

5.17 WORKER SAFETY

This section addresses safety and health issues and describes or outlines systems and procedures that will be implemented to provide occupational safety and health protection for workers of the proposed Project. These systems and procedures will be implemented in accordance with all applicable worker health and safety LORS. All applicable elements of the Title 8 California Code of Regulations (8 CCR), General Industry Safety Orders, Construction Safety Orders, and Electrical Safety Orders, are addressed below. Section 5.17.1, Affected Environment, describes the affected environment relative to worker health and safety. An outline of the principal components of the health and safety programs to be implemented during construction and operation is presented in Section 5.17.2, Environmental Consequences. Mitigation measures are discussed in Section 5.17.3, Mitigation Measures. Section 5.17.4, Applicable Laws, Ordinances, Regulations, and Standards, addresses compliance with LORS.

5.17.1 Affected Environment

SJS 1&2 includes the construction, operation and maintenance of two 53.4 MW net solar hybrid power stations and ancillary systems.

The Project site is located on West Jayne Avenue approximately 6 miles east of Coalinga and approximately 3 miles west of Interstate 5 in an agricultural area of Fresno County, California. The Project site will be situated on one section of land of approximately 640 acres.

The two components of each plant are the solar field and the biomass facilities. Each solar field has the heat generating capacity to fully load its respective turbine to produce 53.4 MW. Each biomass facility will be used to maximize the turbine's energy output during shoulder solar hours (as the sun rises and sets) and will operate at night to produce up to 40 MW of energy.

An onsite security system will be installed as part of SJS 1&2. Controlled access gates will be maintained at the main entrance to the site on West Jayne Avenue, with 24-hour site security monitoring provided in the control room via closed-circuit television and an intercom system.

Perimeter security fencing and access gates will be provided for the SJS 1&2 site. All site security monitoring will be displayed on a real-time basis as well as recorded. Security monitoring cameras and active detection systems will be provided for all facility buildings, support areas, and the entire site perimeter. Regular site security vehicular patrols will be conducted to provide additional site security. Site access will be provided to off-site emergency response teams that respond in the event of an "after-hours" emergency. Entry into the Project site by the fire department or emergency units will be handled on a manual override basis.

5.17.2 Environmental Consequences

Construction, operation, and maintenance activities may expose workers to the hazards identified in Table 5.17-1, Potential Worker Hazards during Facility Construction and Table 5.17-3, Potential Worker Hazards during Facility Operation and Maintenance. Exposure to these hazards can be minimized through adherence to appropriate engineering design criteria and administrative controls, use of applicable PPE, and compliance with all applicable health and safety LORS. The programs, regulations, and preventive

measures intended to control the potential worker health and safety impacts associated with these hazards are described throughout this section. This section describes a comprehensive health, safety, and fire prevention program and an accident/injury prevention program intended to ensure healthful and safe operations at the Project site.

5.17.2.1 Construction Health and Safety Program

To protect the health and safety of workers during construction, the Applicant (or construction contractor) will ensure compliance with the Construction Health and Safety Program, and all federal, state, and local health standards that pertain to worker health and safety.

**Table 5.17-1
Potential Worker Hazards During
Facility Construction**

Activity	Potential Hazard
Elevated Work	Slips/trips/falls.
Hot Work - Welding/Cutting	Flash burns, explosion, thermal burns, toxic welding fumes.
Excavations	Excavation/trench wall collapse, spoil movement, oxygen deficiency, buildup of toxic, gases, fumes, vapors, dusts or mists, wet exposures, crushing hazards, confined spaces, potentially contaminated soil/waste.
Cement/Forms Work	Slips/trips/falls, protruding objects, caustics, punctures, and lacerations.
Equipment Operation- Motor Vehicle and Heavy Equipment Use	Noise exposure, vehicle accidents, load hazards, induced current.
Transmission Lines/ Transformer Station- Working on Electrical Equipment and Systems	Slips/trips/falls, contact with live electricity and energized equipment, electrocution, flash burns.
Painting	Paint solvents, paint vapors, chemical burns, fire/explosion, and slips/trips/falls.
Abrasive Blasting	Dust, flying particles, pressure vessels, noise.
Powered Hand Tools	Noise, dust, flying particles, cuts, amputation, crushing.
Fueling and Working with Flammable and Combustible Liquids	Fire, explosion, spills, environmental contamination.
Construction and Testing of High-Pressure Steam and Air Systems	Injury from failure of pressurized system components or unexpected pressure release
General Construction Activities	Heat and cold stress, biological hazards, noise exposure, dust exposure, injury to head, eyes,/face, body, foot, and skin, ergonomic injuries, exposure to hazardous materials

Source: California Department of Industrial Relations (2008).

Construction Injury and Illness Prevention Program

The Construction Health and Safety Program will meet the Cal/OSHA Injury and Illness Prevention Plan (IIPP) requirements. The IIPP will include the following elements:

- A written Code of Safe Practices that relates to construction activities;
- Identification of the person or persons responsible for implementing the program;
- Posting of the Code of Safe Practices at a conspicuous location at each job site office or providing it to each supervisor, who shall have it readily available;
- A system for identifying workplace hazards, including inspections;
- A system of ensuring employee and subcontractor compliance;
- “Toolbox” or “tailgate” meetings conducted by supervisors with employees to discuss job hazards and mitigation measures;
- Methods of communicating with employees that encourage employees to expose unsafe activities; and
- Procedures for correcting unsafe conditions.

When workers are first employed, they will be instructed regarding the hazards and safety precautions applicable to the type of work in question; workers will also be directed to read the Code of Safe Practices. When employees are required to work near known job site hazards, they will be instructed in the recognition of the hazard, the procedures for protecting themselves from injury, and the first aid procedures in the event of injury.

