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5.16 Worker Health and Safety

This section analyzes the potential worker health and safety issues that may be encountered during construction and operation of the Alamitos Energy Center (AEC). Because of the subject matter, this section follows a slightly different format than other sections in Section 5.0 of this AFC. Instead of a discussion of affected environment, followed by the project's environmental consequences and proposed mitigation measures for significant impacts, this section contains worker safety information, including the laws, ordinances, regulations, and standards (LORS) that apply to the construction and operation of the AEC, as well as the demolition of existing units at the Alamitos Generating Station. Section 5.16.1 is a description of the construction and demolition, and the operation work environment and setting of the AEC. Section 5.16.2 describes the project's fuel handling system. Section 5.16.3 describes the health and safety programs in terms of analyses conducted to identify hazards and also the safety compliance and training programs that will be established onsite. Section 5.16.4 discusses the applicable LORS. Section 5.16.5 lists the regulatory agencies involved and key agency contacts, and Section 5.16.6 presents permits required and the permitting schedules. Section 5.16.7 provides the references used to prepare this section.

AES Southland Development, LLC (AES-SLD) considers worker health and safety to be its number one priority. A cornerstone policy for the delivery of all of AES-SLD's global projects and operations provides all workers, whether they are employees or contractors, with the right and responsibility to stop work on any job if unsafe conditions or behaviors are observed during the construction or operational phase of a project. The AEC will adhere to AES-SLD's corporate commitment and policies for worker health and safety, and safe work plans will be developed prior to the commencement of construction, demolition, and operational activities.

5.16.1 Setting

AES-SLD proposes to construct, own, and operate the AEC—a natural-gas-fired, air-cooled, combined-cycle, electrical generating facility in Long Beach, Los Angeles County, California. The proposed AEC will have a net generating capacity of 1,936 megawatts (MW) and gross generating capacity of 1,995 MW.¹ The AEC will replace and be constructed on the site of the existing Alamitos Generating Station.

The AEC will consist of four 3-on-1 combined-cycle gas turbine power blocks with twelve natural-gas-fired combustion turbine generators (CTG), twelve heat recovery steam generators (HRSG), four steam turbine generators, four air-cooled condensers, and related ancillary equipment. The AEC will use air-cooled condensers for cooling, completely eliminating the existing ocean water once-through-cooling system. The AEC will use potable water provided by the City of Long Beach Water Department (LBWD) for construction, operational process, and sanitary uses but at substantially lower volumes than the existing Alamitos Generating Station has historically used. This water will be supplied through existing onsite potable water lines.

The AEC will interconnect to the existing Southern California Edison (SCE) 230-kilovolt (kV) switchyard adjacent to the north side of the property. Natural gas will be supplied to the AEC via the existing offsite 30-inch-diameter pipeline owned and operated by Southern California Gas Company (SoCalGas) that currently serves the Alamitos Generating Station. Existing water treatment facilities, emergency services, and administration and maintenance buildings will be reused for the AEC. The AEC will require relocation of the natural gas metering facilities and construction of a new natural gas compressor building within the existing Alamitos Generating Station site footprint. Stormwater will be discharged to two retention basins and then ultimately to the San Gabriel River via existing stormwater outfalls.

¹ Referenced to site ambient average temperature conditions of 65.3 degrees Fahrenheit (°F) dry bulb and 62.7°F wet bulb temperature without evaporative cooler operation.

The AEC will include a new 1,000-foot process/sanitary wastewater pipeline to the first point of interconnection with the existing LBWD sewer system and will eliminate the current practice of treatment and discharge of process/sanitary wastewater to the San Gabriel River. The project may also require upgrading approximately 4,000 feet of the existing offsite LBWD sewer line downstream of the first point of interconnection, therefore, this possible offsite improvement to the LBWD system is also analyzed in this AFC. The total length of the new pipeline (1,000 feet) and the upgraded pipeline (4,000 feet) is approximately 5,000 feet.

To provide fast-starting and stopping, flexible generating resources, the AEC will be configured and deployed as a multi-stage generating (MSG) facility. The MSG configuration will allow the AEC to generate power across a wide and flexible operating range. The AEC can serve both peak and intermediate loads with the added capabilities of rapid startup, significant turndown capability (ability to turn down to a low load), and fast ramp rates (30 percent per minute when operating above minimum gas turbine turndown capacity). As California's intermittent renewable energy portfolio continues to grow, operating in either load following or partial shutdown mode will become necessary to maintain electrical grid reliability, thus placing an increased importance upon the rapid startup, high turndown, steep ramp rate, and superior heat rate of the MSG configuration employed at the AEC.

By using proven combined-cycle technology, the AEC can also run as a baseload facility, if needed, providing greater reliability to meet resource adequacy needs for the southern California electrical system. As an in-basin generating asset, the AEC will provide local generating capacity, voltage support, and reactive power that are essential for transmission system reliability. The AEC will be able to provide system stability by providing reactive power, voltage support, frequency stability, and rotating mass in the heart of the critical Western Los Angeles local reliability area. By being in the load center, the AEC also helps to avoid potential transmission line overloads and can provide reliable local energy supplies when electricity from more distant generating resources is unavailable.

The AEC's combustion turbines and associated equipment will include the use of best available control technology to limit emissions of criteria pollutants and hazardous air pollutants. By being able to deliver flexible operating characteristics across a wide range of generating capacity, at a relatively consistent and superior heat rate, the AEC will help lower the overall greenhouse gas emissions resulting from electrical generation in southern California and allow for smoother integration of intermittent renewable resources.

Existing Alamitos Generating Station Units 1–6 are currently in operation. All six operating units and retired Unit 7 will be demolished as part of the proposed project. Construction and demolition activities at the project site are anticipated to last 139 months, from first quarter 2016 until third quarter 2027. The project will commence with the demolition of retired Unit 7 and other ancillary structures to make room for the construction of AEC Blocks 1 and 2. The demolition of Unit 7 will commence in the first quarter of 2016. The construction of Block 1 is scheduled to commence in the third quarter of 2016 and construction of Block 2 is scheduled to commence in the fourth quarter of 2016. The demolition of existing Units 5 and 6 will make space for the construction of AEC Block 3. AEC Block 3 construction is scheduled to commence in the first quarter of 2020 and will be completed in the second quarter of 2022. The demolition of existing Units 3 and 4 will make space for the construction of AEC Block 4. AEC Block 4 construction is scheduled to commence in the second quarter of 2023 and will be completed in the fourth quarter of 2025. The demolition of remaining existing units is scheduled to commence in the third quarter of 2025.

Construction of the AEC will require the use of onsite laydown areas (approximately 8 acres dispersed throughout the existing site) and an approximately 10-acre laydown area located adjacent to the existing site. The adjacent 10-acre laydown area will be shared with another project being developed by the Applicant (Huntington Beach Energy Project [HBEP] 12-AFC-02). Due to the timing for commencement of construction for these two projects, the adjacent laydown area will already be in use for equipment storage before AEC construction begins.

