addition to the equipment described above, applications submitted for Permits to Construct also include a series of ESP maintenance options for consideration. These include:

- Operate one train of the new ESPs during maintenance;
- Operate the existing ESPs as needed to maintain the total power input of the new ESPs; and
- Operate the CO boiler in waste heat mode during maintenance of the new ESPs.

The purpose of these maintenance options is to allow optimal operational flexibility. The new ESP facilities will consist of two parallel ESP trains that will be constructed to comply with Rule 1105.1 at the maximum flue gas rate. The new ESP facilities will include membrane type guillotine valves on the inlet and outlet of each of the ESP boxes to allow one ESP train to be isolated in the event that on-line maintenance of the other ESP train is required.

As previously mentioned, ExxonMobil Oil Corporation proposes to maintain the operation of the existing ESPs as needed during the maintenance of the new ESPs. In addition, it is proposed that the existing ESPs be operated as needed to maintain the total




**GENERAL FCCU/ESP LOCATION**

| 2007 | EXXONMOBIL RULE 1105.1 COMPLIANCE PROJECT - TORRANCE REFINERY | FIGURE 2-3 |
|---|---|---|

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input power levels of the new ESPs. Operation of the existing ESPs may be necessary, such as if the new ESPs were to malfunction or during maintenance of the new ESPs. Once the proposed project is complete, the existing ESPs will be shut off, with the exception of the mechanical rappers, unless needed as indicated above.

The proposed project will also affect the number of truck trips per day delivering anhydrous ammonia to the refinery and the number of truck trips per year transporting spent FCC catalyst offsite for recycling to facilities such as California Portland Cement. Currently, there is one truck trip per day of anhydrous ammonia delivery to the refinery and used in the FCCU process (i.e., 365 truck trips per year). Similarly, there are 234 truck trips per year transporting spent FCC catalyst offsite for recycling. This means that the maximum number of truck trips per day related to anhydrous ammonia deliveries and spent catalyst transportation offsite is two truck trips per day. The proposed project is expected to reduce the number of anhydrous ammonia truck trip deliveries from one per day to one every three days, or from 365 truck trips to 122 truck trips per year. Alternatively, the number of truck trips to transport spent catalyst may increase slightly from 234 to 260 per year. The net effect of the proposed project is that there could be days throughout the year without any anhydrous ammonia deliveries or spent catalyst transportation offsite, thereby no truck trips per day. However, on potentially 122 days per year there could possibly be a maximum of two truck trips per day, the same as the baseline situation. As a result, on an annual basis there will be a net reduction in truck trips and associated mobile source emissions. However, on a peak daily basis, there will be no net change in truck trips or associated mobile source emissions.

The environmental benefits of the proposed project include:

- Reduced PM10 emissions from the FCCU due to the installation of new air pollution control equipment (i.e., ESPs); and
- A reduction in the use of anhydrous ammonia as a flue gas conditioner to improve ESP performance (i.e., from approximately 3,225 to 1,035 pounds per day).

## 2.6 CONSTRUCTION ACTIVITIES

### Schedule

As shown on Figure 2-1, the construction schedule for the ExxonMobil Rule 1105.1 Compliance Project is currently estimated to be 21.5 months beginning on April 1, 2007 and ending on January 16, 2009. The construction workday is planned to be 20 hours a day (two 10-hour shifts) in Phases 1, 2 and 3; and 24 hours a day (two 12-hour shifts) in Phase 4. Construction will take place six days a week in Phases 1 and 2, five days a week in Phase 3, and seven days a week in Phase 4.

## FIGURE 2-4
## EXXONMOBIL RULE 1105.1 COMPLIANCE PROJECT CONSTRUCTION SCHEDULE

| Phase | 2007 | | | | | | | | | 2008 | | | | | | | | | | | | 2009 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A | M | J | J | A | S | O | N | D | J | F | M | A | M | J | J | A | S | O | N | D | J |
| Phase 1 - Site Prep/ Excavation | | | | | | | | | | | | | | | | | | | | | | |
| Phase 2 – Erection & Installation | | | | | | | | | | | | | | | | | | | | | | |
| Phase 3 – QA/QC Punchout | | | | | | | | | | | | | | | | | | | | | | |
| Phase 4 – FCCU Tie-In | | | | | | | | | | | | | | | | | | | | | | |

Phase 1 (Site Preparation/Excavation) begins on April 1, 2007 and ends on September 30, 2007 (six months).
Phase 2 (Erection and Installation) begins on October 1, 2007 and ends on November 30, 2008 (14 months).
Phase 3 (QA/QC Punchout) begins on December 1, 2008 and ends on December 29, 2008 (one month).
Phase 4 (FCCU Tie In) begins on December 30, 2008 and ends on January 16, 2009 (two weeks).

### Phases

Construction activities will occur in four phases, and will not overlap:

*Phase 1* - Site Preparation/Excavation (April 1, 2007-September 30, 2007). This phase involves excavation of the site; pouring the concrete foundations; drilling caissons; and installing underground utilities.

*Phase 2* - Erection and Installation (October 1, 2007-November 30, 2008). This phase involves erecting the structural steel and assembling the ESP equipment; building an electrical switchhouse (20 feet x 10 feet); relocating a sewer line; and installing all the ancillary systems (e.g., instrumentation, piping, heating/ventilation/air conditioning, electrical).

*Phase 3* – Quality Assurance/Quality Control (QA/QC) Punchout (December 1, 2008-December 29, 2008). This phase involves the QA/QC inspection and performing any modifications or corrections to the previously performed construction.

*Phase 4* - FCCU Tie-In (December 30, 2008-January 16, 2009). This phase involves the connection of the new ESPs to the FCCU.

## 2.7 OPERATION OF THE PROPOSED PROJECT

Operational conditions at the Torrance Refinery will not change once the proposed project is complete and the permanent work force at the Refinery will not increase. The proposed modifications to the FCCU will reduce PM10 and ammonia emissions and reduce the volume of anhydrous ammonia required to be used in a process associated with the FCCU (and associated truck deliveries).

## 2.8 PERMITS AND APPROVALS

The proposed project may require ministerial permits and approvals from a variety of regulatory agencies in addition to the discretionary air permits from the SCAQMD. Some of these permits and approvals that may be required at the Torrance Refinery for the ExxonMobil Rule 1105.1 Compliance Project are summarized in Table 2-1 below.

## Table 2-1
## Federal, State and Local Agency Permits and Approvals

| Agency | Requirement | Applicability to Project |
|---|---|---|
| **Federal** | | |
| No federal agency approvals for the proposed project would be anticipated to be required. | | |
| **State** | | |
| California Dept. of Toxic Substances Control (DTSC) | Hazardous materials storage "reporting requirement" | When the refinery updates their Hazardous Materials Business Plan (annual update), they would revise the volume of anhydrous ammonia stored onsite to account for the reduction as a result of the proposed project. |
| State Water Resources Control Board (SWRCB) | National Pollutant Discharge Elimination System (NPDES) Permit/Stormwater Discharge requirement | Compliance with applicable stormwater pollution prevention plans and best management practices during construction. |
| California Department of Transportation (Caltrans) | Transportation Permit | Construction contractors would be required to apply for and receive approval to transport any overweight, oversize and wide loads on state highways. |
| Cal-OSHA | Construction-related permits | Excavation, construction, and crane erection permits. |
| **Local** | | |
| SCAQMD | Rule 201: Permits to Construct and Reg XXX: Title V of the 1990 Clean Air Act | Applications are required to construct, operate or modify air emission sources. |
| | Rule 203: Permits to Operate | Applications are required to operate air emissions sources. |
| | CEQA | State regulation that is implemented at the local level. Therefore, the SCAQMD is the lead agency for preparation of the environmental document. |
| | Rule 212: Standards for Approving Permits | Requires public notification of a significant project. |
| | Rule 1105.1: Reduction of PM10 and Ammonia Emissions from FCCUs | Installation of air pollution control equipment to reduce PM10 and ammonia emissions from FCCUs. |
| City of Torrance | Building, excavation, plumbing and electrical permits | Required for project-related foundations, buildings and general construction. |

# CHAPTER 3

# EXISTING ENVIRONMENTAL SETTING

Introduction
Regulatory Setting
Air Quality

# 3.0 EXISTING ENVIRONMENTAL SETTING

## 3.1 INTRODUCTION

CEQA Guidelines §15125 require that an EIR include a description of the environment within the vicinity of a proposed project as it exists at the time the NOP/IS is published, or if no NOP/IS is published, at the time the environmental analyses commences from both a local and regional perspective. This chapter presents the existing environmental setting for the proposed project against which potential impacts of the project have been evaluated. This Final EIR focuses only on air quality, the environmental topic area identified in the NOP/IS that could be significantly adversely affected by the proposed project (see Appendix A). The NOP/IS also includes the discussion of environmental topics not considered in this Final EIR, and the rationale for inclusion or exclusion of each environmental topic.

## 3.2 REGULATORY SETTING

**Federal Authority – U.S. Environmental Protection Agency (EPA):** The EPA enforces the Federal Clean Air Act and the associated NAAQS for CO, NO2, ozone, SO2, PM10, PM2.5, and lead. These air quality standards are concentrations above which the pollutant is known to cause adverse health effects.

The project site is located within the Basin, which is currently designated "severe-17" nonattainment[7] for the federal eight-hour ozone ambient air quality standard and has until 2021 to achieve the national standard. For PM10 the Basin is designated "serious" nonattainment and is required to meet the national standard by 2006. The Basin is also in nonattainment for PM2.5 and has until 2010 to achieve the national standard, but will be filing a five-year extension to 2015. The Basin is in attainment for $NO_2$. The Basin has met the federal standards and the SCAQMD has applied for reclassification for CO, but has not been officially redesignated in attainment.

**State Authority – California Air Resources Board (CARB):** CARB is the state agency that: (1) establishes and enforces emission standards for motor vehicles, fuels and consumer products; (2) establishes health-based air quality standards; (3) Conducts research; (4) Monitors air quality; (5) identifies and promulgates control measures for TACs; (6) provides compliance assistance for businesses; (7) produces education and outreach programs and materials; and (8) oversees and assists local air quality districts that regulate most non-vehicular sources of air pollution. CARB approves the regional Air Quality Management Plans (AQMPs) for incorporation into the State Implementation Plan (SIP) and is responsible for preparing those portions of the plan related to mobile source emissions. CARB implements the California Clean Air Act requirements, regulating emissions from motor vehicles, and setting fuel standards. The CCAA established ambient air quality standards for ozone, PM10, PM2.5, CO, NO2, SO2, lead, visibility-reducing particles, sulfates, hydrogen sulfide, and vinyl chloride. California standards are generally stricter than national standards.

[7] A *nonattainment* designation indicates that the air quality violates an ambient air quality standard. An *attainment* designation indicates that the air quality does not violate the established standard. An *unclassified* designation indicates that there are insufficient data for determining attainment or nonattainment.

**Local Authority – SCAQMD:** The SCAQMD is the local agency responsible for the regulation and enforcement of federal, state, and local air pollution control regulations in the Basin. The SCAQMD operates monitoring stations in the Basin, develops and enforces rules and regulations for stationary sources and equipment, prepares emissions inventory and air quality management planning documents, and conducts source testing and inspections. The SCAQMD AQMP includes control measures and strategies to be implemented to attain state and federal ambient air quality standards in the Basin. The SCAQMD then implements these control measures as regulations to control or reduce criteria pollutant emissions from stationary sources or equipment.

## 3.3 AIR QUALITY

The existing air quality setting in the vicinity of the ExxonMobil Rule 1105.1 Compliance Project is presented in this section. The proposed project is within the jurisdiction of the SCAQMD, which encompasses an area of 10,473 square miles (referred to hereafter as the district), consisting of the four county South Coast Air Basin and the Riverside County portions of the Salton Sea Air Basin (SSAB) and the Mojave Desert Air Basin (MDAB). The Basin, which is a subarea of the SCAQMD's jurisdiction, is bounded by the Pacific Ocean to the west and the San Gabriel, San Bernardino, and San Jacinto Mountains to the north and east. The 6,745 square-mile Basin includes all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino Counties. The Riverside County portion of the SSAB and MDAB is bounded by the San Jacinto Mountains in the west and spans eastward up to the Palo Verde Valley. The federal nonattainment area (known as the Coachella Valley Planning Area) is a subregion of both Riverside County and the SSAB and is bounded by the San Jacinto Mountains to the west and the eastern boundary of the Coachella Valley to the east.

### 3.3.1 METEOROLOGICAL CONDITIONS

The climate in the Basin is characterized by sparse winter rainfall and hot summers tempered by cool ocean breezes. During the summer months, a warm air mass frequently descends over the cool, moist marine layer produced by the interaction between the ocean's surface and the lowest layer of the atmosphere. The warm upper layer forms a cap or "inversion" over the cool marine layer and inhibits the pollutants released into the marine layer from dispersing upward. In addition, light winds during the summer further limit dispersion. Finally, sunlight triggers the photochemical reactions which produce ozone, and this region experiences more days of sunlight than many other major urban areas in the nation.[8]

Table 3-1 summarizes historical meteorological data readings from 2000 through 2005 taken at the National Oceanic and Atmospheric Administration (NOAA) weather station closest to the project site (e.g., the Los Angeles International Airport weather station).