Construction Written Health and Safety Programs

Written safety programs that will be implemented in conjunction with the Code of Safe Practices may include the following:

- Accident/incident reporting procedures;
- Blood-borne pathogens exposure control program;
- Compressed gas and air handling systems;
- Confined space entry procedures;
- Contractor Safety Program;
- Electrical safety procedures;
- Emergency Action Plan;
- Emergency response procedures;
- Excavation, Trenching, and Shoring Program;
- Fall Protection Program;

- Fire Protection and Prevention Plan;
- First Aid/CPR/automated external defibrillator (AED) Program;
- Hand tools and equipment guarding safety procedures;
- Hazard Communication Plan (including Proposition 65 requirements);
- Hazardous materials handling procedures;
- Hazardous waste awareness training;
- Hearing Conservation Program;
- Heat stress/cold stress prevention;
- Heavy equipment procedures;
- Hoist/chain/wire rope/webs/rope slings/crane procedures;
- Hot Work Program (welding, cutting, and brazing);
- Industrial Hygiene Program;
- Industrial truck (forklifts) safety;
- Ladders, scaffolds, and work platforms;
- Lockout/Tag-out Program;
- Motor vehicle safety;
- PPE Program;
- Portable electric and pneumatic tools;
- Preventing slips, trips, and falls;
- Repetitive stress injuries/ergonomics/lifting hazards;
- Respiratory Protection Program;
- Safety and Housekeeping Inspection Program;
- Safety Committee and toolbox/tailgate safety meetings;
- Security Program;
- Signs, tags, and barricades; and
- Tools, power- and hand-operated.

Construction Personal Protective Equipment Program

Employees will be instructed to use the required PPE during construction. Required PPE will be approved for use, distinctly marked to facilitate identification, and used in accordance with the manufacturer's instructions. PPE will be of such design, fit, and durability as to provide adequate protection against the hazards for which it is designed. The type of PPE required for each job task will be described in the job

safety analysis for that task. The use of PPE for site activities includes, but is not limited to, the items specifically described in Table 5.17-2, Basic Protective Equipment Guide, and will comply with Cal/OSHA requirements. When protective-insulating equipment is used, it will comply with the Electrical Safety Codes.

**Table 5.17-2
Basic Protective Equipment Guide**

Body Area	Hazards	Recommended Protection
Eyes/Face	Low-velocity flying particles.	Safety glasses with side shields.
	High-velocity chips and sparks.	Impact goggles or safety glasses with full face shield.
	Corrosive liquid splash during transfer.	Splash proof goggles and face shield.
	Welding - injurious light rays.	Welding hood with appropriate eye filter lenses.
Head/Ears	General wear, overhead rigging, material handling, maintenance, and general construction processes.	Hardhat.
	High noise level.	Earplugs or muff.
Respiratory System	Low-hazard inert dusts.	Dust mask.
	Low concentration solvent vapors.	Cartridge-type organic vapor respirator.
	Acid mists.	Cartridge-type acid mist respirator.
	High-concentration dusts or vapors.	Airline respirator.
	Oxygen deficiencies or gases.	Self-contained breathing apparatus.
Hands and Arms	Handling rough or sharp objects.	Leather gloves.
	Handling hot objects.	Insulated gloves.
	Using solvents.	Impervious synthetic gloves.
Feet and Legs	General wear for light handling.	Safety-toe shoes
	Handling heavy objects.	Metatarsal safety shoes.
	Working with corrosive liquids.	Safety-toe boots.
	Underground work.	Safety-toe synthetic boots.
Trunk and Full Body	Hot or corrosive liquids.	Synthetic apron.
	Punctures, impact, or cuts.	Canvas or leather kickback apron or metal mesh apron.
	Breaking acid containers.	Full body suit made of appropriate materials.
Fall Protection/Rescue	Working from elevated structure or platform without standard railings.	Safety belt and lanyard.
	Vessel entry.	Harness and lifeline or wristlets and lifeline.
	Suspended scaffolds.	Lifeline, safety belt/lanyard.

Source: California Department of Industrial Relations (2008).

A Respiratory Protection Program complying with 8 CCR 5144 and General Industry Safety Order requirements will be developed, including respirator training, fit testing, monitoring, selection, etc.

Fire Protection and Prevention Plan

The SJS 1&2 facility will rely on both onsite fire protection systems and local fire protection services. A Fire Protection and Prevention Plan will be developed and followed throughout the Project construction. The specified firefighting equipment will be provided to site personnel.

During construction, the permanent facility fire protection system will be placed in service as early as practicable. An interim fire protection system will be in place during construction until the permanent system is completed. The permanent fire protection systems for the SJS 1&2 site are described in Section 3.4.10, Fire Protection Systems. Construction fire regulations in 8 CCR 1620 *et seq.*, will be followed as necessary to prevent construction fires. Applicable local fire requirements include:

- 1998 edition of California Fire Code and all applicable NFPA standards (24 CCR Part 9);
- Uniform Fire Code standards; and
- California Building Code 24 CCR 3 *et seq.*

Special attention will be paid to operations involving open flames, such as welding, and use of flammable materials. Personnel involved in such operations will have appropriate training. A fire watch utilizing appropriately classed extinguishers or other equipment will be maintained during hot work operations. Site personnel will not be expected to fight fires past the incident stage. The local responding fire officials will be given information on the site hazards and the location of these hazards, and the information will be included in the emergency response planning.

