

5.16 Worker Health and Safety

5.16.1 Introduction

This section summarizes the worker health and safety issues that may be encountered during the construction and operation of the Carlsbad Energy Center Project (CECP). This section contains worker health and safety information including the laws, ordinances, regulations, and standards (LORS) that apply to this project along with specific sections outlining the safety training programs and general health and safety programs that will be prepared and implemented for this project, the methods to control the anticipated hazards, fire protection information, and general information on permitting agencies and contacts.

5.16.2 Laws, Ordinances, Regulations, and Standards

Construction and operation of CECP will be conducted in accordance with all applicable LORS. Table 5.16-1 summarizes the LORS relating to worker health and safety and provides a summary of the applicable national consensus standards.

TABLE 5.16-1
Laws, Ordinances, Regulations, and Standards Applicable to Worker Health and Safety

Law, Ordinance, Regulation, or Standard	Applicability
Federal	
Title 29 Code of Federal Regulations (CFR) Part 1910	Contains the minimum occupational safety and health standards for general industry in the United States
Title 29 CFR Part 1926*	Contains the minimum occupational safety and health standards for the construction industry in the United States
State	
California Occupational Safety and Health Act, 1970	Establishes minimum safety and health standards for construction and general industry operations in California
8 California Code of Regulations (CCR) 339	Requires list of hazardous chemicals relating to the Hazardous Substance Information and Training Act
8 CCR 450	Addresses hazards associated with pressurized vessels
8 CCR 750	Addresses hazards associated with high-pressure steam
8 CCR 1509	Addresses requirements for construction Injury and Illness Prevention Plans
8 CCR 1509, et seq. and 1684, et seq.	Addresses construction hazards, including head, hand, and foot injuries and noise and electrical shock
8 CCR 1528, et seq., and 3380, et seq.	Requirements for personal protective equipment (PPE)
8 CCR 1597, et seq., and 1590, et seq.	Requirements addressing the hazards associated with traffic accidents and earth-moving
8 CCR 1604, et seq.	Requirements for construction hoist equipment
8 CCR 1620, et seq. and 1723, et seq.	Addresses miscellaneous hazards

TABLE 5.16-1

Laws, Ordinances, Regulations, and Standards Applicable to Worker Health and Safety

Law, Ordinance, Regulation, or Standard	Applicability
8 CCR 1709, et seq.	Requirements for steel reinforcing, concrete pouring, and structural steel erection operations
8 CCR 1920, et seq.	Requirements for fire protection systems
8 CCR 2300, et seq. and 2320, et seq.	Requirements for addressing low-voltage electrical hazards
8 CCR 2395, et seq.	Addresses electrical installation requirements
8 CCR 2700, et seq.	Addresses high-voltage electrical hazards
8 CCR 3200, et seq. and 5139, et seq.	Requirements for control of hazardous substances
8 CCR 3203, et seq.	Requirements for operational accident prevention programs
8 CCR 3270, et seq. and 3209, et seq.	Requirements for evacuation plans and procedures
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.
8 CCR 3360, et seq.	Addresses requirements for sanitary conditions
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
8 CCR 3649, et seq. and 3700, et seq.	Requirements for addressing hazards associated with field vehicles
8 CCR 3940, et seq.	Requirements for addressing hazards associated with power transmission, compressed air, and gas equipment
8 CCR 5109, et seq.	Requirements for addressing construction accident and prevention programs
8 CCR 5110, et seq.	Requirements for the implementation of an ergonomics program
8 CCR 5139, et seq.	Requirements for addressing hazards associated with welding, sandblasting, grinding, and spray-coating
8 CCR 5150, et seq.	Requirements for confined space entry
8 CCR 5160, et seq.	Requirements for addressing hot, flammable, poisonous, corrosive, and irritant substances
8 CCR 5192, et seq.	Requirements for conducting emergency response operations
8 CCR 5194, et seq.	Requirements for employee exposure to dusts, fumes, mists, vapors, and gases
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
8 CCR 5583, et seq.	Requirements for design, construction, and installation of venting, diking, valving, and supports

TABLE 5.16-1
Laws, Ordinances, Regulations, and Standards Applicable to Worker Health and Safety