[8] SCAQMD. August 2003. *2003 Air Quality Management Plan, page 1-3.*

**Table 3-1**
**Historical Meteorological Data**

| ELEMENT | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 |
|---|---|---|---|---|---|---|
| Highest temperature | 93°F Sept 12 | 84°F Feb 4 | 89°F Feb 21 | 91°F Oct 26 | 101°F Sept 5 | 96°F Sept 29 |
| Lowest temperature | 41°F Jan 8 | 41°F Feb 15 | 36°F Jan 31 | 16°F Oct 8 | 41°F Dec 6 | 42°F Dec 4 |
| Average temperature | 56.3°F | 55.4°F | 55.2°F | 56.2°F | 56.4°F | 63.1°F |
| Mean relative humidity | 74% | 76% | 75% | 76% | 75% | 77% |
| Number of days with heavy fog (visibility ≤ ¼ mile) | 26 | 35 | 27 | 34 | 17 | 20 |
| Number of days with thunderstorms | 1 | 2 | 1 | 1 | 1 | 10 |
| Mean wind speed | 7.6 mph | 7.5 mph | 7.5 mph | 7.3 mph | 7.5 mph | 7.4 mph |
| Total precipitation | 11.01 inches | 17.01 inches | 5.03 inches | 9.55 inches | 16.32 inches | 18.81 inches |
| Snow, ice pellets, hail | None | None | None | None | None | None |

Source: NOAA, meteorological data 2000-2005, Los Angeles, CA (Los Angeles International Airport Station).
F = Fahrenheit; mph = miles per hour.

### 3.3.2 TEMPERATURE AND RAINFALL

Temperature affects air quality in the region in several ways. Local winds are the result of temperature differences between the relatively stable ocean air and the uneven heating and cooling that takes place in the Basin due to a wide variation in topography. The mean wind speed in the Basin is 7.5 miles per hour. Temperature also has a major effect on vertical mixing height and affects chemical and photochemical reaction times. The annual average temperatures vary throughout the Basin from the low 40s to the high 90s. The coastal areas show little variation in temperature on a year round basis due to the moderating effect of the marine influence. On average, September is the warmest month, while December and January are the coolest months of the year. Annual rainfall varies from a low of five inches to a high of 19 inches. No snow, ice or hail has been reported between 2000 and 2005.

### 3.3.3 WIND FLOW PATTERNS

Wind flow patterns play an important role in the transport of air pollutants in the Basin. The winds flow from offshore and blow eastward during the daytime hours. In summer, the sea breeze starts in mid-morning, peaks at 10-15 miles per hour, and subsides after sundown. There is a calm period until about midnight. At that time, the land breeze begins from the northwest, typically becoming calm again about sunrise. In winter, the same general wind flow patterns exist except that summer wind speeds average slightly higher than winder wind speeds. This pattern of low wind speeds is a major factor that allows the pollutants to accumulate in the Basin. The normal wind patterns in the Basin are interrupted by the unstable air accompanying the passing storms during the winter and infrequent strong northeasterly Santa Ana wind flows from the mountains and deserts north of the Basin. (BP Carson Refinery Safety, Compliance and Optimization Project Final EIR, SCH 2005111057, at page 3-2)

## 3.3.4 EXISTING AIR QUALITY

The SCAQMD is responsible for ensuring that state and federal ambient air quality standards are achieved and maintained in its geographical jurisdiction. Health-based air quality standards have been established by California and the federal government for the following criteria air pollutants: ozone, CO, NO2, PM10, PM2.5, SO2, and lead. These standards were established to protect sensitive receptors within a margin of safety from adverse health impacts due to exposure to air pollution. In most cases, the California standards are more stringent than the federal standards. California has also established standards for sulfate, visibility, hydrogen sulfide, and vinyl chloride. The state and national ambient air quality standards (NAAQS) for each of these pollutants and their effects on health are summarized in Table 3-2. The SCAQMD monitors levels of the aforementioned criteria pollutants at 34 monitoring stations throughout the Basin. The 2005 air quality data from SCAQMD's Southwest Coastal Los Angeles County monitoring station is presented in Table 3-3. This is the monitoring station closest to the ExxonMobil Torrance Refinery.

### Monitored Air Quality and Health Effects

*Carbon Monoxide:* CO is a colorless and odorless gas formed by the incomplete combustion of fossil fuels. CO competes with oxygen, often replacing it in the blood, thus reducing the blood's ability to transport oxygen to vital organs in the body. The ambient air quality standard for CO is intended to protect persons whose medical condition already compromises their circulatory systems' ability to deliver oxygen.

CO was monitored at 25 locations in the district in 2005 and no locations exceeded the federal or state eight-hour CO standards. The highest eight-hour average CO concentration of the year (i.e., 5.9 parts per million [ppm]) was 62 percent of the federal standard. This concentration was measured at Source/Receptor Area No. 12, South Central Los Angeles County (Station No. 084). The CO concentration was down from the calendar year 2004 concentration of 6.7 ppm, or 71 percent of the federal standard. No areas within the district have exceeded the NAAQS since 2003.

*Nitrogen Dioxide:* NO2 is a brownish gas that is formed in the atmosphere through a rapid reaction of the colorless gas nitric oxide (NO) with atmospheric oxygen. NO and NO2 are collectively referred to as NOx. NO2 can cause respiratory irritation and constriction of the airways, making breathing more difficult.

In 2005 the SCAQMD monitored NO2 levels at 25 stations and the maximum annual arithmetic mean (AAM) was measured at 0.0313 ppm, which represents 58 percent of the federal standard. The federal standard is an AAM of NO2 greater than 0.0534 ppm. The more stringent one-hour state standard (i.e., 0.25 ppm) was not exceeded in 2005. The district is classified as attainment for both the state and national AAQS.

*Sulfur Dioxide:* SO2 is a colorless, pungent gas formed primarily by the combustion of sulfur-containing fossil fuels. Health effects include acute respiratory symptoms and breathing difficulty. In 2005, seven locations monitored SO2 levels and neither the state nor the federal standards were exceeded.

# Table 3-2
# Federal and State Ambient Air Quality Standards

| AIR POLLUTANT | STATE STANDARD (CONCENTRATION/ AVERAGING TIME) | FEDERAL PRIMARY STANDARD CONCENTRATION/ AVERAGING TIME | MOST RELEVANT EFFECTS |
|---|---|---|---|
| Ozone | 0.09 ppm, 1-hr. average > 0.070 ppm, 8-hr | 0.08 ppm, 8-hr average > | (a) Short-term exposures: (1) Pulmonary function decrements and localized lung edema in humans and animals (2) Risk to public health implied by alterations in pulmonary morphology and host defense in animals; (b) Long-term exposures: Risk to public health implied by altered connective tissue metabolism and altered pulmonary morphology in animals after long-term exposures and pulmonary function decrements in chronically exposed humans; (c) Vegetation damage; (d) Property damage. |
| Carbon Monoxide | 9.0 ppm, 8-hr average > 20 ppm, 1-hr average > | 9 ppm, 8-hr average > 35 ppm, 1-hr average > | (a) Aggravation of angina pectoris and other aspects of coronary heart disease; (b) Decreased exercise tolerance in persons with peripheral vascular disease and lung disease; (c) Impairment of central nervous system functions; (d) Possible increased risk to fetuses. |
| Nitrogen Dioxide | 0.25 ppm, 1-hr average > | 0.053 ppm, annual arithmetic mean > | (a) Potential to aggravate chronic respiratory disease and respiratory symptoms in sensitive groups; (b) Risk to public health implied by pulmonary and extra-pulmonary biochemical and cellular changes and pulmonary structural changes; (c) Contribution to atmospheric discoloration. |
| Sulfur Dioxide | 0.04 ppm, 24-hr average > 0.25 ppm, 1-hr. average > | 0.030 ppm, annual arithmetic mean > 0.14 ppm, 24-hr average > | Bronchoconstriction accompanied by symptoms which may include wheezing, shortness of breath and chest tightness, during exercise or physical activity in persons with asthma. |
| Suspended Particulate Matter (PM10) | 20 µg/$m^3$, annual arithmetic mean > 50 µg/$m^3$, 24-hr average > | 50 µg/$m^3$, annual arithmetic mean > 150 µg/$m^3$, 24-hr average > | (a) Excess deaths from short-term exposures and exacerbation of symptoms in sensitive patients with respiratory disease; (b) Excess seasonal declines in pulmonary function, especially in children. |
| Suspended Particulate Matter (PM2.5) | 12 µg/$m^3$, annual arithmetic mean > | 15 µg/$m^3$, annual arithmetic mean > 35 µg/$m^3$, 24-hour average > | Decreased lung function from exposures and exacerbation of symptoms in sensitive patients with respiratory disease; elderly; children. |
| Sulfates | 25 µg/$m^3$, 24-hr average >= | No Federal Standard | (a) Decrease in ventilatory function; (b) Aggravation of asthmatic symptoms; (c) Aggravation of cardio-pulmonary disease; (d) Vegetation damage; (e) Degradation of visibility; (f) Property damage. |
| Lead | 1.5 µg/$m^3$, 30-day average >= | 1.5 µg/$m^3$, calendar quarter> | (a) Increased body burden; (b) Impairment of blood formation and nerve conduction. |
| Visibility-Reducing Particles | In sufficient amount to give an extinction coefficient >0.23 inverse kilometers (visual range to less than 10 miles) with relative humidity less than 70%, 8-hour average (10am – 6pm PST) | No Federal Standard | Nephelometry and Airborne Instrumentation System-Internal (AISI) Tape Sampler; instrumental measurement on days when relative humidity is less than 70 percent. |
| Hydrogen Sulfide | 0.03 ppm, 1-hr. average > | No Federal Standard | Odor annoyance. |
| Vinyl Chloride | 0.01 ppm, 24-hr average > | No Federal Standard | Known carcinogen. |

*Particulate Matter (PM10):* PM10 is defined as the coarse fraction of suspended particulate matter measuring 10 microns or less in diameter and includes a complex mixture of man-made and natural substances including sulfates, nitrates, metals, elemental carbon, sea salt, soil, organics and other materials. PM10 may have adverse health impacts because these microscopic particles are able to penetrate into the respiratory system. In some cases, the particulates themselves may cause actual damage to the alveoli of the lungs or they may contain adsorbed substances that are injurious.

In 2005, PM10 was monitored at 20 locations in the district. There were no exceedances of the federal 24-hour standard (i.e., 150 micrograms per cubic meter [$\mu g/m^3$]), while the state 24-hour standard (i.e., 50 μg/m3) was exceeded at 17 monitored locations. The federal standard (i.e., AAM greater than 50 μg/m3)[9] was exceeded in one location.

*Particulate Matter (PM2.5):* The PM2.5 standard is a subset of PM10 such that it complements existing national and state ambient air quality standards that target the full range of inhalable PM10. In addition to the health effects of PM10, additional effects from exposure to PM2.5 may result in increased respiratory symptoms, disease, and decreased lung functions.

In 2005, PM2.5 was monitored at 19 locations in the district. The federal 24-hour standard (i.e., 65 $\mu g/m^3$) was exceeded at seven locations. The federal standard (i.e., AAM greater than 15 $\mu g/m^3$) was exceeded in 12 locations, and the state standard (i.e., AAM greater than 12 $\mu g/m^3$) was exceeded in 16 locations.

*Lead:* In 2005, lead was monitored at eight locations in the district. No location in the Basin exceeded either the federal quarterly average (>1.5 $\mu g/m^3$) or the state monthly average ($\geq$1.5 $\mu g/m^3$) standard. There have been no violations of any lead standard in the district since 1982, although there were some localized exceedances of the state standard at special monitoring stations in 1991 and 1994.

*Sulfates:* Sulfates or SOx are a group of chemical compounds containing the sulfate group, which is a sulfur atom with four oxygen atoms attached. In 2005, sulfates were monitored at 12 locations in the district. The 24-hour state sulfate standard (i.e., 25 $\mu g/m^3$) was not exceeded at any of these locations in 2005. There are no federal air quality standards for sulfates.

*Ozone:* In addition to primary criteria pollutants, the SCAQMD monitors ozone at various locations throughout the district. Unlike primary criteria pollutants that are emitted directly from an emissions source, ozone is a secondary pollutant. Ozone is formed in the atmosphere through the photochemical reaction of VOCs, NOx, oxygen, and other hydrocarbon materials with sunlight.

Ozone is a deep lung irritant, causing the passages to become inflamed and swollen. Exposure to ozone produces alterations in respiration, the most characteristic of which is shallow, rapid breathing and a decrease in pulmonary performance. Ozone reduces the respiratory system's ability to fight infection and to remove foreign particles.