Materials brought on site must conform to contract requirements, such as specified flame resistance or fireproof characteristics. Specific materials in this category include fuels, paints, solvents, plastic materials, lumber, paper, boxes, and crating materials. Specific attention will be given to storage of compressed gas, fuels, solvents, and paint. Electrical wiring and equipment located in inside storage rooms used for Class I liquids will be stored in accordance with applicable regulations. Outside storage areas will be graded to divert possible spills away from buildings and will be kept clear of vegetation and other combustible materials. Precautions will be taken to protect storage areas against tampering where necessary.

Onsite fire prevention during construction will consist of portable and fixed firefighting equipment. Portable firefighting equipment will consist of fire extinguishers and small hose lines in conformance with Cal/OSHA and the NFPA for the potential types of fire from construction activities. Periodic fire prevention inspections will be conducted by the contractor's safety representative.

Fire extinguishers will be inspected routinely and replaced immediately if defective or in need of recharge. All firefighting equipment will be conspicuously located and marked with unobstructed access. A water supply of sufficient volume, duration, or pressure to operate the required firefighting equipment will be provided on site. Authorized storage areas and containers for flammable materials shall be used with adequate fire control services.

5.17.2.2 Plant Operational Safety

The locations of potential worker hazards during plant operations are listed in Table 5.17-3, Potential Worker Hazards during Facility Operation and Maintenance

Programs that address these hazards will include the following:

- Regular employee education and training in safe work practices for general and particular task areas;
- Communication of hazards in accordance with federal and state standards;
- Accident and incident evaluations;
- Administrative safety procedures;
- Emergency response;
- Fire prevention and fire response;
- Security; and
- Maintenance of safety performance data.

All operations personnel will be provided with written safety guidance. All construction safety programs and procedures that apply to facility operations will be incorporated into the plant operational safety program.

**Table 5.17-3
Potential Worker Hazards during
Facility Operation and Maintenance**

Activity	Potential Hazard
Generation Enclosure	High voltage.
Operations Building	High voltage, repetitive trauma.
Transformer	Electrocution, flash burns.
Compressor	Fire, noise, temperature, rotating equipment, pressure.
Chemical Storage	Chemical splashes, burns, reactions, gases, vapors, fumes, injury due to ingestion, inhalation, or dermal contact.
Machinery, General	Noise, temperature extremes, rotating equipment, electrocution.
Elevated Work	Slips/trips/falls.
Hot Work - Welding/Cutting	Flash burns, explosion, thermal burns, toxic welding fumes.
Equipment Operation- Motor Vehicle and Heavy Equipment Use	Noise exposure, vehicle accidents, load hazards, induced current.

**Table 5.17-3
Potential Worker Hazards during
Facility Operation and Maintenance
(Continued)**

Activity	Potential Hazard
Fueling and Working with Flammable and Combustible Liquids	Fire, explosion, spills, environmental contamination.
Transmission Lines/Transformer Station-Working on Electrical Equipment and Systems	Slips/trips/falls, contact with live electricity and energized equipment, electrocution, flash burns.
Maintenance of High-Pressure Steam and Air Systems	Injury from failure of pressurized system components or unexpected pressure release.
General Plant Operation Activities	Heat and cold stress; biological hazards; noise exposure; dust exposure; injury to head, eyes, face, body, foot, and skin; ergonomic injuries; and exposure to hazardous materials.

Source: California Department of Industrial Relations (2008).

Operations Injury and Illness Prevention Program

The primary prevention measures for worker hazards during the Project operations are presented in the IIPP, which are mandated by 8 CCR 3203. The written IIPP will contain the following information:

- Identity of the person(s) with authority and responsibility for implementing the program;
- A system for ensuring that employees comply with safe and healthy work practices;
- A system for communicating with employees in a readily understandable form;
- Procedures for identifying and evaluating workplace hazards, including inspections to identify hazards and unsafe conditions;
- Methods for correcting unhealthy/unsafe conditions in a timely manner—when the hazard is discovered and/or when there is an imminent danger;
- A training program for:
 - Establishing the program initially.
 - New, transferred, or promoted employees.
 - New processes and equipment.
 - Supervisors.

Methods of documenting inspections and training and maintaining records:

- For 3 years; and
- Providing all operations personnel with written safety guidance.

The IIPP designates a safety representative responsible for implementing the program. The IIPP also describes safety training for new employees and procedures for tracking safety training. In addition, the IIPP provides job hazard analyses (JHAs) for each job. The JHA will identify safety hazards related to each work task and establish procedures for avoiding, correcting, reporting, and notifying employees of these hazards.

Operational Written Safety Programs

The IIPP is used in conjunction with other written safety programs. These programs may include the following:

- Accident/incident reporting procedures;
- Blood-borne Pathogens Exposure Control Program;
- Chemical Hygiene Plan;
- Code of Safe Practices for Equipment and Operation;
- Compressed gas and air handling systems;
- Confined space entry procedures;
- Electrical safety procedures;
- Emergency Action Plan;
- Emergency response procedures;
- Fall Protection Program;
- Fire Protection and Prevention Plan;
- First Aid/CPR/AED Program;
- Hand tools and equipment guarding safety procedures;
- Hazard Communication Plan (including Proposition 65 requirements);
- Hazardous materials handling procedures;
- Hazardous waste awareness training;
- Hearing Conservation Program;
- Heat stress/cold stress prevention;
- Heavy equipment procedures;
- Hoist/chain/wire rope/webs/rope slings/cranes;
- Hot Work Program (welding, cutting, and brazing);
- Industrial Hygiene Program;
- Industrial truck (forklifts) safety;

- Ladders, scaffolds, and work platforms;
- Lock out/Tag out Program;
- Motor vehicle safety;
- PPE Program;
- Portable electric and pneumatic tools;
- Preventing slips, trips, and falls;
- Repetitive stress injuries/ergonomics/lifting hazards;
- Respiratory Protection Program;
- Safety and Housekeeping Inspection Program;
- Safety Committee and toolbox/tailgate safety meetings;
- Security Program;
- Stop work authority;
- Signs, tags, and barricades; and
- Tools, power- and hand-operated.

