3.1 FACILITY DESIGN, EFFICIENCY AND RELIABILITY

This section outlines the portions of the Modified Project that may affect the analysis, rationale, conclusions, and Conditions of Certification contained in the Commission Final Decision for the Approved Project.

3.1.1 Overview of Approved Project

The Approved Project was originally licensed as a nominally rated 1000 MW solar thermal facility to be developed in four independent units, each with a capability of generating up to 250 MW with traditional steam turbine technology. The Approved Project would interconnect with a double circuit 230 kV transmission generation tie-line to the Colorado River Substation (CRS) which is already under construction.

The Approved Project would have utilized solar parabolic trough technology to generate electricity. With this technology, arrays of parabolic mirrors collect heat energy from the sun and refocus the radiation on a receiver tube located at the focal point of the parabola. A heat transfer fluid (HTF) is brought to high temperature (750°F) as it circulates through the receiver tubes. The HTF is then piped through a series of heat exchangers where it releases its stored heat to generate high pressure steam. The steam is then fed to a traditional steam turbine generator where electricity is produced. Individual components of the Approved Project included:

- Solar Field & Power Block #1 (northeast);
- Solar Field & Power Block #2 (northwest);
- Solar Field & Power Block #3 (southwest);
- Solar Field & Power Block #4 (southeast);
- Access road from and including upgraded portion of Black Rock Road to onsite office;
- Warehouse/maintenance building, assembly hall and laydown area;
- Telecommunications Lines;
- Natural Gas Pipeline;
- Concrete Batch plant;
- Fuel depot;
- Onsite transmission facilities, including central internal switchyard;
- 230 kV double circuit transmission line interconnecting to the Colorado River Substation (Gen-Tie Line); and
- Groundwater wells used for water supply.

3.1.2 Relevant Modifications to Project Description

The primary modifications relevant to Facility Design, Efficiency and Reliability are the following:

- The previously planned four power blocks (which each included a steam turbine, evaporation pond, auxiliary boiler, air-cooled condenser, and equipment) and structures have been eliminated.
- The Land Treatment Units for HTF have been eliminated.
- The HelioTrough energy collection systems have been eliminated and replaced with PV panels configured for either horizontal tracking or fixed tilt operations.
- The substation will be relocated near the center of the disturbance area.
- The large assembly hall will be eliminated.
- The concrete batch plant will be eliminated.
- The natural gas line has been eliminated.
- The water treatment system, associated waste and evaporation ponds have been reduced from eight ponds to two.
- The large drainage structures surrounding the site will be reduced in size or eliminated.

3.1.3 Power Plant Efficiency

An analysis of the Modified Project's efficient use of land to generate electricity will be submitted under separate cover.

3.1.4 Power Plant Reliability

For practical purposes, a reliable power plant is one that is available when called upon to operate. The evidence shows that delivering acceptable reliability entails: 1) adequate levels of equipment availability; 2) plant maintainability with on-going maintenance; 3) fuel and water availability; and 4) resistance to natural hazards.

An analysis of these factors demonstrating that the Modified Project can be constructed and operated in a safe and reliable manner will be submitted under separate cover.

3.1.5 Compliance With LORS

The Commission Final Decision concluded that, with implementation of the Conditions, the Approved Project would comply with all applicable LORS. No LORS have been identified that are uniquely applicable to PV. In fact, some of the LORS that would have been applicable to the Approved Project, such as those associated with the design of

the facility components using natural gas or HTF, would no longer be applicable to the Modified Project. As with the Approved Project, the Modified Project would comply with all applicable LORS.

3.1.6 Conditions of Certification

Condition of Certification **GEN-2** contains a table of major structures associated with the Approved Project. The table should be modified as follows:

Equipment/System	Quantity (Plant)
PV Modules ~~Steam Turbine Generator Foundation and Connections~~	~~4~~
PV Racking System ~~Start-up Boilers Foundations and Connections~~	~~4~~
Generator Step-up Transformer Foundation and Connections	~~4~~
Inverters ~~Overflow Vessel Foundation and Connections~~	~~8~~
~~Expansion Vessel Foundation and Connections~~	~~8~~
Weather Station Building Structure, Foundation and Connections	~~4~~
~~HTF Pumps Lube Oil Unit Foundation and Connections~~	~~8~~
~~Balance of Plant Electrical Building Structure, Foundation and Connections~~	4
~~Ullage Coolers and Vessel~~	4
~~Reheaters Foundation and Connections~~	8
~~MCC Cooling Tower Foundation and Connections~~	4
~~Gland Condenser Foundation and Connections~~	4
~~Lube Oil Console~~	4
~~Deaerator Foundation and Connections~~	4
~~LP/HP Pre-Heaters~~	4
~~Main Auxiliary Transformers Foundations and Connections~~	4
~~Air-cooled Condenser Structure, Foundation and Connections~~	4
~~Oil/Water Separator Foundation and Connections~~	4
~~Compressed Air System Foundation and Connections~~	4
~~Generator Circuit Breaker Foundation and Connections~~	4
Warehouse Building Structure, Foundation and Connections	4 ***1***
~~Chemical Injection Skid Foundation and Connections~~	~~4~~
~~Cooling Tower Structure Foundation and Connections~~	~~4~~
Water Tank Structure, Foundation and Connections	4
Take Off Tower Structure, Foundation and Connections	4
~~Blowdown Tanks Structure, Foundation and Connections~~	~~8~~

Condition of Certification **MECH-1** lists several LORS that may no longer be applicable to the construction of a project that uses PV instead of solar thermal technology. An update of the LORS that should be eliminated will be submitted under separate cover.