5.16.2 Fuel Handling System

The AEC CTGs will only combust natural gas. Natural gas will be delivered to the site via the existing SoCalGas natural gas pipeline that enters the Alamitos Generating Station on the northern side of the facility near the existing SCE 230-kV switchyard. Within the project boundaries, a valve, piping, and metering station is operated and maintained by SoCalGas from which gas is routed to the onsite combustion sources. The natural gas pipeline is a 30-inch-diameter line that operates at a nominal 145 pounds per square inch (psi). The existing natural gas metering station at the Alamitos Generating Station will remain in service for continued operation of Units 1 through 7 during AEC construction, and will be relocated for use by the AEC.

The natural gas will flow from the metering station to a gas pressure control station and gas scrubber/filtering equipment. Prior to being supplied to the CTGs, the natural gas will be compressed, scrubbed, and filtered consistent with the turbine vendor recommendations. The natural gas used in the HRSG duct burner will not require gas compression, but will require filtering and scrubbing performed at the gas metering station. The natural gas for the building heating systems will flow through the metering station and gas pressure control station, and will not require compression or filtering. The natural gas handling system is also discussed in further detail in Section 4.0.

5.16.3 Health and Safety Programs

5.16.3.1 Environmental Checklist

Health and safety impacts analyzed in this AFC are evaluated with respect to the California Environmental Quality Act (CEQA) checklist. However, the CEQA checklist does not have specific questions for worker health and safety. The analysis below is consistent with the analysis routinely conducted by CEC staff related to worker health and safety. Related analyses are also included in Section 5.5, Hazardous Materials Handling, and Section 5.7, Noise.

5.16.3.2 Hazard Analysis

Workers will be exposed to potential AEC construction, demolition, and operation safety hazards. A hazard analysis is included below to evaluate these hazards and assess control measures. The analysis identifies the potential hazards anticipated during construction, demolition, and operation, and indicates which safety programs will be developed and implemented to mitigate and appropriately manage those hazards. The hazard analysis for construction and demolition activities is presented in Table 5.16-1; the hazard analysis prepared for plant operation is presented in Table 5.16-2. Because the types of hazards anticipated during construction/demolition and operation activities are similar, this likeness is reflected in the tables.

Programs are overall plans that set forth the method or methods that will be followed to achieve particular health and safety objectives. For example, the Fire Protection and Prevention Program will describe what is necessary to protect against and prevent fires. This will include equipment required, such as alarm systems and firefighting equipment, and procedures to follow to protect against fires. The Emergency Action Program/Plan will describe escape procedures, rescue and medical procedures, alarm and communication systems, and response procedures for every hazardous material handled onsite. The programs or plans are set forth in written documents that are kept at specific locations in the facility.

Each program or plan will contain minimum training requirements that are translated into detailed training courses for plant construction, demolition, and operating personnel, and will adhere to the Project Owner's corporate safety policy and all applicable federal Occupation Safety and Health Administration (OSHA) and California Occupational Safety and Health Administration (Cal/OSHA) regulations. Training will be provided to construction, demolition, and operating personnel as needed. For example, all plant operating personnel will receive training in escape procedures under the Emergency Action Program and Plan; however, only those personnel working with flammables will receive training under the Fire Protection and Prevention Program.

Tables 5.16-1 and 5.16-2 list construction, demolition, and operation activities and associated potential hazards; the “Control” column includes the programs designed to reduce the occurrence of each hazard.

TABLE 5.16-1

Hazard Analysis for the AEC Construction and Demolition Activities

| Activity | Potential Hazard* | Control |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Motor vehicle and heavy equipment use | Employee injury and property damage from collisions between people and equipment | Motor Vehicle and Heavy Equipment Safety Program |
| Forklift operation | Same as motor vehicle and heavy equipment use | Forklift Operation Program |
| Trenching and excavation | Employee injury and property damage from the collapse of trenches and excavations or exposure to fumes or vapors that have collected in the trench/excavation | Excavation/Trenching Program |
| Working at elevated locations | Falls from the same level and elevated areas | Fall Prevention Program Scaffolding/Ladder Safety Program Articulating Boom Platforms Program |
| Use of cranes and derricks | Property damage from falling loads; employee injuries from falling loads; and injuries and property damage from contact with crane or derrick | Crane and Material Handling Program Crane Operator certification |
| Working with flammable and combustible liquids | Fire/spills | Fire Protection and Prevention Program Housekeeping and Material Handling and Storage Program |
| Hot work (including cutting and welding) | Employee injury and property damage from fire; exposure to fumes during cutting and welding; ocular exposure to ultraviolet and infrared radiation during cutting and welding | Hot Work Safety Program; Respiratory Protection Program; Employee Exposure Monitoring Program; Personal Protective Equipment (PPE) Program, Fire Protection and Prevention Program; Hexavalent Chromium Program |
| Inspection and maintenance of temporary systems used during construction activities | Employee injury and property damage from contact with hazardous energy sources (such as electrical, thermal, and mechanical) | Electrical Safety Program; Lock-Out/Tag-Out Program |
| Working on electrical equipment and systems | Employee contact with live electricity and energized equipment | Electrical Safety Program; PPE Program |
| Exposure to asbestos and lead | Personnel who are working with or have the potential to be exposed to asbestos and lead during demolition of existing facility | Asbestos and Lead Program |
| Exposure to hazardous waste | Personnel who are working with or have the potential to be exposed to contaminated soil, groundwater, or debris during construction and demolition | Hazardous Waste Program |
| Confined space entry | Employee injury from physical and chemical hazards | Permit-required, Confined-space Entry Program |

TABLE 5.16-1
Hazard Analysis for the AEC Construction and Demolition Activities

| Activity | Potential Hazard* | Control |
|-----------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|
| General construction activity | Employee injury from hand and portable power tools | Hand and Portable Power Tool Safety Program; PPE Program; Powder-actuated Tools Program |
| General construction activity | Employee injury/property damage from inadequate walking and work surfaces | Housekeeping and Material Handling and Storage Program |
| General construction activity | Employee exposure to occupational noise | Hearing Conservation Program; PPE Program |
| General construction activity | Employee injury from improper lifting and carrying of materials and equipment | Back Injury Prevention Program |
| General construction activity | Employee injury to head, eye/face, hand, body, foot, and skin | PPE Program |
| General construction activity | Employee exposure to hazardous gases, vapors, dusts, and fumes | Hazard Communication Program; Respiratory Protection Program; PPE Program; Air Monitoring Program |
| General construction activity | Employee exposure to various hazards; reporting of hazardous conditions during construction | Injury and Illness Prevention Program |
| General construction activity | Heat and cold stress | Heat and Cold Stress Monitoring and Control Program |
| Construction and testing of high-pressure steam and air systems | Employee injury and property damage due to failure of pressurized system components or unexpected release of pressure | Pressure Vessel and Pipeline Safety Program; Electrical Safety Program; Lock-Out/Tag-Out Program |

*The hazards and hazard controls provided are generic to construction and demolition activities. During various phases of construction and demolition, a task-specific hazard analysis will be performed to more specifically evaluate the relevant hazards and to develop appropriate controls.