These programs and procedures will be reviewed annually to determine whether they are affected by any new regulations and to determine the effectiveness of their implementation. Other written programs or plans may relate to worker safety in that they enable work to be performed in a safe manner. These include standard operating procedures, worker qualifications programs, and site security.

Operational Safety Training Programs

All SJS 1&2 site workers will be instructed regarding their responsibility for the safe conduct of their work. These instructions will be given in part at the time the employee is first hired and as an ongoing training program of hazard recognition and avoidance.

Workers will be instructed in the safety regulations pertinent to their employment tasks. Safe working conditions, work practices, and protective equipment requirements will be communicated following the bulleted items listed below.

- New, promoted, or transferred employees receive safety-training orientation.
- Weekly safety meetings are held with employees.
- Toolbox/tailgate safety meetings are conducted periodically for each crew. General safety topics and specific hazards that may be encountered will be discussed. Comments and suggestions from all employees will be encouraged.
- Regularly scheduled safety meetings will be held for supervisors.

- Hazard communication training, including California Proposition 65 warnings and discharge prohibitions, will be conducted as new hazardous materials are introduced to the workplace.
- Material safety data sheets (MSDSs) will be provided for all appropriate chemicals.
- A bulletin board with required postings and other information will be maintained at the plant site.
- Warning signs will be posted in hazardous areas.
- Safety training will be provided to each new employee, as described below.
- A list of safe work rules for the SJS 1&2 site will be explained to each new employee.
- A copy of the applicable Safe Work Practices will be given to each new employee. The provisions will be incorporated into training for the qualifications programs so that employees may fully understand what the protective provisions mean.
- The Hazard Communication Program and other applicable training and requirements for personal protection for the types of hazards that may be encountered at the SJS 1&2 site will be explained to employees. This training will be documented.
- Unusual hazards that are found on site will be explained in detail to each new employee, including any specific personal protection requirements.
- Safety requirements for the new employee's specific job assignment will be explained by the foreman on initial assignment and on any reassignment.

Operational Personal Protective Equipment Program

Personal protective clothing and equipment will be used during specified work operations. Each employee will be provided the following information pertaining to the protective clothing and equipment:

- Proper use and maintenance;
- When the protective clothing and equipment are to be used;
- Benefits and limitations;
- When and how the protective clothing and equipment are to be replaced; and
- Each employee is checked for proper fit and to see if they are medically capable of wearing the equipment.

All safety equipment will meet National Institute for Occupational Safety and Health (NIOSH) or American National Standards Institute (ANSI) standards and will have all required markings, numbers, or certificates of approval. Table 5.17-2, Basic Protective Equipment Guide, contains a list of the basic protective equipment that will be used during construction and operation and maintenance at the SJS 1&2.

Hazardous Materials Handling and Storage

Various hazardous materials will be stored and used during SJS 1&2 construction and operation. Storage, handling, and use of all hazardous materials will follow applicable LORS to minimize risks to workers.

All hazardous materials will be appropriately labeled and stored in hazardous materials storage facilities. Bulk hazardous materials will be stored in ASTs; other hazardous materials will be stored in their delivery containers. Hazardous materials storage and chemical feed areas will be enclosed by containment or curbing to contain leaks and spills. The containment areas will be sized to hold an appropriate volume (considering the potential for local hazard contingencies), as designated by a California-registered Professional Engineer. At a minimum, this volume equals the full contents of the largest single tank, plus sufficient capacity for precipitation from a 25-year, 24-hour storm event, in the case of outdoor storage tanks.

Safety showers and eyewash stations will be provided in or adjacent to corrosive chemical storage areas and in required areas in accordance with regulatory requirements. The PPE and spill response equipment for the exposure and cleanup will be readily available to plant personnel for use during spill containment and cleanup activities. A hazardous material emergency response team trained in the handling of emergencies and accidental releases of hazardous materials will be available to the SJS 1&2 through contract. Emergency contact numbers will be available for spill response contractors and for notification to local agencies of spill incidents. These and other procedures will be detailed in the SJS 1&2 Emergency Action Plan.

A RMP will be developed for the storage and use of aqueous ammonia on the Project site. The RMP will detail specific safety requirements, procedures, and training to protect workers from an ammonia release.

Operational Emergency Action Plan/Emergency Response Plan

In addition to incorporating various safety and environmental features and design measures to minimize emergencies and their effects on public and worker safety, SJS 1&2 will develop a site-specific Emergency Action Plan/Emergency Response Plan. A typical plan outline is provided in Table 5.17-4, Sample Emergency Action/Emergency Response Plan Outline. The Emergency Action Plan/Emergency Response Plan is designed to address potential emergencies, including hazardous materials releases, fires, bomb threats, pressure vessel ruptures, and other catastrophic events. This plan describes evacuation routes, warning devices, points of contact, assembly areas, responsibilities, and other actions to be taken during an emergency. The plan has a layout map and a fire extinguisher list, and describes arrangements with local emergency agencies for emergency response.