Law, Ordinance, Regulation, or Standard	Applicability
8 CCR 6150, et seq.; 6151, et seq.; 6165, et seq.; 6170, et seq.; and 6175, et seq.	Provides fire protection requirements
24 CCR 3 et seq.	Incorporates current addition of Uniform Building Code
8 CCR, Part 6	Provides health and safety requirements for working with tanks and boilers
Health and Safety Code Section 25500, 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 acutely hazardous materials prepare and maintain a Risk Management Plan
Health and Safety Code Sections 25500 through 25541	Requires the preparation of a Hazardous Material Business Plan that details emergency response plans for a hazardous materials emergency at the facility
Local	
Specific hazardous material handling requirements	Provides response agencies with necessary information to address emergencies
Emergency Response Plan	Allows response agency to integrate VPP emergency response activities into any response actions
Business Plan	Provides response agency with overview of VPP purpose and operations
Risk Management Plan (Certified Unified Program Agency)	Provides response agency with detailed review of risks and hazards located at VPP and mitigation implemented to control risks or hazards.
Applicable National Consensus 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
National Fire Protection Association (NFPA) 10, Standard for Portable Fire Extinguishers	Requirements for selection, placement, inspection, maintenance, and employee training for portable fire extinguishers
NFPA 11, Standard for Low-Expansion Foam and Combined Agent Systems	Requirements for installation and use of low-expansion foam and combined-agent systems
NFPA 11A, Standard for Medium- and High-Expansion Foam Systems	Requirements for installation and use of medium- and high-expansion foam systems
NFPA 12, Standard on Carbon Dioxide Extinguishing Systems	Requirements for installation and use of carbon dioxide extinguishing systems
NFPA 13, Standard for Installation of Sprinkler Systems	Guidelines for selection and installation of fire sprinkler systems
NFPA 13A, Recommended Practice for the Inspection, Testing, and Maintenance of Sprinkler Systems	Guidance for inspection, testing, and maintenance of sprinkler systems

TABLE 5.16-1

Laws, Ordinances, Regulations, and Standards Applicable to Worker Health and Safety

Law, Ordinance, Regulation, or Standard	Applicability
NFPA 14, Standard for the Installation of Standpipe and Hose Systems	Guidelines for selection and installation of standpipe and hose systems
NFPA 15, Standard for Water Spray Fixed Systems	Guidelines for selection and installation of water spray fixed systems
NFPA 17, Standard for Dry Chemical Extinguishing Systems	Guidance for selection and use of dry chemical extinguishing systems
NFPA 20, Standard for the Installation of Centrifugal Fire Pumps	Guidance for selection and installation of centrifugal fire pumps
NFPA 22, Standard for Water Tanks for Private Fire Protection	Requirements for water tanks for private fire protection
NFPA 24, Standard for the Installation of Private Fire Service Mains and Their Appurtenances	Requirements for private fire service mains and their appurtenances
NFPA 26, Recommended Practice for the Supervision of Valves Controlling Water Supplies	Supervision guidance for valves controlling water supplies
NFPA 30, Flammable and Combustible Liquid Code	Requirements for storage and use of flammable and combustible liquids
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
NFPA 50A, Standard for Gaseous Hydrogen Systems at Consumer Sites	Fire protection requirements for hydrogen systems
NFPA 54, National Fuel Gas Code	Fire protection requirements for use of fuel gases
NFPA 59A, Standard for the Storage and Handling of Liquefied Petroleum Gases	Requirements for storage and handling of liquefied petroleum gases
NFPA 68, Guide for Explosion Venting	Guidance in design of facilities for explosion venting
NFPA 70, National Electric Code	Guidance on safe selection and design, installation, maintenance, and construction of electrical systems
NFPA 70B, Recommended Practice for Electrical Equipment Maintenance	Guidance on electrical equipment maintenance
NFPA 70E, Standard for Electrical Safety Requirements for Employee Workplaces	Employee safety requirements for working with electrical equipment
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
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
NFPA 72E, Standard on Automatic Fire Detection	Requirements for automatic fire detection

TABLE 5.16-1
Laws, Ordinances, Regulations, and Standards Applicable to Worker Health and Safety

