Appendix E

Representative Health and Safety Codes

APPENDIX E
REPRESENTATIVE HEALTH AND SAFETY CODES

E.1 GENERAL CODES AND STANDARDS

The PMEC will be designed in accordance with (1) federal, state, and local regulations, (2) applicable industrial design codes and standards, and (3) applicable design standards which apply to the systems used. Table E-1 lists representative codes/standards and organizations which include standards to be considered in the design of the proposed facility. The most current codes approved by the local authority shall be used as the design basis of this project.

TABLE E-1
GENERAL CODES/STANDARDS

Subject	Code/Standard
Safety and Health Standards for Construction	-WISHA (WAC 196-155) -OSHA (29 CFR 1926)
Gasifiers	American Society of Mechanical Engineers (ASME)
Piping	-ANSI/ASME B31.1 -National Plumbing Code ASA-A80.8
Boilers and Pressure Vessels	-ASME Boiler and Pressure Vessel Code -American Boiler Manufactures Association (ABMA), "Boiler Water Limits and Steam Parity Recommendations for Watertube Boilers"
Heat Exchangers	-Standards of the Heat Exchange Institute (HEI) -Tubular Exchanger Manufacturers Association (TEMA)
Water Quality	-ASME Handbook on Water Technology for Thermal Power Systems
Protection Against Steam Turbine Water Damage	-ASME Standard No. TDP-1
Structural/Civil Design	-American Institute of Steel Construction (AISC) "Specification for the Structural Steel Building, Allowable Stress and Plastic Design" -American Concrete Institute (ACI) "Building Code Requirements for Reinforced Concrete," ACI 318-89) -American Society of Civil Engineers (ASCE) "Minimum Design Loads for Buildings and Other Structures," ASCE 7-88 -American National Standards Institute (ANSI) -American Society for Testing and Materials (ASTM) -Occupational Safety and Health Administration (OSHA) -Americans with Disabilities Act (ADA)
Electrical Design, Furnishing	-Institute of Electrical and Electronic and Installation Engineers (IEEE) -National Electric Code (NEC) -National Electrical Manufacturers Association (NEMA) -Underwriters Laboratory (UL)
Fire Protection	-National Fire Protection Assoc. (NFPA) NPFA 850 – "Fire Protection for Fossil Fueled Steam and Combustion Turbine Electric Generating Plants" -National Fire Protection Association (NFPA) NFPA 101 –Life Safety Code
HVAC	-American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE)
Instrumentation	-Instrument Society of America (ISA) -Scientific Apparatus Manufacturers Assoc. (SAMA)

E.2 PERSONNEL AND EQUIPMENT PROTECTION

- All systems shall be equipped with manual or automatic protection devices which

prevent damage to the equipment caused by transient operating conditions or failures of related components. Where feasible, the control system shall provide an alarm prior to initiation of automatic remedial action.

- Freeze protection of equipment shall be applied per PMEC requirements as listed in Section 4.1.6.
- All systems shall be designed to provide a safe working environment for all plant operating personnel. Such provisions shall consist of, but not be limited to:
  - Safe egress from all confined areas.
  - Adequate ventilation of all enclosed work areas.
  - Fire protection.
  - Pressure relief of all pressurized equipment to a safe location.
  - Isolation of al hazardous substances to a confined and restricted location.
- All occupied building structures and facilities shall conform to standards of the Americans with Disabilities Act (ADA).
- Seismic Requirements:
  - All equipment and structures shall be designed to resist earthquake forces in accordance with ASCE 7-88 requirements. Design forces shall be applied in any horizontal direction applied to the center of gravity and to transmit such forces to the equipment or structure foundation.
  - Earthquake forces and wind forces shall not be assumed simultaneously. The greater of the two conditions shall govern the design.

E.3 CODES FOR CONTROL AND GENERATION BUILDINGS

This section provides a summary of the primary applicable architectural and space conditioning codes, standards, and criteria used in the layout and design of the control/administration area and the generation building for the Reference Plant.

E.3.1 PRIMARY APPLICABLE CODES AND STANDARDS

- American Society of Civil Engineers (ASCE) standards, ASCE 7-88
- American Institute of Steel Construction (AISC), “Specification for the Structural Steel Building, Allowable Stress and Plastic Design”
- American Concrete Institute (ACI) – ACI 318-89
- Building Officials and Code Administrations (BOCA) National Building Code
- National Fire Protection Association (NFPA), NFPA 101 –Life Safety Code
- National Fire Protection Association (NFPA), NFPA 850, “Fire Protection for Fossil Fuel Steam and Combustion Turbine Electric Generating Plants”
- Occupational Safety and Health Administration (OSHA) – Code of Federal Regulations (No. 29; Labor, Parts 1900 to 1910)
- Americans with Disabilities Act (ADA), “Accessibility Guidelines for Building and

Facilities”

- National Electric Code (NEC)
- National Plumbing Code
- ANSI/IES RP-7, Industrial Lighting
- ANSI/IES RP-8, Roadway Lighting

E.4 GENERAL CONSIDERATIONS

The following criteria apply to the materials being considered for use on the project:

- Materials will be functional and economical.
- Materials will be appropriate for climate conditions.
- Materials will be capable of being erected or installed using common construction techniques.
- Materials will be selected according to their thermal transmission and acoustical properties.
- Materials will be selected with respect to their ability to be erected or installed within project schedules.
- Materials and construction techniques will be in accordance with applicable codes and standards.

E.4.1 LIGHTING

The lighting systems will be designed in accordance with the Illuminating Engineering Society (IES) to provide illumination levels recommend by the following standards and organizations:

- ANSI/IES RP-7, 1983, Industrial Lighting
- ANSI/IES RP-8, 1983, Roadway Lighting
- Occupational Safety and Health Act (OSHA).

E.4.2 SPACE CONDITIONING

The design of the heating, ventilating and air conditioning (HVAC) systems provides several functions for the control/administration area and the generation building. These functions include the following:

- Operation staff comfort and safety
- Environmental control for reliable equipment operation
- Sensitivity to environmental concerns such as noise and fume emissions.

Equipment will be selected with low noise levels to minimize the need for hearing protection and to limit the noise outside the plant.

The air conditioning equipment will be selected to limit the potential for release of ozone depleting refrigerants. Areas with potentially hazardous fumes will be adequately vented; fumes will be directed away from air intakes.

The design requirements for life safety as indicated by the National Fire Protection Association will be included in the HVAC system. This includes the use of approved equipment and design features to limit the movement of smoke.