Table 5.17-4
Sample Emergency Action/Emergency
Response Plan Outline

Section Number	Description
1.0	Introduction
1.1	Purpose
1.2	Scope
2.0	Responsibilities
2.1	Incident Command System

**Table 5.17-4
Sample Emergency Action/Emergency
Response Plan Outline
(Continued)**

Section Number	Description
	Emergency Response Coordinator
	Emergency Evacuation Coordinator
	Alternate Safety Coordinator
2.2	Position Description Assignments
	Facility Manager
	Facility Supervisor
	Operators
	Health and Safety Manager
	Security
3.0	Response and Notification Plan (Points of Contact)
3.1	Supervisor/Emergency Coordinator
3.2	Health and Safety Manager
4.0	Response Procedures
4.1	Evacuation Routes and Procedures
4.2	Accidents Involving Serious Injury and/or Death
4.3	Fire
4.4	Hazardous Waste or Chemical Spills
4.5	Earthquake
4.6	Bomb Threat
4.7	Emergency Plant Shutdown
4.8	Site Security
4.9	Emergency Medical Treatment and First Aid
4.10	Decontamination
4.11	Documentation and Recordkeeping
4.12	News Media
4.13	Emergency Notification List
4.14	Emergency Telephone Numbers List
5.0	Reference Procedures
5.1	Evacuation Plan
5.2	Emergency Equipment Locations
5.3	Fire Extinguisher Locations

Table 5.17-4
Sample Emergency Action/Emergency
Response Plan Outline
(Continued)

Section Number	Description
5.4	Security
5.5	Accident Reporting and Investigation
5.6	Lockout/Tagout
5.7	Hazard Communication
5.8	Spill Containment and Reporting
5.9	First Aid and Medical Response
5.10	Respiratory Protection
5.11	Personal Protective Equipment
5.12	Sanitation
5.13	Work Site Inspections

Source: California Department of Industrial Relations (2008).

Fire Protection and Prevention Plan

Fire protection at SJS 1&2 will include measures to safeguard human life, prevent personnel injury, preserve property, and minimize downtime due to fire or explosion (National Safety Council 1992). Fire protection also involves physical arrangements, such as sprinkler systems, water supplies, and fire extinguishers. Fire protection includes fire prevention measures to prevent the inception of fires. Specific topics include adequate exits, fire-safe construction, reduction of ignition sources, and control of fuel sources.

The Fire Protection and Prevention Plan presents fire protection practices, including routine inspections of SJS 1&2 by the designated safety representative. The plan requires prompt action to correct situations deemed to be a fire hazard, and it identifies firefighting equipment and systems at the plant, as well as methods to safely store flammable and combustible materials. The SJS 1&2 facilities have been designed by a California-registered Engineer and fire protection equipment is installed and maintained in accordance with all applicable NFPA standards and recommendations (NFPA 1994). A fire reporting protocol (depending on the size of the fire) and an investigation protocol are detailed in the Fire Protection and Prevention Plan.

The comprehensive onsite fire protection system and procedures will be designed and implemented to protect both personnel and property. The Fire Protection and Prevention Plan will address the following:

- Names and/or job titles responsible for maintaining equipment and accumulation of flammable or combustible material control;
- Procedures in the event of fire;

- Fire alarm and protection equipment;
- System and equipment maintenance;
- Monthly inspections;
- Annual inspections;
- Firefighting demonstrations;
- Housekeeping practices; and
- Training.

Fire Suppression

The fire protection system will be designed to protect personnel, limit property loss, and reduce plant downtime in the event of a fire. The fire protection system is summarized in Section 3.4.10, Fire Protection Systems. The complete fire protection system includes automatic detection and suppression systems. Transformer protection will be provided by separation and firewalls.

The facilities fixed fire protection system will be a wet/dry/pre-action sprinkler system for the warehouse, Administration Building, Equipment Building, and Steam Turbine Building. The fire sprinkler system design will be consistent with Uniform Building Code/International Building Code (UBC/IBC) Type II-N facilities construction and applicable LORS.

An automatic clean agent system per NFPA 2001 will be provided for the project control room and substation control room.

Non-occupied support areas will be provided with a standpipe and hose fire protection design. Hose stations and portable extinguishers will be provided throughout buildings as required by code.

Foam cannons will be located in areas of HTF concentrations to control oil fires. Permanently installed fire alarm detection systems will be provided and designed in accordance with the National Electrical Code (NFPA 70) and NFPA 72. Detection system and fire alarm pull stations will be provided for the Control Room, biomass staging area, and the switchgear room. Pull stations shall be located in buildings as required by code.

The SJS 1&2 onsite fire suppression systems will be backed up by fire suppression support from the Fresno County Fire Prevention Division, Coalinga Fire Department, located at 25600 West Jayne Avenue, Coalinga, California. The Coalinga Fire Department has an estimated response time of 5 minutes and will provide primary fire protection, firefighting, and emergency response services to the SJS 1&2 site. The Coalinga Fire Department Fire Chief will perform a final fire safety inspection on completion of construction and, thereafter, will conduct periodic fire safety inspections and training for SJS 1&2 site employees. Before start-up, the Coalinga Fire Department will be requested to visit the Project site to become familiar with the site and with the Project emergency response procedures.

Employees will be given fire safety training, including instruction in fire prevention, the use of portable fire extinguishers and hose stations, and the reporting of fires to the local fire department. Note:

employees will only suppress fires in their incipient stage. Fire drills will be conducted at least twice each year for each work area.

5.17.3 Mitigation Measures

No environmental consequences related to worker safety are foreseen at this time; therefore, additional measures beyond the Construction and Operational Health and Safety Programs, as discussed previously, are not considered necessary. No significant unavoidable adverse impacts to worker safety are anticipated from the Project. Additional measures may be necessary should the Project change in a manner that impacts worker safety.

5.17.4 LORS Compliance

The following LORS are applicable or potentially applicable to the Project in the context of the public and occupational safety and health protection measures addressed in this section and in Section 5.16, Public Health and Safety. The LORS applicable to worker safety are summarized in Table 5.17-5, Summary of LORS – Worker Safety.