TABLE 5.16-2
Hazard Analysis for the AEC Operation Activities

| Activity | Potential Hazard* | Control |
|------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------|
| Motor vehicle and heavy equipment use | Employee injury and property damage from collisions between people and equipment | Motor Vehicle and Heavy Equipment Safety Program |
| Forklift operations | Same as heavy equipment | Forklift Operation Program |
| Trenching and excavation | Employee injury and property damage from the collapse of trenches and excavations | Excavation/Trenching Program |
| Working at elevated locations | Falls from the same level and elevated areas | Fall Protection Program; Scaffolding/Ladder Safety Program |
| Use of cranes or derricks | Property damage from falling loads; employee injuries from falling loads; injuries and property damage from contact with crane or derrick | Crane and Material Handling Program |
| Working with flammable and combustible liquids | Fire/spills | Fire Protection and Prevention Program |
| Working with hazardous materials | Employee injury due to ingestion, inhalation, and dermal contact | Hazard Communication Program |

TABLE 5.16-2
Hazard Analysis for the AEC Operation Activities

| Activity | Potential Hazard* | Control |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Hot work (including cutting and welding) | Employee injury and property damage from fire; exposure to fumes during cutting and welding; ocular exposure to ultraviolet and infrared radiation during cutting and welding | Hot Work Safety Program; Respiratory Protection Program; Employee Exposure Monitoring Program; PPE Program; Fire Protection and Prevention Program; Hexavalent Chromium Program |
| Transformer Fires | Employee injury and property damage from fire | A transformer fire protection plan will be included within the Fire Protection and Prevention Program |
| Troubleshooting and maintenance of plant systems and general operational activities | Employee injury and property damage from contact with hazardous energy sources (such as electrical, thermal, and mechanical) | Electrical Safety Program; Lock-Out/Tag-Out Program |
| Working on electrical equipment and systems | Employee contact with live electricity | Electrical Safety Program; PPE Program |
| Confined space entry | Employee injury from physical and chemical hazards | Permit-required, Confined-space Entry Program |
| General plant operation activities | Employee injuries from hand and portable power tools | Hand and Portable Power Tool Safety Program; PPE Program |
| General plant operation activities | Employee injury and property damage from inadequate walking and work surfaces | Housekeeping and Material Handling and Storage Program |
| General plant operation activities | Employee overexposure to occupational noise | Hearing Conservation Program; PPE Program |
| General plant operation activities | Employee injury from improper lifting and carrying of materials and equipment | Back Injury Prevention Program |
| General plant operation activities | Employee injury and property damage from unsafe driving | Safe Driving Program |
| General plant operation activities | Employee overexposure to hazardous gases, vapors, dusts, and fumes | Hazard Communication Program; Respiratory Protection Program; PPE Program; Employee Exposure Monitoring Program |
| General plant operation activities | Reporting and repair of hazardous conditions | Injury and Illness Prevention Program |
| General plant operation activities | Heat and cold stress | Heat and Cold Stress Monitoring and Control Program |
| General plant operation activities | Ergonomic injuries | Ergonomic Awareness Program |
| Maintenance and repair of high-pressure steam and air systems | Employee injury and property damage due to failure of pressurized system components or unexpected release of pressure | Pressure Vessel and Pipeline Safety Program; Electrical Safety Program; Lock-Out/Tag-Out Program |
| Ammonia storage | Ammonia release | Emergency Action Program/Plan; Risk Management Plan (RMP) |

*The potential hazards and hazard controls provided are generic to operational activities. Task-specific hazard analysis is required for all medium- and high-risk work activities in the operational phase.

5.16.3.3 Training and Safety Programs

To protect the safety and health of workers during the AEC construction and operation and during the demolition of the Alamitos Generating Station, health and safety programs designed to mitigate hazards and comply with applicable regulations will be implemented. Periodic internal audits will be performed by qualified individuals to determine whether proper work practices are being used to mitigate hazardous conditions and to evaluate regulatory compliance. A comprehensive Environmental, Health, and Safety audit will be conducted on an annual basis during the construction phase and every 3 years during the AEC operation.

Specific training program content for all construction and demolition employees will be required of all construction and demolition contractors. All construction and demolition workers will be required to attend an AEC site safety orientation prior to being allowed to work at the site and are required to follow all federal, state, and local employee safety rules and regulations, as well as the AEC safety programs while onsite. Construction and demolition worker safety-related certifications and licenses will be verified during the pre-qualification process using PICS² and/or an AEC internal validation process.

The following sections contain information on the anticipated content of the health and safety programs.

5.16.3.3.1 Construction and Demolition Health and Safety Program Construction and demolition safety programs will be developed and implemented during construction and demolition of the AEC as outlined in the following lists.

Injury and Illness Prevention Program

- Philosophy and safety commitment
- Safety leadership and responsibilities
- Accountability
- Specific core safety processes (see Construction Safety Programs later in this section)
- Employee communication
- Planning “job hazard analysis and pre-task”
- Compliance with work rules and safe work practices
- Measurement of compliance and effectiveness of prevention methods; inspections/audits
- Communication of performance and implementation of necessary improvements
- Training and other communication requirements

Fire Protection and Prevention Program

- General requirements
- Housekeeping and proper material storage
- Employee alarm/communication system
- Portable fire extinguishers
- Fixed firefighting equipment
- Fire control and containment
- Transformer fire protection and prevention
- Flammable and combustible liquid storage
- Dispensing and disposal of flammable liquids
- Service and refueling areas
- Training

Personal Protective Equipment Program

- Personal protective devices
- Hazard analysis

² PICS is a third-party contractor qualifying system for safety training, performance and work history.

- Training
- Head protection
- Eye/face protection
- Body protection
- Hand protection
- Foot protection
- Skin protection
- Fall protection
- Electrical arc flash protection
- Respiratory protection
- Hearing protection

First Aid, CPR, and Automated External Defibrillator

- General requirements
- Written program
- Training
- Maintenance

Emergency Action Program/Plan

Emergency procedures for the protection of personnel, equipment, the environment, and materials as follows:

- Fire and emergency reporting procedures
- Response actions for accidents involving personnel and/or property
- Bomb threat response procedures
- Site assembly and emergency evacuation route procedures
- Natural disaster response

Reporting and notification procedures for emergencies and contacts, including offsite and local authorities, as follows:

- Alarm and communication systems
- Spill response, prevention, and control action plan
- Emergency response equipment
- Emergency personnel (response team) responsibilities and notification roster
- Training requirements

Construction Safety Programs

- Motor Vehicle and Heavy Equipment Safety Program:
 - Operation and maintenance of vehicles
 - Inspection
 - PPE
 - Training
- Forklift Operation Program:
 - Trained and certified operators
 - Fueling operations
 - Safe operating parameters
 - Training
- Excavation/Trenching Program:
 - Shoring, sloping, and benching requirements
 - Cal/OSHA permit requirements