Law, Ordinance, Regulation, or Standard	Applicability
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
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
NFPA 75, Standard for the Protection of Electronic Computer/Data Processing Equipment	Requirements for fire protection systems used to protect computer systems
NFPA 78, Lightning Protection Code	Lightning protection requirements
NFPA 80, Standard for Fire Doors and Windows	Requirements for fire doors and windows
NFPA 90A, Standard for the Installation of Air Conditioning and Ventilating Systems	Requirements for installation of air conditioning and ventilating systems
NFPA 101, Code for Safety to Life from Fire in Buildings and Structures	Requirements for design of means of exiting the facility
NFPA 291, Recommended Practice for Fire Flow Testing and Marking of Hydrants	Guidelines for testing and marking of fire hydrants
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 and alternative fuel electric generating plants
NFPA 1961, Standard for Fire Hose	Specifications for fire hoses
NFPA 1962, Standard for the Care, Maintenance, and Use of Fire Hose Including Connections and Nozzles	Requirements for care, maintenance, and use of fire hose
NFPA 1963, Standard for Screw Threads and Gaskets for Fire Hose Connections	Specifications for fire hose connections
American National Standards Institute/American Society for Mechanical Engineers (ANSI/ASME), Boiler and Pressure Vessel Code	Specifications and requirements for pressure vessels
ANSI, B31.2, Fuel Gas Piping	Specifications and requirements for fuel gas piping

5.16.3 Affected Environment

The CECP will consist of the construction, installation and operation of two Siemens Rapid Response SCC6-5000F combined-cycle (R2C2) units. The facility will be located in Carlsbad, San Diego County, California, on an approximately 23-acre parcel. Land use in the area surrounding the project site (discussed in detail in Section 5.6, Land Use) is primarily industrial, commercial, residential, and open space. The CECP site is designated as Public Utility (U) in the City of Carlsbad General Plan, which allows electrical generation and transmission facilities.

5.16.4 Environmental Analysis

5.16.4.1 Significance Criteria

Impacts would generally be evaluated with respect to the California Environmental Quality Act (CEQA). The CEQA significance criteria do not have specific questions for worker health and safety. Related CEQA significance criteria are addressed in the Section 5.5, Hazardous Materials Management, and Section 5.6, Noise. The analysis of worker health and safety related to construction is the same for both the Single Phase Construction and Phased Construction schedules (see Section 2.2.15), therefore, a separate analysis for the two optional construction schedule is not required.

5.16.4.2 Discussion of Impacts

During construction and operation of the CECP, workers will be exposed to construction safety and operation safety hazards. To evaluate these hazards and control measures, a hazard analysis has been prepared. The analysis identifies the hazards anticipated during construction and operation of the CECP and indicates which safety programs should be developed and implemented to mitigate and appropriately manage those hazards. The hazard analysis for construction activities is outlined in Table 5.16-2; the hazard analysis for plant operation is outlined in Table 5.16-3. Since the types of hazards anticipated during plant construction and operation are similar, there is considerable duplication between the tables.

TABLE 5.16-2
CECP Construction Hazard Analysis

Activity	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 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 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
Working with flammable and combustible liquids	Fire/spills	Fire Protection and Prevention Program; Housekeeping and Material Handling and Storage Program

TABLE 5.16-2
CECP Construction Hazard Analysis

Activity	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; Personal Protective Equipment Program
Inspection and maintenance of temporary systems used during construction activities	Employee injury and property damage from contact with hazardous energy sources (electrical, thermal, mechanical, etc.)	Electrical Safety Program
Working on electrical equipment and systems	Employee contact with live electricity and energized equipment	Electrical Safety Program; Personal Protective Equipment 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	Hazardous Waste Program
Confined space entry	Employee injury from physical and chemical hazards	Permit-Required Confined-Space Entry Program
General construction activity	Employee injury from hand and portable power tools	Hand and Portable Power Tool Safety Program; Personal Protective Equipment 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 Personal Protective Equipment 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	Personal Protective Equipment Program
General construction activity	Employee exposure to hazardous gases, vapors, dusts, liquids, and fumes	Hazard Communication Program; Respiratory Protection Program; Personal Protective Equipment 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

TABLE 5.16-2
CECP Construction Hazard Analysis

Activity	Hazard*	Control*
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

* The hazards and hazard controls provided are generic to construction activities. During various phases of construction, a hazard analysis will be performed to evaluate the hazards and develop appropriate controls.

TABLE 5.16-3
CECP Operation Hazard Analysis

Activity	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, dermal contact	Hazard Communication 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 Program; 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 (electrical, thermal, mechanical, etc.)	Electrical Safety Program
Working on electrical equipment and systems	Employee contact with live electricity	Electrical Safety Program; Personal Protective Equipment Program
Confined space entry	Employee injury from physical and chemical hazards	Permit-Required Confined-Space Entry Program

TABLE 5.16-3
CECP Operation Hazard Analysis

Activity	Hazard*	Control*
General plant operation activities	Employee injuries from hand and portable power tools	Hand and Portable Power Tool Safety Program; Personal Protective Equipment 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; Personal Protective Equipment 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, liquids, and fumes	Hazard Communication Program; Respiratory Protection Program; Personal Protective Equipment 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

* The hazard and hazard controls provided are generic to operational activities. This hazard analysis may have to be updated if plant operations change or new equipment is added that was not considered during this evaluation.