**Table 5.17-5
Summary of LORS – Worker Safety**

LORS	Requirements	Conformance Section	Administering Agency	Agency Contact
Federal Jurisdiction				
Occupational Health and Safety Act of 1970 (OSHA), 29 USC 651 et seq.; 29 CFR 1910 et seq.; and 29 CFR 1926 et seq.	Meet employee health and safety standards for general industry and the construction industry.	5.17.4.1	DIR DOSH	Public Information 415-703-5070 DOSH Consultation Services 800-963-9424
Department of Labor, Safety and Health Regulations for Construction Promulgated Under Section 333 of the Contract Work Hours and Safety Standards Act, 40 USC 327 et seq.	Meet employee health and safety standards for construction activities. Requirements addressed by CCR Title 8, General Construction Safety Orders.	5.17.4.1	DIR DOSH	Public Information 415-703-5070 DOSH Consultation Services 800-963-9424
National Fire Protection Association	Meet standards necessary to establish a reasonable level of safety and property protection from the hazards created by fire and explosion.	5.17.4.1	Fresno County Fire Protection District, Coalinga Fire Department	Dan Hernandez Fire Chief 559-935-0756

**Table 5.17-5
Summary of LORS – Worker Safety
(Continued)**

LORS	Requirements	Conformance Section	Administering Agency	Agency Contact
State Jurisdiction				
CCR, Title 8	Meet requirements for a safe and hazard-free working environment. Categories of requirements include General Industry Safety Orders, General Construction Safety Orders, and Electrical Safety Orders.	5.17.4.2	DIR DOSH	Public Information 415-703-5070 DOSH Consultation Services 800-963-9424
California Clean Air Act, California Health & Safety Code 39650 et seq.	Meet requirements for best available control technology to minimize exposure limits to toxic air pollutants and possible risk assessments for carcinogen pollutants.	5.17.4.2	San Joaquin Valley Air Pollution Control District	Central Region 559-230-6000
California Public Resources §25523(a); 20 CCR §1752, 1752.5, 2300.2309, and Division 2, Chapter 5, Article 1, Appendix B, Part (I), CEC	Protect environmental quality and ensure public health.	5.17.4.2	Fresno County Department of Public Works and Planning	559-262-4078
California Health and Safety Code §25500 to 25541; 19 CCR §§2720-2734	Estimate emissions for listed air toxic pollutants and submit inventory to air district for major sources of criteria air pollutants. Follow-up from air district may require a health risk assessment.	5.17.4.2	San Joaquin Valley Air Pollution Control District	Central Region 559-230-6000
Local Jurisdiction				
Fresno, County of Zoning Ordinance	Provide safety setbacks as required by the Fresno County.	5.17.4.3	Fresno County Department of Public Works and Planning	559-262-4078
FCDCH, Environmental Health Division	Provide implementation of the Hazardous Materials Business Plan and Risk Management Plan.	5.17.4.3	FCDCH, Environmental Health Division, CUPA	559-455-3217

**Table 5.17-5
Summary of LORS – Worker Safety
(Continued)**

LORS	Requirements	Conformance Section	Administering Agency	Agency Contact
------	--------------	---------------------	----------------------	----------------

Source: California Department of Industrial Relations (2008), California Department of Toxic Substances Control, 2008; Cal/EPA, Fresno County Fire Protection District, 2008; Fresno County Public Works and Planning, 2008, Fresno County FCDCH, Environmental Health Division, 2008. San Joaquin Valley APCD (2008).

Notes:

- CCR = California Code of Regulations
- CEC = California Energy Commission
- CFR = Code of Federal Regulations
- CUPA = Certified Unified Program Agency
- DIR = Department of Industrial Relations
- DOSH = Division of Occupational Safety and Health
- DTSC = Department of Toxic Substances Control
- LORS = laws, ordinances, regulations, and standards

5.17.4.1 Federal

Occupational Safety and Health Act of 1970 (OSHA), 29 USC 651 et seq.; 29 CFR 1910 et seq.; and 29 CFR 1926 et seq.

The authority establishes occupational safety and health standards (§1910) (i.e., permissible exposure limits for toxic air contaminants [§1910.100], electrical protective equipment requirements [§1910.137], electrical workers safety standards [§1910.269], the requirement that information concerning the hazards associated with the use of all chemicals is transmitted from employers to employees [§1910.1200]), and the safety and health regulations for construction (§1926). Subpart I of Section 1910 and Subpart E of Section 1926 address PPE.

Under the Operational Status Agreement of 5 October 1989 between the federal OSHA and the California Department of Industrial Relations, Division of Occupational Safety and Health (DOSH or Cal/OSHA), the state resumed full enforcement responsibility for most of the relevant federal standards and regulations (55 Federal Register 18610 [12 July 1990]; 29 CFR 1952.172). Federal OSHA has retained concurrent enforcement jurisdiction with respect to certain federal standards, including standards relating to hazardous materials at 29 CFR 1910.120 (Id.).

The administering agencies for the above authority are OSHA and DOSH (or Cal/OSHA).

Department of Labor, Safety and Health Regulations for Construction Promulgated Under Section 333 of the Contract Work Hours and Safety Standards Act, 40 USC 327 et seq.

The code establishes safety and health regulations for construction. The requirements for this regulation are all addressed in Title 8 California Code of Regulations, Chapter 4, Subchapter 4, General Construction Safety Orders.

The administering agencies for the above authority are OSHA and DOSH (or Cal/OSHA).

Uniform Fire Code, Article 80

The article includes provisions for storage and handling of hazardous materials. Considerable overlap exists between this code and Chapter 6.95 of the Health and Safety Code. However, the fire code does contain independent provisions regarding fire protection and neutralization systems for emergency venting (§80.303, D, Compressed Gases). Other articles that may be applicable include Article 4, Permits, and Article 79, Flammable and Combustible Liquids.