Ozone levels were monitored at 29 locations in 2005. Maximum one-hour average and eight-hour average ozone concentrations in 2005 (i.e., 0.182 ppm and 0.145 ppm; respectively) were 151 percent and 181 percent, respectively, of the federal one-hour and

[9] In September 2006, U.S. EPA revoked the federal annual PM10 standard and lowered the 24-hour PM2.5 standard to 35$\mu g/m^3$.

eight-hour standards, respectively. Ozone concentrations exceeded the one-hour state standard at all but five of the monitored locations in 2005.

*VOCs:* Since VOCs are not classified as criteria pollutants, there are no state or national ambient air quality standards for these compounds. VOCs are regulated, however, because limiting VOC emissions reduces the rate of photochemical reactions that contribute to the formation of ozone. As a precursor to ozone, VOCs contribute to regional air quality impacts. In addition, VOCs also transform into organic aerosols in the atmosphere, contributing to higher PM10 and lower visibility levels. Although health-based standards have not been established for VOCs, health effects can occur from exposures to high concentrations of VOCs because of interference with oxygen uptake.

### Local Air Quality

The project site is located within SCAQMD Source/Receptor Area (SRA) No. 3 Southwest Coastal Los Angeles County monitoring station no. 820. This area has shown a general improvement in air quality with decreasing or consistent concentrations of most pollutants. In 2005, air quality at SRA No. 3 complied with the state and federal ambient air quality standards for CO, NOx, SOx, PM10, and the federal eight-hour ozone standard. Lead, sulfate, and PM2.5 were not monitored at this station in 2005. The state eight-hour average for ozone was exceeded on one day in 2005 at SRA No. 3.

The SCAQMD air quality data at the Southwest Coastal Los Angeles County monitoring station no. 820 for 2004 and 2005 are presented in Table 3-3.

**Table 3-3**
**SCAQMD Air Quality Data for Southwest Coastal Los Angeles County (Station No. 820)**

| CARBON MONOXIDE | | | | | No. Days Standard Exceeded [a] | |
|---|---|---|---|---|---|---|
| Year | Location of Air Monitoring Station | No. Days of Data | Max. Conc. (ppm, 1-hour) | Max. Conc. (ppm, 8-hour) | Federal 9.5 ppm, 8-hour | State 9.0 ppm, 8-hour |
| 2004 | Southwest Coastal LA County | 260 | 4 | 3.0 | 0 | 0 |
| 2005 | Southwest Coastal LA County | 365 | 3 | 2.1 | 0 | 0 |

KEY: ppm = parts per million parts of air, by volume.
a) The federal 1-hour standard (1-hour average > 35 ppm) and state 1-hour standard (1-hour average > 20 ppm) were not exceeded.

| OZONE | | | | | | | No. Days Standard Exceeded | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Federal | | State [b] | |
| Year | Location of Air Monitoring Station | No. Days of Data | Max. Conc. (ppm, 1-hr) | Max. Conc. (ppm, 8-hr) | Fourth Highest Conc. (ppm, 8-hr) | Health Advisory 0.15 ppm, 1-hr | 0.12 ppm, 1-hr | 0.08 ppm 8-hr | 0.09 ppm, 1-hr | 0.07 ppm, 8-hr |
| 2004 | Southwest Coastal LA County | 262 | 0.120 | 0.100 | 0.086 | 0 | 0 | 4 | 4 | 13 |
| 2005 | Southwest Coastal LA County | 365 | 0.086 | 0.076 | 0.068 | 0 | 0 | 0 | 0 | 1 |

b) CARB established a new 8-hr ozone standard of 0.070 ppm effective May 17, 2005.

**Table 3-3 (continued)**
**2005 SCAQMD Air Quality Data for Southwest Coastal Los Angeles County**
**(Station No. 820)**

| NITROGEN DIOXIDE | | | | |
|---|---|---|---|---|
| Year | Location of Air Monitoring Station | No. Days of Data | Max. Conc. (ppm, 1-hour) (c) | Annual Average AAM Conc. (ppm) (c) |
| 2004 | Southwest Coastal LA County | 230 | 0.09 | 0.0136 |
| 2005 | Southwest Coastal LA County | 365 | 0.09 | 0.0134 |

c) The state standard is 1-hour average > 0.25ppm. The federal standard is annual arithmetic mean (AAM) > 0.0534 ppm.

| SULFUR DIOXIDE | | | | |
|---|---|---|---|---|
| Year | Location of Air Monitoring Station | No. Days of Data | Maximum Concentration (d) | |
| | | | (ppm, 1-hour) | (ppm, 24-hour) |
| 2004 | Southwest Coastal LA County | 261 | 0.02 | 0.007 |
| 2005 | Southwest Coastal LA County | 365 | 0.04 | 0.012 |

d) The state standards are 1-hour average >0.25 ppm and 24-hour average > 0.04 ppm. The federal standards are AAM > 0.03 ppm and 24-hour average > 0.14 ppm.

| SUSPENDED PARTICULATE MATTER (PM10) | | | | | | |
|---|---|---|---|---|---|---|
| Year | Location of Air Monitoring Station | No. Days of Data (e) | Max. Conc. µg/m$^3$ 24-hour | No. (%) Samples Exceeding Standard | | Annual Average (f) AAM Conc. µg/m$^3$ |
| | | | | Federal 150 µg/m$^3$ 24-hour | State 50 µg/m$^3$ 24-hour | |
| 2004 | Southwest Coastal LA County | 37 | 47 | 0 | 0 | 25.1 |
| 2005 | Southwest Coastal LA County | 54 | 44 | 0 | 0 | 22.9 |

e) PM10 samples were collected every six days.
f) Federal PM10 standard is annual average AAM 50 µg/ m$^3$. State standard is annual average AAM 20 µg/ m$^3$.

| SUSPENDED PARTICULATE MATTER (PM2.5) | | | | | | |
|---|---|---|---|---|---|---|
| Year | Location of Air Monitoring Station | No. Days of Data | Max. Conc. µg/m$^3$ 24-hour | 98$^{th}$ Percentile Conc. in µg/m$^3$ 24-hour | No. (%) Samples Exceeding Standard | Annual Averages (g) AAM Conc. µg/m$^3$ |
| | | | | | Federal 65 µg/m$^3$ 24-hour | |
| 2004 | Southwest Coastal LA County | Not monitored at Station 820 in 2004. | | | | |
| 2005 | Southwest Coastal LA County | Not monitored at Station 820 in 2005. | | | | |

g) Federal standard is AAM 15 µg/m$^3$. State standard is AAM 12 µg/m$^3$.

### ExxonMobil Torrance Refinery Criteria Pollutant Emissions

Table 3-4 shows the historical emissions from the ExxonMobil Torrance Refinery as reflected in the Annual Emissions Report (AER) documents submitted to the SCAQMD for July 2003 through June 2004, July 2004 through June 2005, and July 2005 through June 2006. The average baseline emissions are derived from an average of these three reporting periods. The emissions in Table 3-4 are based on actual operations and not the maximum potential to emit. The ExxonMobil Torrance Refinery is permitted for higher emissions than presented in Table 3-4.

**Table 3-4**
**ExxonMobil Torrance Refinery Baseline Criteria Pollutant Emissions (Tons/Year)**

| Reporting Period | CO | VOCs | NOx | SOx | PM10 |
|---|---|---|---|---|---|
| 2003-2004 | 2,827 | 677 | 748 | 720 | 212 |
| 2004-2005 | 2,487 | 713 | 770 | 737 | 234 |
| 2005-2006 | 2,279 | 636 | 806 | 574 | 446 |
| Average Baseline Emissions | 2,531 | 675 | 775 | 677 | 297 |

### Toxic Air Contaminants

A TAC is defined as an air pollutant that may cause or contribute to an increase in mortality or in serious illness, or that may pose a hazard to human health. TACs are usually present in minute quantities in the ambient air. However, their high toxicity or health risk may pose a threat to public health even at very low concentrations. In general, for those TACs that may cause cancer, there is no concentration that does not present some risk. This contrasts with the criteria pollutants for which acceptable levels of exposure can be determined and for which the state and federal governments have set ambient air quality standards.[10]

Monitoring for TACs is limited compared to monitoring for criteria pollutants because toxic pollutant impacts are typically more localized than criteria pollutant impacts. CARB conducts air monitoring for a number of TACs various locations throughout California. The closest CARB TAC monitoring location is the North Long Beach site. Table 3-5 presents the Annual Toxics Summary for North Long Beach, the maximum concentration data for VOCs, polycyclic aromatic hydrocarbons (PAHs) and inorganic compounds. The data for VOCs are for the year 2005; for PAHs the year is 2004; and for all inorganic compounds the data are for the year 2003 except for hexavalent chromium, which is from 2005, the most recent data available from CARB on TACs.

[10] The California Almanac of Emissions and Air Quality, 2005 Edition, CARB, page 32.

## Table 3-5
## Annual Toxics Summary for North Long Beach

| Pollutant | Maximum Concentration | Pollutant | Maximum Concentration |
|---|---|---|---|
| **VOCs [1] (parts per billion by volume)** | | | |
| Acetaldehyde | 2.6 | Ethyl Benzene | 0.6 |
| Acetone | 20 | Formaldehyde | 6.1 |
| Acetonitrile | 2.3 | Methyl Bromide | 0.12 |
| Acrolein | 0.9 | Methyl Chloroform | 0.05 |
| Acrylonitrile | 0.9 | Methyl Ethyl Ketone | 0.2 |
| Benzene | 1.6 | Methyl tertiary - Butyl Ether | * |
| 1,3 – Butadiene | 0.56 | Methylene Chloride | 2.4 |
| Carbon Disulfide | 1.1 | Perchloroethylene | 0.18 |
| Carbon Tetrachloride | * | Styrene | 0.7 |
| Chloroform | 0.06 | Toluene | 4.7 |
| o – Dichlorobenzene | 0.15 | Trichloroethylene | 0.18 |
| p – Dichlorobenzene | 0.15 | meta/para – Xylene | 2.4 |
| cis – 1,3 – Dichloropropene | 0.05 | Ortho – Xylene | 0.8 |
| trans – 1,3 – Dichloropropene | 0.05 | | |
| **PAHs [2] (nanograms per cubic meter)** | | | |
| Benzo(a)pyrene | 0.61 | Benzo(k)fluoranthene | 0.19 |
| Benzo(b)fluoranthene | 0.51 | Dibenz(a,h)anthracene | 0.18 |
| Benzo(g,h,i)perylene | 1.7 | Indeno(1,2,3-cd)pyrene | 0.64 |
| **Inorganic compounds [3] (nanograms per cubic meter)** | | | |
| Aluminum | 1700 | Nickel | 9 |
| Antimony | 3 | Phosphorous | 35 |
| Barium | 56 | Potassium | 890 |
| Bromine | 9 | Rubidium | 4 |
| Calcium | 2,300 | Selenium | 1 |
| Chlorine | 2,000 | Silicon | 5,600 |
| Chromium | 6 | Strontium | 24 |
| Cobalt | 7.5 | Sulfur | 1,300 |
| Copper | 36 | Tin | 2.5 |
| Hexavalent Chromium [4] | 0.12 | Titanium | 140 |
| Iron | 1,600 | Uranium | 1.5 |
| Lead | 12 | Vanadium | 23 |
| Manganese | 33 | Yttrium | 2 |
| Mercury | 1.5 | Zinc | 110 |
| Molybdenum | 1 | Zirconium | 7 |

**Source:** CARB website: http://www.arb.ca.gov/adam/toxics/sitesubstance.html

[1] Data for VOCs are for the year 2005.

[2] Data for PAHs are for the year 2004.

[3] Data for inorganic compounds are for the year 2003, except for hexavalent chromium.

[4] Data for hexavalent chromium are for the year 2005.

(*) Means there was insufficient or no data available to determine the value.

# CHAPTER 4

# ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Introduction
Air Quality
Other CEQA Topics

# 4.0 IMPACTS AND MITIGATION MEASURES

## 4.1 INTRODUCTION

This chapter assesses the potential environmental impacts associated with the construction and operation of the ExxonMobil Rule 1105.1 Compliance Project. Chapter 4 evaluates those impacts that are considered potentially significant under the requirements of CEQA, as determined by the NOP/IS which is included in Appendix A. Specifically, an impact is considered significant under CEQA if it leads to a "substantial, or potentially substantial, adverse change in the environment" (CEQA Guidelines §21068).

Impacts from the proposed project fall within one of the following categories:

- **Beneficial** – Impacts will have a positive effect on the resource.
- **No impact** – There would be no impact to the identified resource as a result of the proposed project.
- **Adverse but not significant** – Some impacts may result from the project; however, they are judged to be insignificant. Impacts are frequently considered insignificant when the changes are minor relative to the size of the available resource base or would not change an existing resource.
- **Potentially significant but mitigation measures reduce to insignificance** – Significant adverse impacts may occur; however, with proper mitigation, the impacts can be reduced to insignificance.
- **Potentially significant and mitigation measures are not available to reduce to insignificance** – Adverse impacts may occur that would be significant even after mitigation measures have been applied to lessen their severity.