- Inspection
- Air monitoring
- Access and egress
- Fall Protection Program:
 - Evaluation of fall hazards
 - Protection devices
 - Training
- Scaffolding/Ladder Safety Program:
 - Construction and inspection of equipment
 - Proper use
 - Training
- Articulating Boom Platforms Program:
 - Inspection of equipment
 - Load ratings
 - Safe operating parameters
 - Operator training
- Crane and Material Handling Program:
 - Certified and licensed operators
 - Inspection of equipment
 - Load ratings
 - Safe operating parameters
 - Training
- Hazardous Waste Program:
 - Evaluation of hazard
 - Training
 - Air monitoring
 - Medical surveillance
 - Health and Safety Plan (HSP) preparation
- Hexavalent Chromium Program:
 - Exposure determination
 - Monitoring schedule requirements
 - Reporting of results (employee notification)
 - Recordkeeping
 - Establish regulated areas
 - Establish hygiene control areas
 - Controls implementation
 - Medical surveillance
 - Training
- Hot Work Safety Program:
 - Welding and cutting procedures
 - Acetylene and fuel gas safety procedures
 - Fire watch
 - Hot work permit
 - PPE
 - Training

- Employee Exposure Monitoring Program:
 - Exposure evaluation
 - Monitoring requirements
 - Reporting of results
 - Medical surveillance
 - Training
- Electrical Safety Program:
 - Grounding procedure
 - Overhead and underground utilities
 - Utility clearance
 - Assured Grounding Program/Ground Fault Circuit Interrupters (GFCI)
 - Training
- Lock-out/Tag-Out Program:
 - Allocation of devices (locks, tags, and adaptors)
 - Lock-out/tag-out sequencing
 - Types/magnitudes of energy
 - Types/locations of machines
 - Verification
 - Training
- Permit-required Confined-space Entry Program:
 - Air monitoring and ventilation requirements
 - Rescue procedures
 - Lock-out/tag-out and blocking, blinding, and blanking requirements
 - Permit completion
 - Training
- Hand and Portable Power Tool Safety Program:
 - Guarding and proper operation
 - Training
- Powder-actuated Tool Safety Program:
 - Operator qualification
 - Inspection requirements
 - Repair requirements
 - Storage requirements
 - Training
- Housekeeping and Material Handling and Storage Program:
 - Storage requirements
 - Walkways and work surfaces
 - Equipment handling requirements
 - Training
- Hearing Conservation Program:
 - Identifying high-noise environments
 - Exposure monitoring
 - Medical surveillance requirements
 - Hearing-protective devices
 - Training

- Back Injury Prevention Program:
 - Proper lifting and material handling procedures
 - Training
- Hazard Communication Program:
 - Labeling requirements
 - Storage and handling
 - Material Safety Data Sheets
 - Chemical inventory
 - Training
- Respiratory Protection Program:
 - Selection and use
 - Storage
 - Fit testing
 - Medical requirements
 - Inspection and repair
 - Training
- Heat and Cold Stress Monitoring and Control Program:
 - Monitoring requirements
 - Prevention and control
- Safe Driving Program:
 - Training
- Pressure Vessel and Pipeline Safety Program:
 - Line-breaking program
 - Equipment inspection and maintenance
 - Blocking, bleeding, and blanking
 - Training

5.16.3.3.2 Operation Health and Safety Program

Upon completion of construction and commencement of operations at the AEC, the construction Health and Safety Plan will transition into an operation-oriented program reflecting the potential hazards and controls to be employed during operation. The following outline sets forth the topics that will be included in the Operations Health and Safety Program.

Injury and Illness Prevention Program

- Personnel with the responsibility and authority for implementing the plan
- Safety and health policy
- Work rules and safe work practices
- System for ensuring that employees comply with safe work practices
- Employee communications
- Identification and evaluation of workplace hazards
- Methods and/or procedures for correcting unsafe or unhealthy conditions, work practices, and work procedures in a timely manner based on the severity of the hazards
- Specific safety procedures (see Plant Operation Safety Program)
- Training and instruction

First Aid, CPR, and Automated External Defibrillator

- General requirements

- Written program
- Training
- Maintenance

Fire Protection and Prevention Program

- General requirements
 - Fire hazard inventory, including ignition sources and mitigation
 - Housekeeping and proper materials storage
 - Employee alarm/communication system
 - Portable fire extinguishers
 - Fixed firefighting equipment
 - Fire control
 - Flammable and combustible liquid storage
 - Use of flammable and combustible liquids
 - Dispensing and disposal of liquids
 - Training
 - Personnel to contact for information on plan contents

Emergency Action Program/Plan

- This program/plan is part of the Risk Management Plan and Process Safety Management Program:
 - Emergency escape procedures and emergency escape route assignments
 - Procedures to be followed by employees who remain to operate critical plant operations before they evacuate
 - Procedures to account for all employees after emergency evacuation has been completed
 - Rescue and medical duties for those employees performing rescue and medical duties
 - Fire and emergency reporting procedures
 - Alarm and communication system
 - Personnel to contact for information on plan contents
 - Response procedure for ammonia release
 - Training requirements

Personal Protective Equipment Program

- Hazard analysis and prescription of PPE
- Personal protective devices
- Head protection
- Eye and face protection
- Body protection
- Hand protection
- Foot protection
- Skin protection
- Sanitation
- Safety belts and life lines for fall protection
- Protection for electric shock
- Medical services and first aid/blood borne pathogens
- Respiratory protective equipment
- Hearing protection
- Training

Plant Operation Safety Program

- Motor Vehicle and Heavy Equipment Safety Program:
 - Operation and maintenance of vehicles
 - Inspection
 - PPE
 - Training
- Forklift Operation Program:
 - Trained and certified operators
 - Fueling operations
 - Safe operating parameters
 - Training
- Excavation/Trenching Program:
 - Shoring, sloping, and benching requirements
 - Cal/OSHA permit requirements
 - Inspection
 - Air monitoring
 - Access and egress
- Fall Protection Program:
 - Evaluation of fall hazards
 - Protection devices
 - Training
- Scaffolding/Ladder Safety Program:
 - Construction and inspection of equipment
 - Proper use
 - Training
- Articulating Boom Platforms Program:
 - Inspection of equipment
 - Load ratings
 - Safe operating parameters
 - Operator training
- Crane and Material Handling Program:
 - Certified and licensed operators
 - Inspection of equipment
 - Load ratings
 - Safe operating parameters
 - Training
- Hot Work Safety Program:
 - Welding and cutting procedures
 - Acetylene and fuel gas safety
 - Fire watch
 - Hot work permit
 - PPE
 - Training