The administering agency for the above authority is the Fresno County Fire Protection District, Coalinga Fire Department.

National Fire Protection Association

The NFPA prescribes minimum requirements necessary to establish a reasonable level of fire safety and property protection from the hazards created by fire and explosion. The standards apply to the manufacture, testing, and maintenance of equipment.

The administering agency for the above authority is the Fresno County Fire Prevention Division, Coalinga Fire Department.

Compliance

The Project will comply with all federal LORS by developing appropriate plans and policies as well as by measures described in Section 5.17.2, Environmental Consequences, and Section 5.17.3, Mitigation Measures.

5.17.4.2 State

8 California Code of Regulations

These authorities prescribe general occupational safety and health regulations and standards in addition to the construction and industrial safety regulations, standards, and orders. The Project will comply with applicable sections of 8 CCR, Chapter 4, Subchapter 7, and 24 CCR. Topics of concern are provided in 8 CCR 1509 (Construction) and 3203 (General Industry). These regulations make numerous changes designed to redirect the emphasis of Cal/OSHA toward ensuring that employers have an effective worksite IIPP to focus Cal/OSHA discretionary inspections in the highest hazard industries, as determined by worker compensation and other occupational injury data, and to limit the number of follow-up inspections that Cal/OSHA must perform. 8 CCR 5189 requires facility owners to develop and implement effective safety management plans to ensure that large quantities of hazardous materials are handled safely. Although such requirements primarily provide for the protection of workers, they also indirectly improve public safety and are coordinated with the RMP process.

California Health and Safety Code, Section 25500

This code requires companies that handle hazardous materials in sufficient quantities to develop a Hazardous Materials Business Plan (HMBP). The HMBP includes the basic information on the location, type, quantity, and health risks of hazardous materials handled, stored, used, or disposed of that could be accidentally released into the environment. The HMBP also includes a plan for training new personnel and for annual training of all personnel in safety procedures to follow in the event of a release of hazardous materials. In addition, the HMBP includes an emergency response plan and identifies the business representative able to assist emergency personnel in the event of a release.

The California Health and Safety Code, Section 25531, directs facility owners storing or handling acutely hazardous materials in reportable quantities to develop an RMP and submit it to appropriate local authorities, USEPA, and the designated local administering agency for review and approval. The RMP includes an evaluation of the potential impacts associated with an accidental release, the likelihood of an accidental release occurring, the magnitude of potential human exposure, any pre-existing evaluations or studies of the material, the likelihood of the substance being handled in the manner indicated, and the material's accident history. This newly developed program supersedes the California RMP and is known as the California Accidental Release Program.

Compliance

The Project will comply with all state LORS by developing appropriate plans and policies as well as by the measures described in Section 5.17.2, Environmental Consequences, and Section 5.17.3, Mitigation Measures.

*5.17.4.3 Local**FCDCH, Environmental Health Division, CUPA*

This office provides for the implementation of the HMBP and the RMP.

Compliance

The Project will comply with all local LORS and will develop an HMBP for construction and operation of the Site, and will develop an RMP for operation of the new facility. The Project will also ensure continued compliance by updating the appropriate plans and policies, as well as by the measures described in Section 5.17.2, Environmental Consequences, and Section 5.17.3, Mitigation Measures.

5.17.4.4 Agencies and Agency Contacts

Agencies with jurisdiction to issue applicable permits and/or enforce LORS related to worker safety are shown in Table 5.17-6, Agency Contact List for LORS.

**Table 5.17-6
Agency Contact List for LORS**

Agency	Contact	Address	Telephone
FCDCH, Environmental Health Division, CUPA	Gustavo Gomez or Hazardous Materials Specialist On Call	1221 Fulton Mall Fresno, California 93775	559-445-3271
Fresno County Fire Prevention Division, Coalinga Fire Department	Dan Hernandez Fire Chief	25600 W. Jayne Ave. Coalinga, CA 93210	559-935-0756
Cal/OSHA-District Office	District Manager	2550 Mariposa Street, Ste. 4000, Fresno 93721	559- 445-5302
Cal/OSHA Pressure Vessel Unit	Pressure Vessel Engineer	Northern Office Headquarters Office Suite 1302 1515 Clay Street Oakland, CA 94612	(510) 622-3066

Source: Fresno County Fire Protection District, 2008; 2008, Fresno County FCDCH, Environmental Health Division, 2008,

Notes:

Cal/OSHA = California Division of Occupational Safety and Health

CUPA = Certified Unified Program Agency

DTSC = Department of Toxic Substances Control

5.17.4.5 *Applicable Permits*

The permits required for this Project are listed in Table 5.17-7, Applicable Permits. An HMBP will be developed before the Project construction and will be updated before Project operation. Required Cal/OSHA permits will be obtained from the Cal/OSHA District Office.

**Table 5.17-7
Applicable Permits**

Responsible Agency	Permit/Approval	Schedule
Federal	None required	N/A
State	None required	N/A
FCDCH, Environmental Health Division, CUPA	Hazardous Materials Business Plan	30 days prior to storage of hazardous materials on site
FCDCH, Environmental Health Division, CUPA	Risk Management Plan	Prior to delivery of hydrogen to the facility.
Cal/OSHA	Trenching or Excavation Permit	Prior to commencing construction
Cal/OSHA	Pressure Vessel Permit	Prior to commencing construction

**Table 5.17-7
Applicable Permits
(Continued)**

Responsible Agency	Permit/Approval	Schedule
--------------------	-----------------	----------

Source Fresno County FCDCH, Environmental Health Division, 2008.