## 4.2 AIR QUALITY

### 4.2.1 SIGNIFICANCE CRITERIA

To determine whether or not air quality impacts from the proposed project are significant, impacts will be evaluated and compared to the SCAQMD air quality significance thresholds listed in Table 4-1. If impacts equal or exceed any of the following criteria, they will be considered significant and all feasible mitigation measures will be identified and implemented to reduce significant impacts to the maximum extent feasible.

## TABLE 4-1
## SCAQMD Air Quality Significance Thresholds

| Mass Daily Thresholds | | |
|---|---|---|
| **Pollutant** | **Construction** | **Operation** |
| NOx | 100 lbs/day | 55 lbs/day |
| VOCs | 75 lbs/day | 55 lbs/day |
| PM10 | 150 lbs/day | 150 lbs/day |
| SOx | 150 lbs/day | 150 lbs/day |
| CO | 550 lbs/day | 550 lbs/day |
| Lead | 3 lbs/day | 3 lbs/day |
| **TACs and Odor Thresholds** | | |
| TACs (including carcinogens and non-carcinogens) | Maximum Incremental Cancer Risk $\geq$ 10 in 1 million<br>Hazard Index $\geq$ 1.0 (project increment) | |
| Odor | Project creates an odor nuisance pursuant to SCAQMD Rule 402 | |
| **Ambient Air Quality for Criteria Pollutants[(a)]** | | |
| NO2<br><br>1-hour average<br>annual average | In attainment; significant if project causes or contributes to an exceedance of any following standard:<br>0.25 ppm (state)<br>0.053 ppm (federal) | |
| PM10<br>24-hour<br><br>annual geometric mean<br>annual arithmetic mean | 10.4 µg/m$^3$ (recommended for construction)[(b)]<br>2.5 µg/m$^3$ (operation)<br>1.0 µg/m$^3$<br>20 µg/m$^3$ | |
| Sulfate<br>24-hour average | 25 µg/m$^3$ | |
| CO<br><br>1-hour average<br>8-hour average | In attainment; significant if project causes or contributes to an exceedance of any following standard:<br>20 ppm (state)<br>9.0 ppm (state/federal)) | |

**(a)** Ambient air quality thresholds for criteria pollutants based on SCAQMD Rule 1303, Table A-2 unless otherwise stated.

**(b)** Ambient air quality threshold based on SCAQMD Rule 403.

µg/m$^3$ = micrograms per cubic meter; lbs/day = pounds per day; $\geq$ greater than or equal to

**Source:** SCAQMD CEQA website

The SCAQMD makes significance determinations based on the maximum daily emissions during the construction period, which provides a "worst-case" analysis of the construction emissions. Similarly, significance determinations for operational emissions are based on the maximum daily emissions during the operational phase.

Subsequent to the adoption of the SCAQMD CEQA Air Quality Handbook (SCAQMD, 1993), the SCAQMD adopted Regulation XX - Regional Clean Air Incentive Market (RECLAIM), which fundamentally changed the framework of air quality rules and permits. The RECLAIM program is a pollution credit trading program that applies to the largest sources of NOx and SOx emissions within the jurisdiction of the SCAQMD. RECLAIM facilities are given an initial emissions allocation that reflects their historical usage which declines yearly to reduce total emissions. RECLAIM facilities are also allowed to buy and sell credits. The emissions from the universe of RECLAIM facilities were capped in 1994. The emissions cap declined each year from 1995 to 2003, and is now fixed at a level of approximately 78 percent below the initial levels. The RECLAIM regulation was amended in 2005 to require further NOx emission reductions. After implementation of the RECLAIM program, SCAQMD staff examined how to apply the CEQA significance thresholds to RECLAIM facilities, recognizing that CEQA case law directs that the existing environmental setting include permits and approvals that entitle operators to conduct or continue certain activities. SCAQMD staff determined that the baseline should consist of the RECLAIM initial allocation for each RECLAIM facility *for RECLAIM pollutants*, and that a proposed project would be considered significant if it would cause the facility's emissions to exceed the baseline plus the adopted significance threshold.

Under the RECLAIM program, the SCAQMD issued facility-wide permits to sources[11]. The facility permits specify an initial allocation and annual emission allocations for NOx and SOx. The initial allocations were based on historical reported emissions for the years immediately prior to implementation of the RECLAIM program. Annual allocations represent the number of RECLAIM Trading Credits (RTCs) the facilities begin with each year and the allocations showed a decline each year from 1994 through 2003. Operators of RECLAIM sources must not emit more than the total number of RECLAIM credits they possess, which include the annual allocation plus any credits bought and minus any credits sold. In this way, the RECLAIM process reduces, on an annual basis, the overall emissions of NOx and SOx in the Basin, while providing flexibility to individual facilities that purchase RTCs so that they can operate to their actual emission levels established in 1994. RECLAIM facilities can also reduce emissions through various ways including curtailing production and installing pollution control equipment to reduce emissions below their annual allocations. These facilities can generate credits to sell. Although the allocations for RECLAIM facilities have declined each year since 1994, the maximum annual emissions of NOx and SOx permitted to each facility remain at the 1994 limits, provided that additional allocations ("trading credits") are acquired from another RECLAIM facility that has reduced its emissions below its current-year allocation.

[11] The ExxonMobil Torrance Refinery is a RECLAIM facility.

Air quality impacts for a RECLAIM facility are considered to be significant if the incremental mass daily emissions for NOx and SOx from sources regulated under the RECLAIM permit, when added to the allocation for the year in which the project will commence operations, will be greater than the facility's 1994 allocation (including non-tradable credits) plus the increase established in the SCAQMD Air Quality Handbook for that pollutant (55 pounds per day [lbs/day] for $NO_x$ and 150 lbs/day for $SO_x$). In order to perform this calculation, annual allocations as well as the project's incremental annual emissions are converted to a daily average by dividing by 365. Thus, the proposed project is considered significant if:

$(A_1/365) + I < (P + A_2)/365$

Where:

P = the annual emissions increase associated with the proposed project.

$A_1$ = 1994 initial annual allocation (including non-tradable credits).

$A_2$ = Annual allocation in the year the proposed project will commence operations.

I = Incremental emissions established as significant in the SCAQMD Air Quality Handbook (55 lbs/day $NO_x$ or 150 lbs/day $SO_x$).

The determination of CEQA significance for RECLAIM facilities applies only to operational emissions of NOx and/or SOx that would be included in the RECLAIM allocation and subject to the RECLAIM regulations. The RECLAIM CEQA significance determination does not apply to sources that would not be regulated by the RECLAIM regulations (i.e., off-site sources of emissions such as trucks, railcars, and marine vessels), construction emission sources, and to non-RECLAIM pollutants (i.e., VOCs, CO, and PM10) for which the SCAQMD has established significance thresholds. The level of emissions at which CEQA significance is triggered for RECLAIM pollutants NOx and SOx at the ExxonMobil Torrance Refinery ($(A_1/365) + I$) is calculated in Table 4-2.

**TABLE 4-2**
**Determining Significance for RECLAIM Pollutants at the ExxonMobil Refinery**

| Pollutant | $A_1$ Initial Allocation (lb/yr)[a] | $A_1/365$ Initial Allocation (lb/day) | I Significance Threshold (lb/day) | $A_1/365 + I$ (lb/day) | 2009 Allocation | Maximum Allowable Emission Increase |
|---|---|---|---|---|---|---|
| $NO_x$ | 3,845,062 | 10,534 | 55 | 10,589 | 3,047 | 7,542 |
| $SO_x$ | 1,410,211 | 3,864 | 150 | 4,014 | 993 | 3,021 |

[a] Includes non-tradeable credits

It is important to note that the proposed project does not result in any increases in operational NOx or SOx emissions. The purpose of the proposed project is to comply with SCAQMD Rule 1105.1 to reduce PM10 and ammonia emissions from the existing FCCU at the ExxonMobil Torrance Refinery.

### 4.2.2 ENVIRONMENTAL IMPACTS

#### Construction Emissions

Construction-related emissions can be distinguished as either on or off site. On-site emissions generated during construction principally consist of exhaust emissions from heavy-duty construction equipment operation. Off-site emissions during construction

normally consist of exhaust emissions and entrained paved road dust from worker commutes and material delivery trips.

### SCAQMD Final EA Construction Scenario

The air quality analysis of construction-related emissions in the SCAQMD's 2003 Final EA evaluated potential impacts at five refineries in the Basin, assuming one, or a combination of, the following two scenarios would occur in order to comply with Rule 1105.1:

- Scenarios Ia and IIa - Demolition of existing ESP equipment and construction of new ESP equipment; and
- Scenarios Ib and IIb - Cleaning of ESP plates and rebuilding of the existing ESP.

The SCAQMD 2003 Final EA for Rule 1105.1 concluded that both the construction of new ESPs and the rebuilding of existing ESPs would exceed the SCAQMD's construction air quality significance thresholds for NOx. In addition, if any of the construction phases overlap due to concurrent activities at more than one refinery, additional criteria pollutants would exceed their applicable significance criteria. As a result, emissions from the four phases were summed and compared to the SCAQMD significance thresholds, resulting in exceedances in CO, VOCs, and NOx.

The air quality analysis in the SCAQMD 2003 Final EA concluded that significant adverse construction-related impacts would be created by the implementation of Rule 1105.1 because the activities would generate emissions that would exceed the SCAQMD's significance thresholds. As a result, a Statement of Findings and a Statement of Overriding Considerations were prepared.

Pursuant to CEQA Guidelines §15189(a), when preparing an EIR for a compliance project the lead agency shall to the greatest extent feasible use the environmental analysis prepared pursuant to CEQA Guidelines §15187. Table 4-3 summarizes the SCAQMD 2003 Final EA maximum daily construction emissions based on the assumption that construction phase overlap occurs due to concurrent construction at more than one refinery. Construction air quality impacts for the ExxonMobil Rule 1105.1 Compliance Project will be evaluated to determine whether or not they are within the scope of the construction air quality analysis contained in the SCAQMD 2003 Final EA for Rule 1105.1.

**Table 4-3**
**Summary of Construction Emissions from SCAQMD 2003 Final EA[(1)]**

| | CO (lbs/day) | VOCs (lbs/day) | NOx (lbs/day) | SOx (lbs/day) | $PM_{10}$ (lbs/day) |
|---|---|---|---|---|---|
| Phase Ia: Demolition | 136 | 29 | 210 | 17 | 12 |
| Phase IIa: Construct New ESP | 136 | 29 | 210 | 17 | 12 |
| Phase Ib: Plate Cleaning | 139 | 29 | 211 | 17 | 12 |
| Phase IIb: Rebuild Existing ESP | 167 | 35 | 262 | 22 | 14 |
| **Totals** | **578** | **122** | **893** | **73** | **50** |
| **Significance Threshold** | **550** | **75** | **100** | **150** | **150** |
| **Significant?** | **YES** | **YES** | **YES** | **NO** | **NO** |

(1) Source: SCAQMD Final EA, Table 4-6, at page 4-10.

### ExxonMobil Rule 1105.1 Construction Scenario

The proposed project is most similar to SCAQMD Scenario I, except that the existing ESP units at the Torrance Refinery will not be demolished. The proposed project includes the installation of new air pollution control equipment (i.e., two new ESPs) downstream of the two existing ESPs to control the PM10 emissions generated from the existing FCCU's regenerator, an L-shaped building for electrical and control gear (20 feet ~~x~~ by 70 feet) with associated underground electrical lines, and the relocation of a sewer line.

The proposed project will also include new anhydrous ammonia injection piping (aboveground) from the existing storage tanks to the new facilities. There are currently two existing bypass emergency stacks on the FCCU regenerator exhaust at the Torrance Refinery. The stack height of these existing emergency stacks will be cut off and capped. They will then be replaced with new emergency bypass duct around the SCR unit, waste heat boiler and ID fan equipment as part of the proposed project.

The Initial Study (IS) stated that the proposed project was going to include the removal of a small boiler (7 feet ~~x~~ by 10 feet) that has been out of service and installation of a pneumatic conveyance system and storage silo that would collect the particulates from the new ESPs and allow increased onsite storage of the spent FCC catalyst. Based on additional detailed engineering, these components are no longer a part of the proposed project.

In addition to the equipment described above, applications submitted for Permits to Construct also include a series of ESP maintenance options for consideration. These include:

- Operate one train of the new ESPs during maintenance;
- Operate the existing ESPs as needed to maintain the total power input of the new ESPs; and
- Operate the CO boiler in waste heat mode during maintenance of the new ESPs.

The purpose of these maintenance options is to allow for optimal operational flexibility. The new ESP facilities will consist of two parallel ESP trains that will be constructed to comply with Rule 1105.1 at the maximum flue gas rate. The new ESP facilities will include membrane type guillotine valves on the inlet and outlet of each of the ESP boxes to allow one ESP train to be isolated in the event that on-line maintenance of the other ESP train is required.