- Workplace Ergonomics Program:
 - Identification of personnel at risk
 - Evaluation of personnel
 - Workplace and job activity modifications
 - Training
- Employee Exposure Monitoring Program:
 - Exposure evaluation
 - Monitoring requirements
 - Reporting of results
 - Medical surveillance
 - Training
- Electrical Safety Program:
 - Grounding procedure
 - Overhead and underground utilities
 - Utility clearance
 - Training
- Lock-out/Tag-Out Program:
 - Allocation of lock-out/tag-out devices (locks, tags, and adaptors)
 - Machine specific lock-out/tag-out procedures
 - Steps for verification of isolation
 - Training (Affected and Authorized and Interaction with Energized Electrics)
 - Annual program review
- Permit-required Confined-space Entry Program:
 - Air monitoring and ventilation requirements
 - Rescue procedures
 - Lock-out/tag-out and blocking, blinding, and blanking requirements
 - Permit completion
 - Training
- Hand and Portable Power Tool Safety Program:
 - Guarding and proper operation
 - Training
- Housekeeping and Material Handling and Storage Program:
 - Storage requirements
 - Walkways and work surfaces
 - Equipment handling requirements
 - Training
- Hearing Conservation Program:
 - Identifying high-noise environments
 - Exposure monitoring
 - Medical surveillance requirements
 - Hearing-protective devices
 - Training
- Back Injury Prevention Program:
 - Proper lifting and material-handling procedures
 - Training

- Hazard Communication Program:
 - Labeling requirements
 - Storage and handling
 - Material Safety Data Sheets
 - Chemical inventory
 - Training
- Respiratory Protection Program:
 - Selection and use
 - Storage
 - Fit testing
 - Medical requirements
 - Inspection and repair
 - Training
- Heat and Cold Stress Monitoring and Control Program:
 - Monitoring requirements
 - Prevention and control
- Pressure Vessel and Pipeline Safety Program:
 - Line-breaking policy
 - Equipment inspection and maintenance
 - Blocking, bleeding, and blanking
 - Communication
 - Training
- Safe Driving Program:
 - Inspection and maintenance
 - Training

5.16.3.3.3 Safety Training

To ensure that employees recognize and understand how to protect themselves from potential hazards during this project, comprehensive training programs for construction, demolition, and operations personnel will be implemented as indicated in Tables 5.16-3 and 5.16-4. Each of the safety procedures developed to control and mitigate potential site hazards will require some form of training. Training will be delivered in various ways depending on the requirements of Cal/OSHA standards, the complexity of the topic, the characteristics of the workforce, and the degree of risk associated with each of the identified hazards. Training for construction and demolition personnel will be prepared and conducted by the Engineering, Procurement, and Construction (EPC) contractor, and operational training will be prepared and conducted by the Project Owner.

Additional details regarding what will be included in the training are located in Sections 5.16.3.3.1 and 5.16.3.3.2.

TABLE 5.16-3

AEC Proposed Construction and Demolition Training Programs (to be prepared and conducted by EPC contractor)

| Training Course | Target Employees |
|-------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| Injury and Illness Prevention Training | All |
| Emergency Action Program/Plan | All |
| PPE Training | All |
| Fire Protection and Prevention Plan | All |
| Motor Vehicle and Heavy Equipment Safety Training | Employees working on, near, or with heavy equipment or vehicles |
| Forklift Operation Training | Employees operating forklifts |
| Excavation/Trenching Safety Training | Employees involved with trenching or excavation |
| Fall Protection Training | Employees either working at heights greater than 6 feet or required to use fall protection |
| Scaffolding/Ladder Safety Training | Employees required to erect or use scaffolding |
| Crane Safety Training | Employees supervising or performing crane operations |
| Fire Protection and Prevention Training | Employees responsible for the handling and storage of flammable or combustible liquids or gases |
| Hazard Communication Training | Employees handling or working with hazardous materials |
| Hazardous Waste | Employees handling or excavating hazardous waste |
| Hot Work Safety Training | Employees performing hot work |
| Lock-out/Tag-out Training | Employees performing lock-out/tag-out or working on systems that require lock-out/tag-out activities |
| Electrical Safety Training | Employees required to work on electrical systems and equipment, or required to use electrical equipment and cords |
| Permit-required Confined-space Entry Training | Employees required to supervise or perform confined-space entry activities |
| Hand and Portable Power Tool Safety Training | Employees who will be operating hand and portable power tools |
| Powder-actuated Tool Safety Training | Employees who will be operating powder-actuated tools |
| Heat Stress and Cold Stress Safety Training | Employees who are exposed to temperature extremes |
| Hearing Conservation Training | All |
| Back Injury Prevention Training | All |
| Safe Driving Training | Employees supervising drivers or driving motor vehicles |
| Pressure Vessel and Pipeline Safety Training | Employees supervising or working on pressurized systems or equipment |
| Respiratory Protection Training | All employees required to wear respiratory protection |
| Fire Protection and Prevention Training | All |
| Fire Protection and Prevention Training | All |
| First Aid, CPR, and Automated External Defibrillator | All |
| Hexavalent Chromium Program | Employees handling or working with hazardous materials/waste containing hexavalent chromium |
| Articulating Boom Platforms Program | Employees supervising or performing articulating boom operations |
| Employee Exposure Monitoring Program | Employees handling or working with hazardous materials/waste |
| Housekeeping and Material Handling and Safety Program | All |

TABLE 5.16-4
AEC Operations Training Programs (to be prepared and conducted by Project Owner)

| Training Course | Target Employees |
|--------------------------------------------------------|--------------------------------------------------------------------------------------------------|
| Injury and Illness Prevention Training | All |
| Emergency Action Plan | All |
| PPE Training | All |
| Fire Protection and Prevention Plan | All |
| Excavation/Trenching Safety Training | Employees involved with trenching or excavation |
| Scaffolding/Ladder Safety Training | Employees required to erect or use scaffolding |
| Fall Protection Training | Employees required to use fall protection |
| Forklift Operator Training | Employees operating forklifts |
| Crane Safety Training | Employees supervising or performing crane operations |
| Workplace Ergonomics | Employees performing repetitive activities |
| Fire Protection and Prevention Training | Employees responsible for the handling and storage of flammable or combustible liquids or gasses |
| Hot Work Safety Training | Employees performing hot work |
| Lock-out/Tag-out Training | Employees performing lock-out/tag-out activities |
| Electrical Safety Training | Employees required to work on electrical systems and equipment |
| Permit-required Confined-space Entry | Employees required to supervise or perform confined-space entry |
| Hand and Portable Power Tool Safety Training | Employees that will be operating hand and portable power tools |
| Heat Stress and Cold Stress Safety Training | Employees exposed to temperature extremes |
| Hearing Conservation Training | All |
| Back Injury Prevention Training | All |
| Safe Driving Training | Employees supervising drivers or driving motor vehicles |
| Hazard Communication Training | Employees handling or working around hazardous materials |
| Pressure Vessel and Pipeline Safety Training | Employees supervising or working on pressurized systems or equipment |
| Respiratory Protection Program | All employees required to wear respiratory protection |
| Fire Protection and Prevention Training | All |
| First Aid, CPR, and Automated External Defibrillator | Qualified Electrical Employees and Affected Emergency Responders |
| Motor Vehicle and Heavy Equipment Safety Program | All |
| Articulating Boom Platforms Program | Employees supervising or performing articulating boom operations |
| Employee Exposure Monitoring Program | Employees handling or working with hazardous materials/waste |
| Housekeeping and Material Handling and Storage Program | All |