5.16.4.2.1 Overview of Hazards and Related Programs and Training

Hazard and safety 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 the requirements to protect against and prevent fires. This will include equipment required, such as alarm systems and firefighting equipment, and procedures 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 very hazardous materials that can migrate. The programs or plans are contained in written documents that are usually kept at specific locations within the facility.

Each program or plan will contain training requirements that are translated into detailed training courses. These courses are taught to plant construction and operating personnel, as needed. For example, all plant operating personnel will receive training in escape

procedures under the Emergency Action Program/Plan, but only those working with flammables will receive training under the Fire Protection and Prevention Program.

Tables 5.16-2 and 5.16-3, which list construction and operation activities and associated hazards, also show (under the “Control” column) the program designed to reduce the occurrence of each hazard.

5.16.4.3 Health and Safety Programs

To protect the safety and health of workers during the construction and operation of CECP, health and safety programs designed to mitigate hazards and comply with applicable regulations will be implemented. Periodic 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.

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

5.16.4.3.1 Construction Health and Safety Program

The following construction safety programs will be developed and implemented during construction of the CECP, as outlined in the following lists. The construction health and safety program for CECP will be prepared and implemented in accordance with all applicable LORS.

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
- 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
- Flammable and combustible liquid storage
- Use of flammable and combustible liquids
- Dispensing and disposal of flammable liquids
- Service and refueling areas
- Training

Personal Protective Equipment Program

- Personal protective devices
- Head protection
- Eye/face protection
- Body protection
- Hand protection
- Foot protection
- Skin protection
- Fall protection
- High-voltage protection
- Respiratory protection
- Hearing protection
- Hazard analysis
- Training

Emergency Action Program/Plan

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

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

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

- 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
- California Occupational Safety and Health Administration (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 preparation

Hot Work Safety Program

- Welding and cutting 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
- Lock-out/tag-out (LO/TO) procedures
- Overhead and underground utilities
- Utility clearance
- Training

Permit-Required Confined Space Entry Program

- Air monitoring and ventilation requirements
- Rescue procedures
- LO/TO 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 (MSDS)
- 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 program
- Equipment inspection and maintenance
- Blocking, bleeding, and blanking
- Training

5.16.4.3.2 Operations Health and Safety Program

Upon completion of construction and commencement of operations at CECP, the construction safety and health program will transition into an operations-oriented program reflecting the hazards and controls necessary during operation. The following text outlines the topics that will be included in the Operations Health and Safety Program. The operations health and safety program for CECP shall be prepared and implemented in accordance with all applicable LORS.

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

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 (Part of the Risk Management Plan)

- 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
- 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/bloodborne pathogens
- Respiratory protective equipment
- Hearing protection
- Training

Plant Operation Safety Program

Motor Vehicle and Heavy Equipment Safety Program

- Operation and maintenance of vehicles
- Inspection
- Personal Protective Equipment
- 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
- Fire watch
- Hot work permit
- Personal Protective Equipment
- 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
- LO/TO procedures
- Overhead and underground utilities
- Utility clearance
- Training

Permit-Required Confined Space Entry Program

- Air monitoring and ventilation requirements
- Rescue procedures
- LO/TO 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
- MSDS
- 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

5.16.4.4 Safety Training Programs

To ensure that all construction and operations employees recognize and understand how to protect themselves from potential hazards, comprehensive training programs for construction and operation will be implemented as indicated in Tables 5.16-4 and 5.16-5. 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.

Tables 5.16-4 and 5.16-5 summarize the safety training programs that will be provided to construction and operations personnel for the CECP, respectively.

TABLE 5.16-4
CECP Construction Training Program

Training Course	Target Employees
Injury and Illness Prevention Training	All
Emergency Action Program/Plan	All
Personal Protective Equipment Training	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 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 Fire Prevention and Protection Training	Employees performing hot work
Electrical Safety Training	Employees performing LO/TO or working on systems that require LO/TO activities
Electrical Safety Training	Employees required to work on electrical systems and equipment, or use electrical equipment and cords

TABLE 5.16-4
CECP Construction Training Program

Training Course	Target Employees
Permit-Required Confined-Space Entry Training	Employees required to supervise or perform confined-space entry activities
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 that are exposed to temperature extremes
Hearing Conservation Training	All
Back Injury Prevention Training	All
Safe Driving Training	Employees supervising 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