As previously mentioned, ExxonMobil Oil Corporation proposes to maintain the operation of the existing ESPs as needed during the maintenance of the new ESPs. In addition, it is proposed that the existing ESPs be operated as needed to maintain the total input power levels of the new ESPs. This could occur during normal operating periods, such as if the new ESPs were to malfunction or during maintenance of the new ESPs. Once the proposed project is complete, the existing ESPs will be shut off, with the exception of the mechanical rappers, unless needed as indicated above.

The emissions associated with the ExxonMobil Rule 1105.1 Compliance Project construction scenario assumes four phases that will not overlap: Phase 1 - Site Preparation/Excavation; Phase 2 - Erection and Installation; Phase 3 - QA/QC Punchout;

and Phase 4 - FCCU Tie-In. Phase 1 represents the peak "worst-case" daily emissions for all pollutants.

The construction schedule will be 21.5 months, beginning on April 1, 2007 and ending on January 16, 2009. The construction workday is planned to be 20 hours per day (two 10-hour shifts) in Phases 1, 2 and 3; and 24 hours per day (two 12-hour shifts) in Phase 4. Construction will occur six days a week in Phases 1 and 2, five days a week in Phase 3, and seven days a week in Phase 4.

The construction activities evaluated in the SCAQMD 2003 Final EA for Rule 1105.1 and the ExxonMobil construction activities are similar with only minor differences. The proposed project includes a construction scenario that is specific to one refinery, in four phases that will not overlap, with a slightly different mix of construction equipment, and without an ESP demolition phase. Table 4-4 describes the differences in the two project assumptions.

**Table 4-4**
**Comparison of SCAQMD 2003 Final EA Assumptions and ExxonMobil Rule 1105.1 Compliance Project Assumptions**

| SCAQMD 2003 FINAL EA ASSUMPTIONS | EXXONMOBIL ASSUMPTIONS |
|---|---|
| One ESP would be demolished and/or constructed or rebuilt at one refinery; concurrent construction at more than one refinery would occur; and construction phases would overlap. | Two new ESPs will be constructed at the same time; no demolition is required; and no construction phases will overlap. |
| Project phases for each refinery:<br>Phase Ia - ESP Demolition Activities;<br>Phase Ib - ESP Plate Clean Activities;<br>Phase II a - Construction of A New ESP;<br>Phase IIb - Rebuilding an Existing ESP; and<br>Phase III - Operation of New/Rebuilt ESPs. | The proposed project will occur in four phases:<br>Phase 1 - Site Preparation and Excavation;<br>Phase 2 - Erection and Installation;<br>Phase 3 - QA/QC Punchout; and<br>Phase 4 - FCCU Tie-In |
| The use of certain types of construction equipment for demolition and construction activities is set forth. | The use of specific construction equipment for each phase is set forth. |
| Demolition and construction activities would occur for a maximum of 16 hours per day. | Construction work days will be 20 hours a day (two 10-hour shifts) in Phases 1, 2 and 3; and 24 hours a day (two 12-hour shifts) in Phase 4. |
| No or limited construction emissions from grading activities would occur because the refinery operators were assumed to demolish the old ESPs and install new ESPs on the same foundations as the old ESPs. | No grading activities are required as part of the proposed project because the site is already at a level horizontal gradient. |
| Due to space limitations, the need to avoid operational interruptions, and varied FCCU turnaround schedules, only one ESP per refinery could potentially be demolished and/or constructed/rebuilt at a time. | Two new ESPs will be constructed at the same time adjacent to the existing FCCU. |
| Due to refinery planning and permitting requirements, none of the refineries were expected to begin their modifications prior to 2004. To derive Rule 1105.1 peak construction-related emissions, construction activities were expected to occur over a 48-month period for the "worst-case." | Construction activities are expected to begin in April of 2007 and continue for 21.5 months. The peak construction activities will occur in Phase I due to excavation activities. |

**Table 4-4**
**Comparison of SCAQMD 2003 Final EA Assumptions and ExxonMobil Rule 1105.1 Compliance Project Assumptions**
**(continued)**

| SCAQMD 2003 FINAL EA ASSUMPTIONS | EXXONMOBIL ASSUMPTIONS |
|---|---|
| Once the new/rebuilt ESP is operational, the equipment will be more efficient in collecting particulates, thereby requiring approximately four additional one-way truck trips per refinery per year for the disposal of collected catalyst fines. | The proposed project's reduction in the use of anhydrous ammonia will reduce the number of delivery truck trips to the Torrance Refinery. The truck trips will be reduced from one truck trip per day to one truck trip every three days (i.e., from 365 to 122 truck trips per year). The proposed project will result in a small increase in the number of trucks to transport FCC spent catalyst offsite for recycling to facilities such as California Portland Cement (i.e., from 234 to 260 truck trips per year); however, the overall impact from the project will be a net reduction in the current number of truck trips to the Torrance Refinery. |

The construction scenario in the SCAQMD 2003 Final EA for Rule 1105.1 was based on certain assumptions regarding phases of work to be performed, the number of workers needed per phase, the types of equipment to be used during each phase, and the days/hours of construction. For comparison purposes, a summary of the specifics of these parameters for both the SCAQMD 2003 Final EA for Rule 1105.1 and that of the ExxonMobil proposed project is presented in Tables 4-5 and 4-6, respectively. The detailed construction calculations are presented in Appendix B.

**Table 4-5**
**Construction Scenario Assumptions by Phase Used in the SCAQMD 2003 Final EA[(1)]**

| Construction Phase | Number of Workers | Days/Hours of Construction | Construction Equipment Required |
|---|---|---|---|
| Phase Ia - ESP Demolition Activities | 34 | 1 month (26 days)<br>6 days/week<br>16 hours/day | 3 cranes; 1 forklift; 1 tractor trailer; 1 pile driver/ extractor; 1 front end loader; and 2 flatbed trucks. |
| Phase Ib - ESP Plate Cleaning Activities | 38 | 1 month (26 days)<br>6 days/week<br>16 hours/day | 3 cranes; 1 forklift; 1 tractor trailer, 1 pile driver/ extractor; 1 front end loader; 1 vacuum truck; and 2 flatbed trucks. |
| Phase IIa - Construction of a New ESP | 34 | 6 months (120 days)<br>5 days/week<br>16 hours/day | 3 cranes; 1 forklift; 1 tractor trailer; 1 pile driver/ extractor; 1 front end loader; 10 electric welders; 10 acetylene torches; and 2 flatbed trucks. |
| Phase IIb - Rebuilding an Existing ESP | 38 | 1 month (26 days)<br>6 days/week<br>20 hours/day | 3 cranes; 1 forklift; 1 tractor trailer; 1 pile driver/ extractor; 1 front end loader; 10 electric welders; 10 acetylene torches; and 2 flatbed trucks. |

(1) Source: SCAQMD 2003 Final EA, pages 4-5 and 4-6.

**Table 4-6**
**Construction Scenario Assumptions by Phase Used in the ExxonMobil Rule 1105.1 Compliance Project[(1)]**

| Construction Phase | Number of Workers | Days/Hours of Construction | Construction Equipment Required |
|---|---|---|---|
| Phase 1 - Site Preparation/ Excavation [(2)] | 90 | 6 months<br>6 days/week<br>20 hours/day | 1 backhoe; 1 compressor; 1 concrete pump truck; 1 concrete saw; 1 crane; 1 drill rig; 10 cement trucks; 1 excavator; 1 forklift; 1 front end loader; 2 generators; 2 light plants; 4 pickup trucks; 5 dump trucks; 8 delivery trucks; and 1 stakebed truck. |
| Phase 2 - Erection and Installation [(3)] | 230 | 14 months<br>6 days/week<br>20 hours/day | 2 cranes; 1 boom truck; 2 forklifts; 2 generators; 4 light plants; 1 manlift; 5 welding machines; 5 pickup trucks; 15 delivery trucks; 1 stakebed truck; and 2 flatbed trucks. |
| Phase 3 - QA/QC Punchout [(4)] | 30 | 1 month<br>5 days/week<br>20 hours/day | 1 boom truck; 2 forklifts; 2 light plants; 1 manlift; 1 welding machine; 2 pickup trucks; 1 delivery trucks; and 1 stakebed truck. |
| Phase 4 - FCCU Tie-In [(5)] | 60 | 2 weeks<br>7 days/week<br>24 hours/day | 1 compressor; 2 cranes; 1 boom truck; 2 forklifts; 4 light plants; 2 welding machines; 4 pickup trucks; 2 delivery trucks; 2 stakebed trucks; and 1 flatbed truck. |

(1) Source: Detailed construction emission calculations in Appendix B.
(2) Phase 1 involves excavation of the site, pouring the concrete foundations, drilling caissons and installing underground utilities.
(3) Phase 2 involves erecting the structural steel and assembling the ESP equipment, building an electrical switchhouse, relocating a sewer line and installing ancillary systems (i.e., instrumentation, piping, HVAC, electrical).
(4) Phase 3 involves the QA/QC inspection and performing any modifications or corrections to the previously performed construction.
(5) Phase 4 involves connecting the new ESPs to the existing FCCU.
Note: Peak daily in each phase assumes that all equipment will be used in one day. Not all equipment will be used during the full 20 or 24 hours of construction.

Table 4-7 summarizes the peak daily construction emissions associated with the proposed project in Phase 1, the peak phase.

**Table 4-7**
**Summary of Peak Daily Construction Emissions from ExxonMobil Rule 1105.1 Compliance Project[(1)]**

| | CO (lbs/day) | VOCs (lbs/day) | NOx (lbs/day) | SOx (lbs/day) | $PM_{10}$ (lbs/day) |
|---|---|---|---|---|---|
| Construction Equipment | 195 | 39 | 360 | 33 | 22 |
| Vehicle Emissions | 42 | 5 | 21 | 0 | 1 |
| Fugitive - Excavation | 0 | 0 | 0 | 0 | 0.2 |
| Fugitive - Construction | 0 | 0 | 0 | 0 | 13 |
| Fugitive - Road Dust | 0 | 0 | 0 | 0 | 14 |
| **Totals** | **238** | **44** | **380** | **33** | **50** |
| **Significance Threshold** | **550** | **75** | **100** | **150** | **150** |
| **Significant?** | **NO** | **NO** | **YES** | **NO** | **NO** |

(1) Detailed construction emission calculations are in Appendix B.
Note: Most totals rounded to the nearest integer.

Although there are minor differences between the construction scenario assumptions in the SCAQMD 2003 Final EA for Rule 1105.1 and the ExxonMobil Rule 1105.1 Compliance Project, the ExxonMobil peak daily construction emissions are less than the peak daily construction emissions in the SCAQMD's 2003 Final EA for Rule 1105.1,

which evaluated two construction scenarios occurring concurrently. Table 4-8 compares the peak construction emissions in the SCAQMD 2003 Final EA for Rule 1105.1 with the peak construction emissions (unmitigated) in the ExxonMobil Rule 1105.1 Compliance Project.

**Table 4-8**
**Comparison of SCAQMD 2003 Final EA Peak Construction Emissions and ExxonMobil Rule 1105.1 Compliance Project Peak Construction Emissions(1)**
**(Unmitigated)**

| | CO (lbs/day) | VOCs (lbs/day) | NOx (lbs/day) | SOx (lbs/day) | $PM_{10}$ (lbs/day) |
|---|---|---|---|---|---|
| ExxonMobil Peak Daily Construction Emissions | 238 | 44 | 380 | 33 | 50 |
| SCAQMD Final EA Peak Daily Construction Emissions | 578 | 122 | 893 | 73 | 50 |
| Difference between ExxonMobil Peak Daily Construction Emissions and SCAQMD 2003 Final EA Peak Daily Construction Emissions | -340 | -78 | -513 | -40 | 0 |
| **Significance Threshold** | **550** | **75** | **100** | **150** | **150** |
| **Significant?** | **NO** | **NO** | **NO** | **NO** | **NO** |

(1) Detailed construction emission calculations are in Appendix B.
(2) Totals rounded to the nearest integer.

The results in Table 4-8 demonstrate that the proposed project does not generate any new project-specific significant adverse construction-related air quality impacts that were not already evaluated and presented in the SCAQMD 2003 Final EA for Rule 1105.1. Further, since significant adverse construction air quality impacts were already identified in the Final EA for Rule 1105.1, and ExxonMobil peak daily construction emissions are less than the construction-related air quality impacts in the SCAQMD Final EA for Rule 1105.1, the proposed project is not expected to create any new significant adverse impacts or make substantially worse the significant adverse impacts previously identified in the SCAQMD Final EA for Rule 1105.1.

Thus, this analysis concludes that project-specific construction-related air quality impacts associated with the ExxonMobil Rule 1105.1 Compliance Project are less than significant because they are within the scope of the analysis in the SCAQMD 2003 Final EA for Rule 1105.1.