5.16.3.4 Fire Protection

The Long Beach Fire Department has 23 fire stations, including two Fireboat Stations and the Airport Station. The closest fire station to the AEC is Long Beach Fire Department's Station No. 22 at 6340 Atherton Street in Long Beach, California, 90815. The station is approximately 2 miles away and would provide the first response to a fire at the project site, with an approximate 5-minute response time on average (DuRee, 2013). Mutual and automatic aid response would come from the other fire stations in the Long Beach Fire Department and, if necessary, from nearby Los Angeles County Fire Department and the Orange County Fire Authority. The most likely scenario for use of mutual aid to the AEC would be with Orange County Fire

Authority, which would draw resources from Orange County Stations 48, 17, and 42 (DuRee, 2013) if needed. The Project Owner has engaged the Long Beach Fire Department in discussions regarding the project's fire protection needs and the Long Beach Fire Department's ability to respond. The AEC's onsite fire suppression system is described in Section 2.0, Project Description, and in Appendix 2D, Engineering Design Criteria.

5.16.4 Laws, Ordinances, Regulations, and Standards

The AEC construction, demolition, and operation will be conducted in accordance with all applicable LORS. Table 5.16-5 summarizes the federal, state, and local (Los Angeles County and Long Beach) LORS relating to worker health and safety. Table 5.16-5 also provides a summary of the applicable national consensus standards.

TABLE 5.16-5

Laws, Ordinances, Regulations, and Standards for Worker Health and Safety

| LORS | Requirements/Applicability | Administering Agency | AFC Section Explaining Conformance |
|-----------------------------------------------------|------------------------------------------------------------------------------------------------------------------|----------------------|------------------------------------|
| Federal | | | |
| Title 29 CFR Part 1910 | Contains the minimum occupational safety and health standards for general industry in the United States | OSHA | Section 5.16.3 |
| Title 29 CFR Part 1926 | Contains the minimum occupational safety and health standards for the construction industry in the United States | OSHA | Section 5.16.3 |
| State | | | |
| California Occupational Safety and Health Act, 1970 | Establishes minimum safety and health standards for construction and general industry operations in California | Cal/OSHA | Section 5.16.3 |
| 8 CCR § 339 | Requires list of hazardous chemicals relating to the Hazardous Substance Information and Training Act | Cal/OSHA | Section 5.16.3 |
| 8 CCR § 450 | Addresses hazards associated with pressurized vessels | Cal/OSHA | Section 5.16.3 |
| 8 CCR § 750 | Addresses hazards associated with high-pressure steam | Cal/OSHA | Section 5.16.3 |
| 8 CCR § 1509 | Addresses requirements for construction, accident, and prevention plans | Cal/OSHA | Section 5.16.3 |
| 8 CCR § 1509, et seq., and § 1684, et seq. | Addresses construction hazards, including head, hand, and foot injuries and noise and electrical shock | Cal/OSHA | Section 5.16.3 |
| 8 CCR § 1528, et seq., and 3380, et seq. | Requirements for PPE | Cal/OSHA | Section 5.16.3 |
| 8 CCR § 1532, and § 5206 | Addresses Chromium IV (Hexavalent Chromium) | Cal/OSHA | Section 5.16.3 |
| 8 CCR § 1597, et seq., and § 1590, et seq. | Requirements addressing the hazards associated with traffic accidents and earth-moving | Cal/OSHA | Section 5.16.3 |

TABLE 5.16-5
Laws, Ordinances, Regulations, and Standards for Worker Health and Safety

| LORS | Requirements/Applicability | Administering Agency | AFC Section Explaining Conformance |
|--------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|-------------------------------------------|
| 8 CCR § 1604, et seq. | Requirements for construction hoist equipment | Cal/OSHA | Section 5.16.3 |
| 8 CCR § 1620, et seq., and 1723, et seq. | Addresses miscellaneous hazards | Cal/OSHA | Section 5.16.3 |
| 8 CCR § 1709, et seq. | Requirements for steel reinforcing, concrete pouring, and structural steel erection operations | Cal/OSHA | Section 5.16.3 |
| 8 CCR § 1920, et seq. | Requirements for fire protection systems | Cal/OSHA | Section 5.16.3 |
| 8 CCR § 2300, et seq., and § 2320, et seq. | Requirements for addressing low-voltage electrical hazards | Cal/OSHA | Section 5.16.3 |
| 8 CCR § 2395, et seq. | Addresses electrical installation requirements | Cal/OSHA | Section 5.16.3 |
| 8 CCR § 2700, et seq. | Addresses high-voltage electrical hazards | Cal/OSHA | Section 5.16.3 |
| 8 CCR § 3200, et seq., and § 5139, et seq. | Requirements for control of hazardous substances | Cal/OSHA | Section 5.16.3 |
| 8 CCR § 3203, et seq. | Requirements for operational accident prevention programs | Cal/OSHA | Section 5.16.3 |
| 8 CCR 3§ 270, et seq., and § 3209, et seq. | Requirements for evacuation plans and procedures | Cal/OSHA | Section 5.16.3 |
| 8 CCR § 3301, et seq. | Requirements for addressing miscellaneous hazards, including hot pipes, hot surfaces, compressed air systems, relief valves, enclosed areas containing flammable or hazardous materials, rotation equipment, pipelines, and vehicle-loading dock operations | Cal/OSHA | Section 5.16.3 |
| 8 CCR § 3360, et seq. | Addresses requirements for sanitary conditions | Cal/OSHA | Section 5.16.3 |
| 8 CCR § 3511, et seq., and § 3555, et seq. | Requirements for addressing hazards associated with stationary engines, compressors, and portable, pneumatic, and electrically powered tools | Cal/OSHA | Section 5.16.3 |
| 8 CCR § 3649, et seq., and § 3700, et seq. | Requirements for addressing hazards associated with field vehicles | Cal/OSHA | Section 5.16.3 |
| 8 CCR § 3940, et seq. | Requirements for addressing hazards associated with power transmission, compressed air, and gas equipment | Cal/OSHA | Section 5.16.3 |
| 8 CCR § 5109, et seq. | Requirements for addressing construction accident and prevention programs | Cal/OSHA | Section 5.16.3 |
| 8 CCR § 5110, et seq. | Requirements for the implementation of an ergonomics program | Cal/OSHA | Section 5.16.3 |