TABLE 5.16-5
CECP Operations Training Program

Training Course	Target Employees
Injury and Illness Prevention Training	All
Emergency Action Plan	All
Personal Protective Equipment Training	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
Electrical Safety Training	Employees performing LO/TO
Electrical Safety	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

TABLE 5.16-5
CECP Operations Training Program

Training Course	Target Employees
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 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

5.16.4.5 Fire Protection and Emergency Response

The CECP is located within the City of Carlsbad, California, which provides fire services in the area. The Carlsbad Fire Department has a total of 6 fire stations within the City. The nearest fire station to the project site is Station 1 located at 1275 Carlsbad Village Drive. The station is approximately 1.75 miles away and would provide the first response to a fire at the project site. The response time to the project site, with full resources capabilities, would be 5 to 6 minutes. The Carlsbad Fire Department does not have a Hazardous Materials Station, however, the Fire Department employs many firefighters who are hazardous materials trained specialists. The Carlsbad Fire Department would be the initial responder to assess a hazardous materials accident. If additional help is needed, the Carlsbad Fire Department would coordinate with Camp Pendleton and/or the San Diego City Fire Department through their mutual aid agreements. Camp Pendleton is closer and would most likely respond to a hazardous materials accident.

Law enforcement is provided by the Carlsbad Police Department. The police station is located at 2560 Orion Way. There are approximately 148 officers in the Carlsbad Police Department, and response time to the project site is estimated at 5 minutes (Perasall, 2007).

5.16.4.6 Hospitals

The nearest hospital/long-term health care facility is Tri-City Medical Center located approximately 7 miles to the north in Oceanside, California at 4002 Vista Way, Oceanside, California. Tri-City Medical Center does not have a trauma center, so patients in need of a trauma center are stabilized at Tri-City and sent to either Scripps Memorial Hospital La Jolla at 9888 Genesee Avenue, La Jolla, California or University of California San Diego Medical Center at 200 West Arbor Drive, San Diego, California (Schultz, 2007).

5.16.5 Mitigation Measures

The previous sections present measures that the Applicant would implement during project construction and operation phases to mitigate risks during construction and operation of the CECP.

5.16.6 Proposed Conditions of Certification

The following conditions of certification are posed by the Applicant to ensure impacts to worker health and safety remain less than significant.

WORKER SAFETY-1: The Applicant shall submit to the Compliance Project Manager (CPM) a copy of the project Construction Safety and Health Program containing the following:

- A Construction Safety Program
- A Construction Personal Protective Equipment Program
- A Construction Exposure Monitoring Program
- A Construction Emergency Action Plan
- A Construction Fire Protection and Prevention Plan

The Safety Program, the Personal Protective Equipment Program, and the Exposure Monitoring Program shall be submitted to the CPM for review and comment concerning compliance of the program with all applicable Safety Orders. The Construction Fire Protection and Prevention Plan and Emergency Action Plan shall be submitted to the City of Hayward Fire Department for review and comment prior to submittal to the CPM.

Verification: At least 30 days prior to the start of construction, the Applicant shall submit to the CPM for review and approval a copy of the project Construction Injury and Illness Prevention Program. The project applicant shall provide a letter from the City of Hayward Fire Department stating that they have reviewed and commented on the Construction the Construction Fire Protection and Prevention Plan and the Emergency Action Plan.

WORKER SAFETY-2: The Applicant shall submit to the CPM a copy of the project Operations and Maintenance Safety and Health Program containing the following:

- An Operation Injury and Illness Prevention Plan;
- An Emergency Action Plan;
- Hazardous Materials Management Program;
- Fire Protection and Prevention Program (8 CCR § 3221); and;
- Personal Protective Equipment Program (8 CCR §§ 3401-3411).

The Operation Injury and Illness Prevention Plan, Emergency Action Plan, and Personal Protective Equipment Program shall be submitted to the Cal/OSHA Consultation Service for review and comment concerning compliance of the program with all applicable Safety Orders. The Operation Fire Protection Plan and the Emergency Action Plan shall also be submitted to the City of Hayward Fire Department for review and comment.

Verification: At least 30 days prior to the start of operation, the Applicant shall submit to the CPM a copy of the project Operations and Maintenance Safety & Health Program.