### Localized Construction Impacts

At the time the SCAQMD 2003 Final EA for Rule 1105.1 was prepared, localized air quality impacts were not required to be analyzed. As a result, an analysis of the localized air quality impacts related to the ExxonMobil Rule 1105.1 Compliance Project was performed. A localized air quality analysis is only applicable to the following criteria pollutants: CO, NOx and PM10. Localized significance thresholds (LSTs) represent the maximum emissions from a project that are not expected to cause or contribute to an exceedance of the most stringent applicable federal or state ambient air quality standard, and are developed based on the ambient concentrations of that pollutant for each source receptor area and distance to the nearest sensitive receptor. For PM10, LSTs were derived based on the requirements in SCAQMD Rule 403 – Fugitive Dust. The project

specific construction emissions of NOx, CO and PM10 were compared to the Mass Rate LST tables provided by the SCAQMD based on the following assumptions:

- The ExxonMobil Torrance Refinery is in Source/Receptor Area 3;
- The construction site is one acre; and
- The receptor distance from the site boundary is 500 meters.

As a result of these assumptions, the proposed project was determined to be significant for NOx on a short-term basis during construction only. See Table 4-9 for a summary of the results of the LST analysis (unmitigated).

**Table 4-9**
**LST Emission Thresholds Compared with ExxonMobil Rule 1105.1 Compliance Project Construction Emissions (Unmitigated)**

| | CO (lbs/day) | NOx (lbs/day) | PM10 (lbs/day) |
|---|---|---|---|
| Peak Construction Emissions from the Proposed Project | 238 | 380 | 50 |
| Offsite Emissions from construction worker vehicles, delivery trucks, cement trucks and dump trucks (Peak Phase) | -42 | -20 | -1 |
| Total Peak Onsite Construction Emissions from Proposed Project | 196 | 360 | 49 |
| LSTs at 500 meters for SRA 3 (1) | 5,848 | 353 | 213 |
| **Significant?** | **NO** | **YES** | **NO** |

(1) From Tables C-1, C-2 and C-3 in Appendix C of the Final LST Methodology document (2003) at www.aqmd.gov/ceqa/handbook/LST/method.final.pdf.

## Operational Emissions

The overall purpose and objective of the proposed project is to comply with SCAQMD Rule 1105.1. Rule 1105.1 implements AQMP Control Measure CMB-09; establishes emission limits for filterable PM10 and ammonia; requires periodic source testing to ensure compliance; and requires monitoring, reporting, and record keeping of PM10 and ammonia emissions as well as equipment operating parameters. As a result, once operational, the proposed project is expected to provide an overall reduction in PM10 and ammonia emissions from the Torrance Refinery providing an overall air quality benefit.

The SCAQMD 2003 Final EA concluded that Rule 1105.1 would not create significant adverse operational air quality impacts because the overall objective of the rule was expected to reduce emissions by approximately "0.5 ton per day of filterable PM10 and two tons per day of total PM10 (which results in approximately 1.5 tons per day of condensable PM10 or 1.5 tons per day of ammonia) by limiting the amount of ammonia slip to 10 ppmv as corrected for three percent oxygen." (SCAQMD 2003 Final EA, page 1-7)

The proposed project will affect the number of truck trips per day delivering anhydrous ammonia to the refinery and the number of truck trips per year transporting spent FCC catalyst offsite for recycling to facilities such as California Portland Cement. Currently, there is one truck trip per day of anhydrous ammonia delivery to the refinery and used in the FCCU process (i.e., 365 truck trips per year). Similarly, there are 234 truck trips per year transporting spent FCC catalyst offsite for recycling. This means that the maximum number of truck trips per day related to anhydrous ammonia deliveries and spent catalyst transportation offsite is two truck trips per day. The proposed project is expected to

reduce the number of anhydrous ammonia truck trip deliveries from one per day to one every three days, or from 365 truck trips to 122 truck trips per year. Alternatively, the number of truck trips to transport spent catalyst may increase slightly from 234 to 260 per year.

The net effect of the proposed project is that there could be days throughout the year without any anhydrous ammonia deliveries or spent catalyst transportation offsite, thereby no truck trips per day. However, on potentially 122 days per year there could possibly be a maximum of two truck trips per day, the same as the baseline situation. As a result, on an annual basis there will be a net reduction in truck trips and associated mobile source emissions. However, on a peak daily basis, there will be no net change in truck trips or associated mobile source emissions.

**Toxic Air Contaminants**

The ExxonMobil Rule 1105.1 Compliance Project will not generate any additional operational TAC emissions, and will result in overall emission reductions of PM10 and ammonia following project completion. Since ammonia is considered to be a TAC the long-term impacts of the proposed project are expected to be a beneficial impact on public health. The proposed project will only result in a short-term increase in emissions related to construction activities. These emissions will cease following completion of construction. The main contaminant of concern associated with construction activities is diesel exhaust particulates that have been listed as a TAC by CARB. While carcinogenic and chronic non-carcinogenic health risk values have been established for diesel exhaust particulates, no acute diesel exhaust health risk values have been established to evaluate acute (i.e., short-term) health effects related to diesel particulates.

Since construction for the proposed project is considered to be short-term (i.e., lasts less than two years) and does not require a substantial number of construction equipment, no health risk assessment (HRA) is required to be prepared. Further, the proposed project is expected to result in long-term health benefits by reducing PM10 and ammonia emissions from the refinery. Therefore, no significant adverse health effects are expected from the proposed project.

As a result of the above, and since the proposed project will not generate any additional operational TAC emissions, the proposed project is not significant for operational TAC emissions.

### 4.2.3 MITIGATION MEASURES

**Construction**

Mitigation measures are required to reduce the potentially significant impacts associated with NOx emissions during construction activities. The SCAQMD 2003 Final EA for Rule 1105.1 included the following mitigation measures, where feasible, to reduce emissions associated with construction activities for Rule 1105.1 projects:

- Develop a Construction Traffic Emission Management Plan to minimize emissions from vehicles including, but not limited to, scheduling truck deliveries to avoid peak hour traffic conditions, consolidating truck deliveries, and prohibiting individual truck idling in excess of ~~10~~ five consecutive minutes or what is allowed under Title 13 California Code of Regulations §2485 (CARB's

Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling).

- Suspend the use of all construction equipment during first-stage smog alerts.
- Use electricity or alternate fuels for on-site mobile equipment instead of diesel equipment to the extent feasible.
- Maintain construction equipment by conducting regular tune-ups and retard diesel engine timing, to the extent feasible.
- Use electric welders to avoid emissions from gas or diesel welders in portions of the project site where electricity is available.
- Use on-site electricity rather than temporary power generators in portions of the project site where electricity is available.
- Diesel-power construction equipment shall use low-sulfur diesel, as defined in SCAQMD rule 431.2, to the maximum extent feasible[12].
- Prior to use in construction, the project applicant will evaluate the feasibility of retrofitting the large off-road construction equipment that will be operating for significant periods. Retrofit technologies such as particulate traps, SCR, oxidation catalysts, air enhancement technologies, etc., will be evaluated. These technologies will be required if they are certified by CARB and/or the EPA and are commercially available and can feasibly be retrofitted onto construction equipment.

**Operation**

No mitigation measures are required for operation because the proposed project was determined to be less than significant in the operational phase.

### 4.2.4 LEVEL OF SIGNIFICANCE AFTER MITIGATION

Construction and operational emissions for the proposed project are considered to be within the scope of the analysis in the SCAQMD 2003 Final EA for Rule 1105.1 and, therefore are considered to be less than significant.

A mitigation measure to maintain construction equipment by conducting regular tune-ups and retard diesel engine timing, to the extent feasible, has been applied to the project. This mitigation measure has a control efficiency of five percent. As a result, emission reductions can be quantified.

Table 4-10 provides a comparison of the peak construction emissions in the SCAQMD 2003 Final EA for Rule 1105.1 with the mitigated peak construction emissions in the ExxonMobil Rule 1105.1 Compliance Project.

[12] Low sulfur diesel was required to be used nationwide as of September 1, 2006.

**Table 4-10**
**Comparison of SCAQMD 2003 Final EA Peak Construction Emissions and ExxonMobil Rule 1105.1 Compliance Project Peak Construction Emissions[(1)]**
**(Mitigated)**

| | CO (lbs/day) | VOCs (lbs/day) | NOx (lbs/day) | SOx (lbs/day) | $PM_{10}$ (lbs/day) |
|---|---|---|---|---|---|
| ExxonMobil Peak Daily Construction Emissions | 238 | 44 | 380 | 33 | 50 |
| Offsite Peak Daily Emissions from worker vehicles and delivery/cement/dump trucks. | -42 | -5 | -20 | 0 | -1 |
| Total Peak Onsite Construction Emissions | 196 | 39 | 360 | 33 | 49 |
| Control efficiency for conducting regular tune-ups [(2)] | 5% | 5% | 5% | 5% | 5% |
| Emission reductions from conducting regular tune-ups | 10 | 2 | 18 | 2 | 1 |
| Total Mitigated ExxonMobil onsite Peak Daily Construction Emissions | 186 | 37 | 342 | 31 | 48 |
| SCAQMD Final EA Peak Daily Construction Emissions | 578 | 122 | 893 | 73 | 50 |
| Difference between ExxonMobil Peak Daily Construction Emissions and SCAQMD 2003 Final EA Peak Daily Construction Emissions | -392 | -85 | -551 | -42 | -2 |
| **Significance Threshold** | **550** | **75** | **100** | **150** | **150** |
| **Significant?** | **NO** | **NO** | **NO** | **NO** | **NO** |

(1) Detailed construction emission calculations are in Appendix B.
(2) Five percent control efficiency is derived from URBEMIS model 8.7.0.
Note: Totals rounded to the nearest integer.

### Localized Air Quality Analysis

When the control efficiency of five percent for conducting regular tune-ups is applied to onsite construction emissions, the emissions for all three pollutants (i.e., CO, PM10 and NOx) in the localized air quality analysis are reduced to less than the localized significance thresholds. As a result, the localized air quality impacts are less than significant as reflected in Table 4-11 below.

**Table 4-11**
**LST Emission Thresholds Compared with ExxonMobil Rule 1105.1 Compliance Project Construction Emissions**
**(Mitigated)**

| | CO (lbs/day) | NOx (lbs/day) | PM10 (lbs/day) |
|---|---|---|---|
| ExxonMobil peak construction emissions. | 238 | 380 | 50 |
| Offsite peak emissions from construction worker vehicles, delivery trucks, cement trucks and dump trucks. | -42 | -20 | -1 |
| Total peak onsite construction emissions | 196 | 360 | 49 |
| Control efficiency for conducting regular tune-ups | 5% | 5% | 5% |
| Emission reductions from conducting regular tune-ups | 10 | 18 | 1[(2)] |
| Total mitigated onsite construction emissions | 186 | 342 | 48 |
| LSTs at 500 meters for SRA 3 [(1)] | 5,848 | 353 | 213 |
| **Significant?** | **NO** | **NO** | **NO** |

(1) From Tables C-1, C-2 and C-3 in Appendix C of the Final LST Methodology document (2003) at www.aqmd.gov/ceqa/handbook/LST/method.final.pdf.
(2) Control efficiency applied to onsite construction equipment combustion emissions, not fugitive dust.
Note: Totals rounded to the nearest integer.

# 4.3 OTHER CEQA TOPICS

## GROWTH-INDUCING IMPACTS OF THE PROPOSED PROJECT

CEQA defines growth-inducing impacts as those impacts of a proposed project that "could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Included in this are projects, which would remove obstacles to population growth" (CEQA Guidelines §15126.2(d)).

The project involves the installation of air pollution control equipment at an existing industrial facility. No population growth will be encouraged as a result of the project. It is expected that the construction workers performing installation activities will be obtained from the existing labor pool in the Los Angeles area. Further, operation of the proposed project is not expected to require any additional refinery personnel. Therefore, the proposed project is not expected to induce population growth in the area, nor will additional housing be required.

## SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL CHANGES AND ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED

CEQA requires an EIR to discuss significant environmental effects (CEQA Guidelines §15126.2(b)) and irreversible environmental changes (CEQA Guidelines §15126.2[c]), which would result from a proposed project, should it be implemented. Significant adverse impacts are impacts that would exceed established threshold levels (e.g., air emissions would exceed SCAQMD established threshold levels). Irreversible changes include a large commitment of nonrenewable resources, committing future generations to specific uses of the environment (e.g., converting open spaces into urban development), or enduring environmental damage due to an accident.

It was determined that implementation of the proposed project would result in potentially significant adverse cumulative impacts on air quality during construction. These emissions are temporary and will cease following completion of construction activities. Operational air quality impacts of both criteria pollutants and TACs are not expected to have a significant adverse impact on the environment.

Following completion of the construction phase, the proposed project will have an overall beneficial impact on air quality. Therefore, the ExxonMobil Rule 1105.1 Compliance Project is not expected to have long-term adverse environmental impacts on air quality.

The proposed project involves modifications to an existing Refinery, located within an industrial area, which has been operating since 1929. Therefore, there is no major commitment of nonrenewable resources or changes that would commit future generations to specific uses of the environment.