TABLE 5.16-5

Laws, Ordinances, Regulations, and Standards for Worker Health and Safety

| LORS | Requirements/Applicability | Administering Agency | AFC Section Explaining Conformance |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|-------------------------------------------|
| 8 CCR § 5139, et seq. | Requirements for addressing hazards associated with welding, sandblasting, grinding, and spray-coating | Cal/OSHA | Section 5.16.3 |
| 8 CCR § 5150, et seq. | Requirements for confined space entry | Cal/OSHA | Section 5.16.3 |
| 8 CCR § 5155, et seq. | Requirements for use of respirators and for controlling employee exposure to airborne contaminants | Cal/OSHA | Section 5.16.3 |
| 8 CCR § 5160, et seq. | Requirements for addressing hot, flammable, poisonous, corrosive, and irritant substances | Cal/OSHA | Section 5.16.3 |
| 8 CCR § 5192, et seq. | Requirements for conducting emergency response operations | Cal/OSHA | Section 5.16.3 |
| 8 CCR § 5193, et seq. | Requirements for controlling employee exposure to blood-borne pathogens associated with exposure to raw sewage water and body fluids associated with first aid/CPR duties | Cal/OSHA | Section 5.16.3 |
| 8 CCR § 5194, et seq. | Requirements for employee exposure to dusts, fumes, mists, vapors, and gases | Cal/OSHA | Section 5.16.3 |
| 8 CCR § 5405, et seq.; § 5426, et seq.; § 5465, et seq.; § 5500, et seq.; § 5521, et seq.; § 5545, et seq.; § 5554, et seq.; § 5565, et seq.; § 5583, et seq.; and § 5606, et seq. | Requirements for flammable liquids, gases, and vapors | Cal/OSHA | Section 5.16.3 |
| 8 CCR § 5583, et seq. | Requirements for design, construction, and installation of venting, diking, valving, and supports | Cal/OSHA | Section 5.16.3 |
| 8 CCR § 6150, et seq.; § 6151, et seq.; § 6165, et seq.; 6170, et seq.; and § 6175, et seq. | Fire protection requirements | Cal/OSHA | Section 5.16.3 |
| Title 24, Part 3, California Electrical Code | The Cal/OSHA electrical safety regulations incorporate the requirements of the Uniform Electrical Code located in Title 24, Part 3 | Cal/OSHA | Section 5.16.3 |
| 8 CCR, Part 6 | Provides health and safety requirements for working with tanks and boilers | Cal/OSHA | Section 5.16.3 |
| Health and Safety Code Section 25531, et seq. | Requires that every new or modified facility that handles, treats, stores, or disposes of more than the threshold quantity of any of the listed regulated materials prepare and maintain an RMP | Cal/OSHA | Section 5.16.3 |
| Health and Safety Code Sections 25500 through 25541 | Requires the preparation of an HMBP that details emergency response plans for a hazardous materials emergency at the facility | Cal/OSHA | Section 5.16.3 |

TABLE 5.16-5

Laws, Ordinances, Regulations, and Standards for Worker Health and Safety

| LORS | Requirements/Applicability | Administering Agency | AFC Section Explaining Conformance |
|--------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|-------------------------------------------|
| Local | | | |
| Long Beach Municipal Code, Title 18, Chapter 18.48.240 and 18.48.580 | Requirements pertaining to the storage, handling, transport, and generation of hazardous waste | Long Beach Fire Department | Section 5.16.3 |
| Business Plan | Provides response agency with overview of the AEC's purpose and operations | Certified Unified Program Agency, administered by the Long Beach Fire Department | Section 5.16.3 |
| National Standards | | | |
| Uniform Fire Code, Article 80 | Addresses the prevention, control, and mitigation of dangerous conditions related to storage, dispensing, use, and handling of hazardous materials and information needed by emergency response personnel | Long Beach Fire Department | Section 5.16.3 |
| NFPA 10, Standard for Portable Fire Extinguishers | Requirements for selection, placement, inspection, maintenance, and employee training for portable fire extinguishers | Long Beach Fire Department | Section 5.16.3 |
| NFPA 11, Standard for Low-Expansion Foam and Combined Agent Systems | Requirements for installation and use of low-expansion foam and combined-agent systems | Long Beach Fire Department | Section 5.16.3 |
| NFPA 11A, Standard for Medium- and High- Expansion Foam Systems | Requirements for installation and use of medium- and high-expansion foam systems | Long Beach Fire Department | Section 5.16.3 |
| NFPA 12, Standard on Carbon Dioxide Extinguishing Systems | Requirements for installation and use of carbon dioxide extinguishing systems | Long Beach Fire Department | Section 5.16.3 |
| NFPA 13, Standard for Installation of Sprinkler Systems | Guidelines for selection and installation of fire sprinkler systems | Long Beach Fire Department | Section 5.16.3 |
| NFPA 13A, Recommended Practice for the Inspection, Testing, and Maintenance of Sprinkler Systems | Guidance for inspection, testing, and maintenance of sprinkler systems | Long Beach Fire Department | Section 5.16.3 |
| NFPA 14, Standard for the Installation of Standpipe and Hose Systems | Guidelines for selection and installation of standpipe and hose systems | Long Beach Fire Department | Section 5.16.3 |
| NFPA 15, Standard for Water Spray Fixed Systems | Guidelines for selection and installation of water spray fixed systems | Long Beach Fire Department | Section 5.16.3 |
| NFPA 17, Standard for Dry Chemical Extinguishing Systems | Guidance for selection and use of dry chemical extinguishing systems | Long Beach Fire Department | Section 5.16.3 |
| NFPA 20, Standard for the Installation of Centrifugal Fire Pumps | Guidance for selection and installation of centrifugal fire pumps | Long Beach Fire Department | Section 5.16.3 |

TABLE 5.16-5

Laws, Ordinances, Regulations, and Standards for Worker Health and Safety

| LORS | Requirements/Applicability | Administering Agency | AFC Section Explaining Conformance |
|---------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|-----------------------------|-------------------------------------------|
| NFPA 22, Standard for Water Tanks for Private Fire Protection | Requirements for water tanks for private fire protection | Long Beach Fire Department | Section 5.16.3 |
| NFPA 24, Standard for the Installation of Private Fire Service Mains and Their Appurtenances | Requirements for private fire service mains and their appurtenances | Long Beach Fire Department | Section 5.16.3 |
| NFPA 26, Recommended Practice for the Supervision of Valves Controlling Water Supplies | Supervision guidance for valves controlling water supplies | Long Beach Fire Department | Section 5.16.3 |
| NFPA 30, Flammable and Combustible Liquid Code | Requirements for storage and use of flammable and combustible liquids | Long Beach Fire Department | Section 5.16.3 |
| NFPA 37, Standard for the Installation and Use of Stationary Combustion Engines and Gas Turbines | Fire protection requirements for installation and use of combustion engines and gas turbines | Long Beach Fire Department | Section 5.16.3 |
| NFPA 50A, Standard for Gaseous Hydrogen Systems at Consumer Sites | Fire protection requirements for hydrogen systems | Long Beach Fire Department | Section 5.16.3 |
| NFPA 54, National Fuel Gas Code | Fire protection requirements for use of fuel gases | Long Beach Fire Department | Section 5.16.3 |
| NFPA 59A, Standard for the Storage and Handling of Liquefied Petroleum Gases | Requirements for storage and handling of liquefied petroleum gases | Long Beach Fire Department | Section 5.16.3 |
| NFPA 68, Guide for Explosion Venting | Guidance in design of facilities for explosion venting | Long Beach Fire Department | Section 5.16.3 |
| NFPA 70, National Electric Code | Guidance on safe selection and design, installation, maintenance, and construction of electrical systems | Long Beach Fire Department | Section 5.16.3 |
| NFPA 70B, Recommended Practice for Electrical Equipment Maintenance | Guidance on electrical equipment maintenance | Long Beach Fire Department | Section 5.16.3 |
| NFPA 70E, Standard for Electrical Safety Requirements for Employee Workplaces | Employee safety requirements for working with electrical equipment | Long Beach Fire Department | Section 5.16.3 |
| NFPA 71, Standard for the Installation, Maintenance, and Use of Central Station Signaling Systems | Requirements for installation, maintenance, and use of central station signaling systems | Long Beach Fire Department | Section 5.16.3 |