WORKER SAFETY-3: The Applicant shall provide a site Construction Safety Supervisor (CSS) who, by way of training and/or experience, is knowledgeable of power plant construction activities and relevant LORS is capable of identifying workplace hazards relating to the construction activities, and has authority to take appropriate action to assure compliance and mitigate hazards. The CSS shall:

- Have over-all authority for coordination and implementation of all occupational safety and health practices, policies, and programs;
- Assure that the safety program for the project complies with Cal/OSHA & federal regulations related to power plant projects;
- Assure that all construction and commissioning workers and supervisors receive adequate safety training;
- Complete accident and safety-related incident investigations, emergency response reports for injuries, and inform the CPM of safety-related incidents; and
- Assure that all the plans identified in Worker Safety 1 and 2 are implemented.

Verification: At least 30 days prior to the start of site mobilization, the Applicant shall submit to the CPM the name and contact information for the Construction Safety Supervisor (CSS). The contact information of any replacement (CSS) shall be submitted to the CPM within one business day of replacement.

- The CSS shall submit in the Monthly Compliance Report a monthly safety inspection report to include:
- Record of all employees trained for that month (all records shall be kept on site for the duration of the project);
- Summary report of safety management actions and safety-related incidents that occurred during the month;
- Report of any continuing or unresolved situations and incidents that may pose danger to life or health; and
- Report of accidents and injuries that occurred during the month.

WORKER SAFETY-4: The Applicant shall make payments to the Chief Building Official (CBO) for the services of a Safety Monitor based upon a reasonable fee schedule to be negotiated between the project applicant and the CBO. Those services shall be in addition to other work performed by the CBO. The Safety Monitor shall be selected by and report directly to the CBO, and will be responsible for verifying that the Construction Safety Supervisor, as required in Worker Safety 3, implements all appropriate Cal/OSHA and Commission safety requirements. The Safety Monitor shall conduct onsite (including linear facilities) safety inspections at intervals necessary to fulfill those responsibilities.

Verification: Prior to the start of construction, the Applicant shall provide proof of its agreement to fund the Safety Monitor services to the CPM for review and approval.

WORKER SAFETY-5: The Applicant shall ensure that a portable automatic cardiac defibrillator is located on site during construction and operations and shall implement a program to ensure that the recommended number of workers are properly trained in its use and that the equipment is properly maintained and functioning at all times, as per the manufacturer's instructions.

Verification: At least 30 days prior to the start of site mobilization the Applicant shall submit to the CPM proof that a portable automatic cardiac defibrillator exists on site and a copy of the training and maintenance program for review and approval.

5.16.7 Involved Agencies and Agency Contacts

Several agencies are involved to ensure protection of worker health and safety. Agency contacts relative to worker health and safety and fire are shown in Table 5.16-6.

TABLE 5.16-6
Agency Contacts for Worker Health and Safety

Issue	Agency	Contact
Fire Suppression	City of Carlsbad Fire Department	Fire Department Administration 2560 Orion Way Carlsbad, CA 92010
Hazardous Materials Incidents	City of Carlsbad Fire Department	Joe Ashbaker, Supervisor, Hazardous Materials Division 620 South "E" Street San Bernardino, CA 92415 (909) 386-8430 jashbaker@sbcfire.org
Law Enforcement	Carlsbad Police Department	2560 Orion Way Carlsbad, CA 92010 (760) 931-2100
Safety Compliance	Cal-OSHA –District Office	San Diego District Office 7575 Metropolitan Drive, Ste. 204 San Diego, CA 92108 (619) 767-2060
Pressure Vessel Compliance	Cal-OSHA Pressure Vessel Unit	Gary Teel Senior Pressure Value Engineer Santa Ana Pressure Vessel District Office Suite 215 2000 E. McFadden Ave Santa Ana, CA 92705 (714) 567-7208 gteel@dir.ca.gov

5.16.8 Permits Required and Permit Schedule

Table 5.16-7 lists applicable permits related to the protection of worker health and safety for the CECP. The activities covered and application requirements to obtain each permit are provided.

All permits noted in Table 5.16-7 may be obtained from any Cal-OSHA district or field office as needed. Notification requirements are listed as 24 hours because the permits may be required at several points in the construction of the CECP or during operations; no specific permitting schedule is provided.

TABLE 5.16-7
Permits and Permit Schedule for Worker Health and Safety

Permit	Agency Contact	Schedule
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.

5.16.9 References

Perasall, L. 2007. Telephone conversation with Lewis Perasall, Carlsbad Police Department and Lucas Bair/CH2M HILL. August.

Schultz, S. 2007. Telephone conversation with Sharon Schultz, Tri-City Medical Center and Lucas Bair/CH2M HILL. August.