Notes:

Cal/OSHA = California Division of Occupational Safety and Health

CUPA = Certified Unified Program Agency

DTSC = Department of Toxic Substances Control

N/A = not applicable

5.17.5 References

American Conference of Governmental Industrial Hygienists. 1996. Threshold Limit Values (TLV) for Chemical Substances and Physical Agents and Biological Exposure Indices.

California Code of Regulations. No date. Title 8. "General Industry Safety Orders, Construction Safety Orders, and High Voltage Electrical Safety Orders."

California Department of Industrial Relations. 2008. Information downloaded from http://www.dir.ca.gov/occupational_safety.html.

California Department of Industrial Relations. 2008. Information downloaded from <http://www.dir.ca.gov/dosh/DistrictOffices.htm>

California Department of Toxic Substances Control. 2008. Information downloaded from: <http://www.dtsc.ca.gov/>. March 2008.

California Environmental Protection Agency (Cal/EPA), Central Valley Regional Water Quality Control Board (RWQCB). 2008. Information downloaded from: <http://www.waterboards.ca.gov/centralvalley>. March 2008.

Code of Federal Regulations. No date. Title 29 Part 1910. "Construction Safety Orders".

———. No date. Title 29 Part 1926. "General Industry Safety Orders".

Fresno County Department of Community Health (FCDCH), Environmental Health Division. 2008. Information downloaded from: <http://www.fresnohumanservices.org/CommunityHealth/EnvironmentalHealth/CUPA>

Fresno County Department of Public Works and Planning. 2008. Information downloaded from: <http://www.co.fresno.ca.us>. June.

Fresno County Fire Prevention Division. 2008. Information downloaded from: <http://www.fresnocountyfire.net/>. June.

National Fire Protection Association. 1994. A Compilation of NFPA Codes, Standards, Recommended Practices and Guides. Quincy, Massachusetts.

National Safety Council. 1992. Accident Prevention Manual. Volume 2, Chapter 6, Fire Protection, pp. 1324-1386.

San Joaquin Air Pollution Control District. 2008. Information downloaded from:
<http://www.valleyair.org/>. June.

This page intentionally left blank

Adequacy Issue:

Adequate

Inadequate

**DATA ADEQUACY
WORKSHEET**

Revision No.

0

Date

Technical Area:

Worker Safety

Project: San Joaquin Solar 1&2

Technical Staff:

Project Manager:

Docket:

Technical Senior:

SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
Appendix B (g) (1)	...provide a discussion of the existing site conditions, the expected direct, indirect and cumulative impacts due to the construction, operation and maintenance of the Project, the measures proposed to mitigate adverse environmental impacts of the Project, the effectiveness of the proposed measures, and any monitoring plans proposed to verify the effectiveness of the mitigation.	Section 5.17.1, 5.17.2.1, 5.17.2.2 and 5.17.3.		
Appendix B (g) (11) (A)	A description of the safety training programs which will be required for construction and operation personnel.	Section 5.17.2.1 and 5.17.2.2		
Appendix B (g) (11) (B)	A complete description of the fuel handling system and the fire suppression system.	Section 5.17.2.1 and 5.17.2.2		
Appendix B (g) (11) (C)	Provide draft outlines of the Construction Health and Safety Program and the Operation Health and Safety Program, as follows:	Section 5.17.2.1 and 5.17.2.2		
	Construction Health and Safety Program: * Injury and Illness Prevention Plan (8 Cal. Code Regs., § 1509);	Section 5.17.2.1 and 5.17.2.2		
	* Fire Protection and Prevention Plan (8 Cal. Code Regs., § 1920);	Section 5.17.2.1 and 5.17.2.2		
	* Personal Protective Equipment Program (8 Cal. Code Regs., §§ 1514-1522)	Section 5.17.2.1 and 5.17.2.2		
	Operation Health and Safety Program: * Injury and Illness Prevention Program (8 Cal. Code Regs., § 3203);	Section 5.17.2.1 and 5.17.2.2		
	* Fire Prevention Plan (8 Cal. Code Regs., § 3221);	Section 5.17.2.1 and 5.17.2.2		
	* Emergency Action Plan (8 Cal. Code Regs., § 3220);	Section 5.17.2.1 and 5.17.2.2		
	Personal Protective Equipment Program (8 Cal. Code Regs., §§ 3401-3411).	Section 5.17.2.1 and 5.17.2.2		

Adequacy Issue:

Adequate

Inadequate

**DATA ADEQUACY
WORKSHEET**

Revision No.

0

Date

Technical Area:

Worker Safety

Project: San Joaquin Solar 1&2

Technical Staff:

Project Manager:

Docket:

Technical Senior:

SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
Appendix B (i) (1) (A)	Tables which identify laws, regulations, ordinances, standards, adopted local, regional, state, and federal land use plans, leases, and permits applicable to the proposed Project, and a discussion of the applicability of, and conformance with each. The table or matrix shall explicitly reference pages in the application wherein conformance, with each law or standard during both construction and operation of the facility is discussed; and	Section 5.17.4 Table 5.17-5		
Appendix B (i) (1) (B)	Tables which identify each agency with jurisdiction to issue applicable permits, leases, and approvals or to enforce identified laws, regulations, standards, and adopted local, regional, state and federal land use plans, and agencies which would have permit approval or enforcement authority, but for the exclusive authority of the commission to certify sites and related facilities.	Section 5.17.4 Table 5.17-5		
Appendix B (i) (2)	The name, title, phone number, address (required), and email address (if known), of an official who was contacted within each agency, and also provide the name of the official who will serve as a contact person for Commission staff.	Section 5.17.4.4 Table 5.17-5 and 5.17-6		
Appendix B (i) (3)	A schedule indicating when permits outside the authority of the commission will be obtained and the steps the applicant has taken or plans to take to obtain such permits.	Section 5.17.4.5 Table 5.17-7		