TABLE 5.16-5

Laws, Ordinances, Regulations, and Standards for Worker Health and Safety

| LORS | Requirements/Applicability | Administering Agency | AFC Section Explaining Conformance |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|-----------------------------|-------------------------------------------|
| NFPA 72A, Standard for the Installation, Maintenance, and Use of Local Protective Signaling Systems for Guard's Tour, Fire Alarm, and Supervisory Service | Requirements for installation, maintenance, and use of local protective signaling systems | Long Beach Fire Department | Section 5.16.3 |
| NFPA 72E, Standard on Automatic Fire Detection | Requirements for automatic fire detection | Long Beach Fire Department | Section 5.16.3 |
| NFPA 72F, Standard for the Installation, Maintenance, and Use of Emergency Voice/Alarm of Communication Systems | Requirements for installation, maintenance, and use of emergency and alarm communications systems | Long Beach Fire Department | Section 5.16.3 |
| NFPA 72H, Guide for Testing Procedures for Local, Auxiliary, Remote Station, and Proprietary Protective Signaling Systems | Testing procedures for types of signaling systems anticipated for facility | Long Beach Fire Department | Section 5.16.3 |
| NFPA 75, Standard for the Protection of Electronic Computer/Data Processing Equipment | Requirements for fire protection systems used to protect computer systems | Long Beach Fire Department | Section 5.16.3 |
| NFPA 78, Lightning Protection Code | Lightning protection requirements | Long Beach Fire Department | Section 5.16.3 |
| NFPA 80, Standard for Fire Doors and Windows | Requirements for fire doors and windows | Long Beach Fire Department | Section 5.16.3 |
| NFPA 90A, Standard for the Installation of Air Conditioning and Ventilating Systems | Requirements for installation of air conditioning and ventilating systems | Long Beach Fire Department | Section 5.16.3 |
| NFPA 101, Code for Safety to Life from Fire in Buildings and Structures | Requirements for design of means of exiting the facility | Long Beach Fire Department | Section 5.16.3 |
| NFPA 291, Recommended Practice for Fire Flow Testing and Marking of Hydrants | Guidelines for testing and marking of fire hydrants | Long Beach Fire Department | Section 5.16.3 |
| NFPA 850, Recommended Practice for Fire Protection for Fossil Fuel Steam Electric Generating Plants | Requirements for fire protection in fossil-fuel steam electric generating plants | Long Beach Fire Department | Section 5.16.3 |
| NFPA 1961, Standard for Fire Hose | Specifications for fire hoses | Long Beach Fire Department | Section 5.16.3 |
| NFPA 1962, Standard for the Care, Maintenance, and Use of Fire Hose Including Connections and Nozzles | Requirements for care, maintenance, and use of fire hoses | Long Beach Fire Department | Section 5.16.3 |

TABLE 5.16-5

Laws, Ordinances, Regulations, and Standards for Worker Health and Safety

| LORS | Requirements/Applicability | Administering Agency | AFC Section Explaining Conformance |
|-----------------------------------------------------------------------------|------------------------------------------------------|----------------------------|------------------------------------|
| NFPA 1963, Standard for Screw Threads and Gaskets for Fire Hose Connections | Specifications for fire hose connections | Long Beach Fire Department | Section 5.16.3 |
| ANSI/ASME, Boiler and Pressure Vessel Code | Specifications and requirements for pressure vessels | N/A | Section 5.16.3 |
| ANSI, B31.2, Fuel Gas Piping | Specifications and requirements for fuel gas piping | N/A | Section 5.16.3 |

Notes:

ANSI = American National Standards Institute

ASME = American Society of Mechanical Engineers

CCR = California Code of Regulations

CFR = Code of Federal Regulations

HMBP = Hazardous Material Business Plan

NFPA = National Fire Protection Association

Sources: City of Long Beach, 2013; DuRee, 2013

5.16.5 Agencies and Agency Contacts

Agency contacts relative to worker health and safety and fire protection are shown in Table 5.16-6.

TABLE 5.16-6

Agency Contacts for Worker Health and Safety

| Issue | Agency | Persons Contacted |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| CUPA Participating Agency for Hazardous Materials Inventory and Emergency Business Plan and Risk Management Plan, Fire Department Permits, Hazardous Materials Response, SPCC, Aboveground and Underground Storage Tank Permits | Long Beach Fire Department and Long Beach Health Department | Mike DuRee, Fire Chief City of Long Beach 3205 Lakewood Blvd, Long Beach, CA 90808 (562) 570-2579 Michael.DuRee@longbeach.org |
| Worker Health and Safety | Cal/OSHA, Torrance District Office | Marissa Cordeta, Officer on Duty 680 Knox Street, Suite 100 Torrance, CA 90502 (310) 516-3734 |
| Fire Protection | Long Beach Fire Department | Mike DuRee, Fire Chief City of Long Beach 3205 Lakewood Blvd, Long Beach, CA 90808 (562) 570-2579 Michael.DuRee@longbeach.org |

5.16.6 Permits and Permit Schedule

Table 5.16-7 lists applicable permits related to the protection of worker health and safety for the AEC.

TABLE 5.16-7

Permits and Permit Schedule for Worker Health and Safety

| Permit | Agency Contact | Schedule/Steps |
|-------------------------------------|---------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|
| Trenching and excavation permit | Any Cal/OSHA district or field office | Submit completed permit application to any Cal/OSHA district or field office prior to commencing construction |
| Permit to erect a fixed tower crane | Any Cal/OSHA district or field office | Submit completed permit application to any Cal/OSHA district or field office at least 24 hours prior to initiation of activity |
| Pressure vessel permit | Any Cal/OSHA district or field office | Submit completed permit application to any Cal/OSHA district or field office prior to commencing construction |

5.16.7 References

City of Long Beach. 2013. City of Long Beach Fire Department Information. Available online at: <http://www.longbeach.gov/fire/>. Accessed July 1, 2013.

Cordeta, Marissa / CalOSHA Torrance District Office, Officer on Duty. 2012. Personal communication with Jessica Brandt/CH2M HILL. May 30.

DuRee, Mike / Long Beach Fire Department, Fire Chief. 2013. Personal Communication with Beth Smoker/CH2M HILL. July 11.