## ENVIRONMENTAL EFFECTS FOUND NOT TO BE SIGNIFICANT

The environmental effects of the ExxonMobil Rule 1105.1 Compliance Project are identified and discussed in detail in the preceding portions of Chapter 4 and in the Initial Study (see Appendix A) per the requirements of the CEQA Guidelines (§15128). The following topics of analysis in this Final EIR were found to have no potentially significant adverse effects:

- Project-specific regional construction and operational air quality impacts.

The following topics of analysis were found in the IS to have no potentially significant adverse effects:

| | | |
|---|---|---|
| Aesthetics | Hydrology/Water Quality | Solid/Hazardous Waste |
| Agricultural Resources | Land Use/Planning | Hazards/Hazardous Materials |
| Biological Resources | Mineral Resources | Noise |
| Cultural Resources | Population/Housing | Transportation/Traffic |
| Energy | Public Services | |
| Geology/Soils | Recreation | |

Project specific regional construction air quality impacts were concluded to be within the scope of the analysis of the SCAQMD 2003 Final EA for Rule 1105.1 and, therefore, were concluded to be less than significant. In addition, although localized construction NOx emissions exceed the applicable NOx LST, this impact was mitigated to less than significant. Because the proposed project will reduce operational emissions, operational air quality impacts are also not significant.

Potentially significant adverse regional cumulative impacts were identified in the EIR analysis for air quality during construction activities (see Chapter 5 of this Final ~~Draft~~ EIR).

Since the preparation of the NOP/IS, modifications to the proposed project have occurred due to more complete engineering review. The changes include removing the planned pneumatic conveyance system and storage silo for FCC spent catalyst, and eliminating the task of removing a small boiler that has been out of service. Elimination of the storage silo is expected to result in a small increase in the number of trucks to transport FCC spent catalyst offsite (i.e., from 234 to 260 truck trips per year). However, the proposed project is still expected to result in an overall reduction in annual truck trips because of the reduction in the use of anhydrous ammonia, which will reduce the number of delivery truck trips to the Torrance Refinery. The truck trips will be reduced from one truck trip per day to one truck trip every three days (i.e., from 365 to 122 truck trips per year). Therefore, the conclusion in the NOP/IS that the proposed project will result in no additional operational-related trips (and, in fact, will result in a decrease in truck traffic) and no significant adverse impacts on transportation/traffic conditions is still valid.

Further, the proposed project is still expected to result in a decrease in the hazards associated with the transport of anhydrous ammonia since the number of trucks transporting anhydrous ammonia is expected to decrease as stated above. Therefore, the conclusion in the NOP/IS that the proposed project is not expected to result in any adverse impacts on hazards or hazardous materials is still valid. In fact, the proposed project will result in a reduction in the transport of anhydrous ammonia (a TAC) and a reduction in the related hazards.

# CHAPTER 5

# CUMULATIVE IMPACTS

Introduction
Concurrent Projects
Air Quality

# 5.0 CUMULATIVE IMPACTS

## 5.1 INTRODUCTION

CEQA Guidelines §15130(a) requires an EIR to discuss cumulative impacts of a project when the project's incremental effect is cumulatively considerable, as defined in §15065(a)(3). There are two related Rule 1105.1 compliance projects proposed for construction in the Basin at the same time as the proposed project, which will contribute to cumulative impacts. These projects, located at the BP Carson and Shell refineries, are briefly described in the next section. As a result, cumulative construction impacts were evaluated to determine the contribution of these concurrent projects with those of the proposed project to regional cumulative air quality impacts.

The SCAQMD expects that the ConocoPhillips Los Angeles and the Ultramar Valero Wilmington refineries will also propose Rule 1105.1 compliance projects. The details of these projects are not yet available, therefore their impacts are considered speculative at this time. Cumulative impacts from these and existing projects will be evaluated in the cumulative impacts sections of the CEQA documents for these proposed projects when information becomes available.

## 5.2 RELATED PROJECTS

### BP CARSON REFINERY SAFETY, COMPLIANCE AND OPTIMIZATION PROJECT

The BP Carson Refinery has obtained approval (Final EIR, SCH No. 2005111057, September 2006) to begin construction on a project to perform various modifications at their Carson Refinery. In addition to modifications to comply with Rule 1105.1, the proposed project includes: modifications to the existing FCCU, installation of a new fluid feed hydrodesulfurization reactor, modifications to the existing alky merox unit, modifications to the existing alkylation unit, modifications to the existing hydrocracker unit, modifications to the existing coker gas debutanizer pressure relief valve, modifications to the existing sulfur plant, modifications to the existing vapor recovery system, installation of a new north area flare gas recovery system, and modifications to pressure-relief devices. Construction is expected to begin in November 2006 and continue through the end of June 2009. Therefore, the potential construction overlap of the BP Carson Refinery Safety, Compliance and Optimization Project with the proposed project will be evaluated as a potential cumulative impact.

### SHELL RULE 1105.1 COMPLIANCE PROJECT

The Shell Los Angeles Refinery has also implemented a Rule 1105.1 Compliance Project in Wilmington. Shell operates a series of cyclones followed by three dry ESPs to control particulates from the FCCU. The ESPs were installed over 30 years ago. Because of their age, the existing ESPs are no longer as efficient in capturing particulates as the new models currently available. Shell operators have decided to remove the three existing ESPs and install three new ESPs as control equipment for the FCCU to comply with SCAQMD Rule 1105.1. A Negative Declaration (SCH No. 2006031004) was prepared for the Shell Rule 1105.1 Compliance Project and certified by the SCAQMD on April 27, 2006. Construction of the Shell Rule 1105.1 Compliance project was scheduled to begin in May 2006 and to be complete by June 2007. The construction phase of the Shell project will overlap with portions of the proposed project.

# 5.3 AIR QUALITY

## CONSTRUCTION IMPACTS

Currently, the Basin is non-attainment for ozone, CO, and PM10. Construction activities for the concurrent projects considered in this cumulative impact analysis will overlap with the proposed ExxonMobil Rule 1105.1 Compliance Project and result in a short-term significant impact on air quality. Although construction air quality impacts are within the scope of the analysis in the SCAQMD 2003 Final EA for Rule 1105.1 and, therefore, are not considered to be significant, in combination with the other concurrent refinery projects, the proposed project contributes to a regionally significant adverse cumulative impact on air quality.

Table 5-1 summarizes the available construction emissions data for the concurrent projects. On a cumulative basis, construction emissions would exceed the thresholds established by the SCAQMD. Therefore, the cumulative air quality construction impacts are considered significant. Mitigation measures to reduce emissions associated with construction activities are necessary primarily to control emissions from heavy construction equipment and worker travel.

**Table 5-1**
**Cumulative Construction Air Quality Impacts**

| Project | CO (lbs/day) | VOCs (lbs/day) | NOx (lbs/day) | SOx (lbs/day) | PM10 (lbs/day) |
|---|---|---|---|---|---|
| BP Carson Refinery Safety, Compliance and Optimization Project (1) | 891 | 219 | 1,053 | 101 | 138 |
| Shell 1105.1 Compliance Project (1) | 299 | 63 | 416 | 45 | 36 |
| ExxonMobil Rule 1105.1 Compliance Project (2) | 186 | 37 | 342 | 31 | 48 |
| Totals | 1,376 | 319 | 1,811 | 177 | 222 |
| SCAQMD 2003 Final EA | -578 | -122 | -893 | -73 | -50 |
| Remaining Emissions | 798 | 197 | 918 | 104 | 172 |
| **Significance Thresholds** | **550** | **75** | **100** | **150** | **150** |
| **Significant?** | **YES** | **YES** | **YES** | **NO** | **YES** |

(1) Source of emissions from BP Carson Refinery Safety, Compliance and Optimization Project Final EIR, SCH No. 2005111057, September 2006, Table 5-2, at page 5-12.
(2) See Table 4-10 for mitigated ExxonMobil Rule 1105.1 Compliance Project emissions.
Note: Table 5-1 presents the cumulative air quality impacts for projects where emissions have been estimated to date. Emissions from Conoco-Phillips Los Angeles and Ultramar Valero Wilmington refineries have not been prepared at the time of the preparation of this Draft EIR. Cumulative impacts from these projects will be calculated and presented in the respective CEQA documents when they are prepared.

## OPERATIONAL EMISSION IMPACTS

The SCAQMD 2003 Final EA for Rule 1105.1 concluded that Rule 1105.1 would not create significant adverse operational air quality impacts because the overall objective of the rule was expected to reduce emissions by approximately "0.5 ton per day of filterable PM10 and two tons per day of total PM10 (which results in approximately 1.5 tons per day of condensable PM10 or 1.5 tons per day of ammonia) by limiting the amount of ammonia slip to 10 ppmv as corrected for three percent oxygen." (SCAQMD 2003 Final EA, page 1-7) The cumulative operational impacts from the Rule 1105.1 projects evaluated to date are greater than those identified in the SCAQMD Final EA for Rule

1105.1, but are less than the significance thresholds. Therefore, cumulative operational air quality impacts are less than significant and not expected to result in a cumulatively considerable net increase of any criteria pollutant for which the region is in non-attainment under federal or state ambient air quality standards. Therefore, cumulative operational impacts are not cumulatively considerable.

Table 5-2 summarizes cumulative operational air quality impacts for the Rule 1105.1 projects evaluated to date.

**Table 5-2**
**Cumulative Operational Air Quality Impacts**

| Project | CO (lbs/day) | VOCs (lbs/day) | NOx (lbs/day) | SOx (lbs/day) | PM10 (lbs/day) |
|---|---|---|---|---|---|
| BP Carson Refinery Safety, Compliance and Optimization Project (1) | 13 | 52 | 20 | < 1 | 15 |
| Shell 1105.1 Compliance Project (1) | 1 | < 1 | 2 | 0 | < 1 |
| ExxonMobil Rule 1105.1 Compliance Project (2) | 0 | 0 | 0 | 0 | 0 |
| Totals | 14 | 52 | 22 | < 1 | 15 |
| SCAQMD 2003 Final EA for Rule 1105.1 | 5 | 6 | 1 | < 1 | -5,099 |
| **Significance Thresholds** | **550** | **55** | **55** | **150** | **150** |
| **Significant?** | **NO** | **NO** | **NO** | **NO** | **NO** |

(1) Source of emissions data from BP Carson Refinery Safety, Compliance and Optimization Project Final EIR, SCH No. 2005111057, September 2006, Table 5-4, at page 5-15.
(2) The ExxonMobil Rule 1105.1 Compliance Project does not generate any new operational emissions exceeding baseline.

## TOXIC AIR CONTAMINANTS

The ExxonMobil Rule 1105.1 Compliance Project will not generate any additional operational TAC emissions, and will result in overall emission reductions of PM10 and ammonia following project completion. Since ammonia is considered to be a TAC the long-term impacts of the proposed project are expected to be a beneficial impact on public health. The proposed project will only result in a short-term increase in emissions related to construction activities. These emissions will cease following completion of construction. The main contaminant of concern associated with construction activities is diesel exhaust particulates that have been listed as a TAC by CARB. While carcinogenic and chronic non-carcinogenic health risk values have been established for diesel exhaust particulates, no acute diesel exhaust health risk values have been established to evaluate acute (i.e., short-term) health effects related to diesel particulates.

Since construction for the proposed project is considered to be short-term (i.e., lasts less than two years) and does not require a substantial number of construction equipment, no health risk assessment (HRA) is required to be prepared. Further, the proposed project is expected to result in long-term health benefits by reducing PM10 and ammonia emissions from the refinery. Therefore, no significant adverse health effects are expected from the proposed project.

As a result of the above, and since the proposed project will not generate any additional operational TAC emissions, the proposed project is not significant for operational TAC emissions.

Further, even though there will be related Rule 1105.1 compliance project construction activities occurring in the Basin at the same time as the proposed project, because of the

distances between the affected refineries there will be no overlap of localized construction emissions. The proximity of the BP Carson and Shell Wilmington Refineries is a distance of approximately 10 miles from the ExxonMobil Torrance Refinery.

## MITIGATION MEASURES

No mitigation measures for operation are required.

During construction, the mitigation measures developed by the SCAQMD in their 2003 Final EA for Rule 1105.1 will be imposed upon the proposed project and other projects occurring at the same time.

## LEVEL OF SIGNIFICANCE AFTER MITIGATION

The cumulative adverse air quality impacts due to construction activities are expected to exceed the SCAQMD significance thresholds and are considered to be cumulatively considerable. There are no cumulative air quality impacts due to operational activities. The project-specific toxic air pollutant health impacts are not significant, and are not considered to be cumulatively considerable.

# CHAPTER 6

# ALTERNATIVES

Introduction
Alternatives Rejected as Infeasible
Description of Project Alternatives
Environmental Impacts from Project Alternatives
Conclusion

# 6.0 ALTERNATIVES

## 6.1 INTRODUCTION

Chapter 6 provides a discussion of alternatives to the proposed project as required by CEQA. Pursuant to CEQA Guidelines, §15126.6, an EIR shall describe a range of reasonable alternatives to the project that would feasibly attain most of the basic objectives of the project, but would avoid or substantially lessen any of the significant effects of the project and evaluate the comparative merits of the alternatives. In addition, though the range of alternatives must be sufficient to permit a reasoned choice, they need not include every conceivable project alternative. The key issue is whether the selection and discussion of alternatives fosters informed decision making and public participation.

The alternatives were developed by reviewing options to achieving most or some of the objectives of the proposed project. Consequently, each project alternative described below is similar to the proposed project in most respects, while generating fewer or less severe adverse environmental impacts. The objective of the proposed project is to:

- Comply with SCAQMD Rule 1105.1 – Reduction of PM10 and Ammonia Emissions from FCCUs.

CEQA Guidelines §15126.6(f) stipulates that the range of alternatives required in an EIR is governed by a rule of reason in that the EIR must discuss only those alternatives "necessary to permit a reasoned choice" and those that could feasibly attain most of the basic objectives of the proposed project. The range of alternatives to the proposed project is relatively limited because the project proponent must comply with the PM10 and ammonia reduction requirements of Rule 1105.1. In addition, the range of control technologies is very limited, consisting primarily of ESPs, as explained in Section 6.2.

The project alternatives were developed by modifying one or more components of the proposed project taking into consideration the project's limitations as to space, and permitting requirements. Unless otherwise stated, all other components of each project alternative are identical to the proposed project. The identified feasible project alternatives as well as the alternatives rejected as infeasible are discussed further below.

Aside from the alternatives described below, no other project alternatives were identified that met the objectives of the proposed project while substantially reducing significant adverse environmental impacts.

## 6.2 ALTERNATIVES REJECTED AS INFEASIBLE

In accordance with CEQA Guidelines §15126.6(c), a CEQA document should identify any alternatives that were considered by the lead agency, but were rejected as infeasible during the scoping process and briefly explain the reason underlying the lead agency's determination.

Section 15126.6(c) also states that among the factors that may be used to eliminate alternatives from detailed consideration in an EIR are: (1) failure to meet most of the basic project objectives; (2) infeasibility; or (3) inability to avoid significant environmental impacts. Furthermore, CEQA Guidelines §15126.6(f)(2)(B) indicates that if the lead agency concludes that no feasible alternative locations for the project exist, it must disclose the reasons for this conclusion, and should include the reasons in the EIR.

**Other Technology to Reduce PM10 and Ammonia Emissions:** One of the alternatives deemed infeasible was the implementation of air pollution control technology other than dry ESP. The SCAQMD 2003 Final EA for Rule 1105.1 evaluated several technologies to controlling particulate emissions from the FCCU, such as feed hydrotreating, ESPs, catalytic NOx control, SOx reducing additives, flue gas conditioning (ammonia injection), wet gas scrubbers and baghouses. All of the technologies evaluated in the SCAQMD 2003 Final EA for Rule 1105.1 reduced PM10 and ammonia emissions, but ESPs were determined to be the most efficient in meeting the emissions reductions required by Rule 1105.1 at the ExxonMobil Torrance Refinery. The ExxonMobil Rule 1105.1 Compliance Project evaluated technology options and determined dry ESPs to be the best solution for the reduction of PM10 and ammonia emissions from the FCCU at the Torrance Refinery. While other technology options were evaluated, none of the other technology options will reduce cumulative construction-related air quality emissions to less than significant. As a result, this alternative was deemed infeasible to avoid or substantially lessen the significant effects of the proposed project.

**Alternative Sites:** Another of the alternatives deemed infeasible was to build the new air pollution control equipment in a location other than that proposed (i.e., other than adjacent to the existing FCCU).

The Torrance Refinery has limited space and logistical constraints associated with the placement of air pollution control equipment to comply with Rule 1105.1. The new ESPs must be located adjacent to the existing FCCU. As a result, the current site is the only available location and alternative sites are not feasible because:

- The Torrance Refinery has only one existing FCCU;
- The new ESPs must be located adjacent to the existing FCCU;
- Relocating the FCCU to accommodate locating the new ESPs to an alternative site is not feasible;
- Constructing the ESPs in another location, further away from the existing FCCU is infeasible because the ESPs and FCCU regenerator must be located adjacent to each other. Building the ESPs in another location (other than adjacent to the existing FCCU), would require additional duct work, more blowers, more support facilities, increased energy use (to accommodate any potential pressure drops), and more extensive construction activities than the proposed project. Therefore, this alternative would generate greater environmental impacts (e.g., air quality and energy) than the proposed project.

**Postponing Construction Activities:** Another alternative deemed infeasible was postponing construction activities until other overlapping Rule 1105.1 construction activities in the Basin are completed. This alternative was evaluated and found to reduce cumulative construction-related air quality impacts to a level of non significance. Postponing ExxonMobil Rule 1105.1 construction activities, however, would not allow the Torrance Refinery to meet the objectives of the project and meet the compliance deadlines.

# 6.3 DESCRIPTION OF THE PROJECT ALTERNATIVES

## ALTERNATIVE 1 – NO PROJECT ALTERNATIVE

CEQA Guidelines § 15126.6 (e) requires evaluation of a "No Project Alternative." Under the "No Project Alternative," no Refinery modifications would occur. The proposed modifications to the FCCU to comply with Rule 1105.1 would not occur and the Refinery would continue to operate under its current configuration.

The "No Project Alternative" would not meet the objective of the proposed project:

- Compliance with SCAQMD Rule 1105.1 – Reduction of PM10 and Ammonia Emissions from Fluid Catalytic Cracking Units.

## ALTERNATIVE 2 – REDUCTION IN CONSTRUCTION WORKHOURS

The analysis of the proposed project currently assumes construction activities will occur in two 10-hour shifts per day generally throughout most of the 21.5-month construction period. Alternative 2 evaluated a scenario of reducing the construction work hours to one 10-hour shift per day and the resulting impacts on air quality. While the peak daily project construction emissions would be less for this alternative than for the proposed project, the cumulative construction-related emissions would remain outside the scope of the SCAQMD 2003 Final EA for Rule 1105.1 and, therefore, would continue to be significant. The proposed project construction activities would still be anticipated to occur at the same time as the other concurrent Rule 1105.1 refinery construction projects in the Basin and thus not reduce cumulative emissions to less than significant.

In addition, it is expected that the proposed project would not be able to be completed within the currently planned construction schedule if the activities were limited to 10 hours per day, so the ExxonMobil Rule 1105.1 Compliance Project would not be able to install the new air pollution control equipment during the 2008 FCCU turnaround and meet the Rule 1105.1 compliance deadline.

For these reasons, Alternative 2 was found to not meet the primary objectives of the proposed project. Table 6-1 shows cumulative emissions with the proposed project and the cumulative emissions with Alternative 2. The detailed construction calculations for the proposed project and Alternative 2 are in Appendices B and C, respectively. As reflected in Table 6-1, Alternative 2 does not reduce cumulative impacts to a less than significant level.

**Table 6-1**
**Comparison of Proposed Project and Alternative 2**
**Cumulative Construction Emissions**

| | CO (lbs/day) | VOCs (lbs/day) | NOx (lbs/day) | SOx (lbs/day) | PM10 (lbs/day) |
|---|---|---|---|---|---|
| **PROPOSED PROJECT** | | | | | |
| Cumulative Emissions with Proposed Project [(1)] | 1,376 | 319 | 1,811 | 177 | 222 |
| SCAQMD Final EA Peak Emissions | -578 | -122 | -893 | -73 | -50 |
| Difference between SCAQMD Final EA and Cumulative Emissions with Proposed Project | 798 | 197 | 918 | 104 | 172 |
| **SCAQMD Thresholds** | **550** | **75** | **100** | **150** | **150** |
| **Significant?** | **YES** | **YES** | **YES** | **NO** | **YES** |
| **ALTERNATIVE 2** | | | | | |
| Cumulative Emissions with Alternative 2 | 1,313 | 308 | 1,694 | 167 | 218 |
| SCAQMD Final EA Peak Emissions | -578 | -122 | -893 | -73 | -50 |
| Difference between SCAQMD Final EA and Cumulative Emissions with Alternative 2 | 736 | 186 | 801 | 94 | 168 |
| **SCAQMD Thresholds** | **550** | **75** | **100** | **150** | **150** |
| **Significant?** | **YES** | **YES** | **YES** | **NO** | **YES** |

(1) Cumulative emissions from Table 5-1.
Notes:
Detailed construction emission calculations for the proposed project and Alternative 2 in Appendices B and C, respectively.
Totals have been rounded to the nearest integer.
Based on emission calculations, peak daily occurs in Phase 1 for both the proposed project and Alternative 2.

## 6.4 ENVIRONMENTAL IMPACTS FROM PROJECT ALTERNATIVES

### ALTERNATIVE 1 – NO PROJECT ALTERNATIVE

**Construction:** Project-specific and cumulative air quality impacts associated with construction under Alternative 1 would be eliminated because no construction activities would be required. Under Alternative 1, both project-specific and cumulative air quality impacts during construction would be less than significant.

**Operation:** Operational emissions under Alternative 1 would be considered significant because emissions reductions of PM10 and ammonia would not be achieved in compliance with SCAQMD Rule 1105.1 and the primary objectives of the proposed project would not be met. Consequently, Alternative 1 would result in significant operational air quality impacts.

**Toxic Air Contaminants:** Alternative 1 would not alter the existing conditions at the Torrance Refinery associated with TAC emissions and health risks. As part of the proposed project, the volume of anhydrous ammonia required in the FCCU operations will be reduced, which thereby reduces the risks associated with transportation and delivery. As a result, the proposed project has a preferred benefit over Alternative 1, as it relates to TACs and health risk issues.

### ALTERNATIVE 2 – REDUCTION IN CONSTRUCTION WORKHOURS

**Construction:** Project-specific construction air quality impacts under Alternative 2 would be less than the proposed project. Cumulative air quality impacts, however, would remain significant because construction would continue to occur at the same time as other currently planned and approved refinery construction projects in the Basin and cumulative construction emissions would still exceed the applicable construction air quality significance thresholds.

**Operation:** Operational emissions under Alternative 2 would be the same as the proposed project (i.e., less than significant). Reducing construction work hours would have no impact on operational conditions once construction activities concluded although there could be a delay in achieving PM10 Emissions after the compliance date.

**Toxic Air Contaminants:** The TAC emissions and health risk conditions would be the same in Alternative 2 as the proposed project. As part of the proposed project, the volume of anhydrous ammonia required in the FCCU operations will be reduced, which reduces the risk of upset during transportation and delivery, and reduces the number of required truck trips to the refinery. TAC impacts associated with both the proposed project and Alternative 2 are less than significant.

## 6.5 CONCLUSIONS

Based on the analyses herein, no feasible alternatives were identified that would reduce or eliminate the potentially significant cumulative construction-related air quality impacts associated with the proposed project and still achieve the objectives of the ExxonMobil Rule 1105.1 Compliance Project.

Alternative 1 would eliminate potentially significant cumulative construction air quality impacts, but prevent ExxonMobil from complying with SCAQMD Rule 1105.1. Since the main objective of the proposed project is to comply with SCAQMD Rule 1105.1 by reducing PM10 and ammonia emissions from the FCCU, Alternative 1 is not a viable option.

Alternative 2 would result in reducing peak daily construction-related air quality emissions, but would not reduce cumulative air quality impacts to less than significant. In addition, the construction schedule could extend beyond the currently planned end date of December 2008, which would mean that the compliance deadline would not be met. Alternative 2 would not eliminate the overlap of other planned and approved refinery construction projects that will occur in the Basin. As a result, Alternative 2 is also not a viable option to reduce potential cumulative construction-related air quality impacts associated with the proposed project.

Neither alternative will meet the objectives of the project or reduce the cumulative construction-related air quality impacts associated with the ExxonMobil Rule 1105.1 Compliance Project. Table 6-2 below shows a comparison of the alternatives as compared with the proposed project.

**Table 6-2**
**Comparison of Project Alternatives with Proposed Project**

| Air Quality Impacts | Proposed Project | Alternative 1 (No Project) | Alternative 2 (Reduction in Construction Work hours) |
|---|---|---|---|
| Project Specific Construction Air Quality Impacts | NS | NS(=) | NS(-) |
| Project Specific Operational Air Quality Impacts | NS | S(+) | NS(=) |
| Cumulative Construction Air Quality Impacts | S | S(-) | S(-) |
| Toxic Air Contaminants | NS | NS(+) | NS(=) |

**Notes:**
S = Significant
NS = Not Significant
(-) = Potential impacts are less than the proposed project.
(+) = Potential impacts are greater than the proposed project.
(=) = Potential impacts are the same as the proposed project.

# CHAPTER 7

# REFERENCES

References Cited
Organizations and Persons Consulted
List of Environmental Impact Report Preparers

# 7.0 REFERENCES

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## 7.2 ORGANIZATIONS AND PERSONS CONSULTED

CEQA requires that organizations and persons consulted during the preparation of the EIR be provided in the document. The following organizations and persons have provided input to this document.

### 7.2.1 ORGANIZATIONS

South Coast Air Quality Management District
California Air Resources Board

### 7.2.2 INDIVIDUALS CONSULTED

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