

ISO Grid Planning Criteria

I. Background

The purpose of this document is to specify the Planning Criteria that will be used in the planning of ISO Grid transmission facilities.

The ISO Tariff specifies:

“After the ISO Operations Date, the ISO, in consultation with Participating TOs and any affected UDCs, will work to develop a consistent set of reliability criteria for the ISO Controlled Grid which the TOs will use in their transmission planning and expansion studies or decisions.”¹

The ISO Tariff specifies in several places that the facilities that are to be added to the ISO Grid are to meet the Applicable Reliability Criteria, which is defined as follows:

“The reliability standards established by NERC, WSCC, and Local Reliability Criteria as amended from time to time, including any requirements of the NRC.”²

These ISO Grid Planning Criteria will fill the role of the “local reliability criteria” in the above definition. To facilitate the development of these criteria, the ISO formed the ISO Grid Planning Criteria Subcommittee (PCS), which includes representation from all interested market participants. In recognition of the need to closely coordinate the development of the ISO Grid with neighboring electric systems both inside and outside of California, the approach taken by the PCS is to utilize regional (WSCC) or continental (NERC) standards to the maximum extent possible. These ISO Grid Planning Criteria build off of, rather than duplicate, criteria that were developed by WSCC and NERC. The PCS has determined that the ISO Grid Planning Criteria should:

- Address specifics not covered in the NERC Standards and WSCC Criteria.
- Provide interpretations of the NERC Standards and WSCC Criteria specific to the ISO Grid.
- Identify whether specific criteria should be adopted that are more stringent than the NERC Standards or WSCC Criteria.

The following paragraphs describe the general philosophy behind the ISO Planning Criteria and how the NERC Standards and WSCC Criteria will affect the planning of the ISO grid.

¹ ISO Tariff, April 7, 1998, Section 3.2.1.2, Page 129.

² ISO Tariff, April 7, 1998, Appendix A, Page 297.

II. ISO Grid Planning Criteria Principles

The primary principle guiding the development of the ISO Grid Planning Criteria is to develop a consistent reliability criteria for the ISO grid that will maintain or improve the level of transmission system reliability that existed with the pre-ISO planning criteria.

III. WSCC Transmission System Planning Criteria

The WSCC Criteria for Transmission System Planning was originally developed to insure that disturbances in one system do not spread to other systems and produce widespread transmission system outages. Recently the WSCC Criteria have been amended to provide specific requirements for internal system design. The WSCC criteria are currently primarily deterministic criteria but WSCC is working towards transitioning to probabilistic criteria. The ISO has also expressed strong interest in developing probabilistic criteria. The ISO and its members should be proactive in guiding NERC and WSCC in this direction. Until probabilistic criteria are adopted by WSCC, the current criteria will apply. In areas where the PCS believes that it would be uneconomic to comply with specific standards, the ISO can apply for deference with NERC and WSCC.

IV. NERC Planning Standards

In September of 1997, the NERC Board of Trustees approved the NERC Planning Standards. The approval of these standards marked a significant change for NERC and significantly affects the development of the ISO Grid Planning Criteria. Prior to the Planning Standards, NERC only provided "Planning Principles and Guides" which were very general. In contrast, the NERC Planning Standards provide specific planning requirements. In addition the NERC Planning Standards apply uniformly across bulk electric systems and do not distinguish between internal and external systems. The NERC Planning Standards appear to provide the majority of what is needed for an ISO Grid Planning Criteria. However, there is still a major question concerning the cost impact of implementing a stringent interpretation of the NERC Planning Standards. In addition, in past PCS meetings, a variety of entities expressed concern over a lack of clarity on some points in the NERC Planning Standards. The PCS decided that clarifications to the NERC Standards should be developed and that it would be preferable for the PCS to develop the interpretations rather than request that NERC provide clarifications. The adoption of specific interpretations may directly impact the costs associated with compliance with the NERC Planning Standards. If NERC or WSCC provides clarifications that are different than the ones adopted by the PCS, then those clarifications will apply unless the ISO has been granted deference.

V. Interpretations of NERC Planning Standard Terms

Listed below are several of the terms that are used in the NERC Planning Standards which members of the PCS have determined require clarification. Also provided below are ISO interpretations of these terms:

Bulk Electric System: The ISO Bulk Electric System refers to all of the facilities placed under ISO control.

Entity Responsible for the Reliability of the Interconnected System Performance: In the operation of the grid, the ISO has primary responsibility for reliability. In the planning of the grid, reliability is a joint responsibility between the PTOs and the ISO subject to appropriate coordination and review with the relevant state, local, and federal regulatory authorities and WSCC. The PTOs develop annual transmission plans, which the ISO reviews. Both the ISO and PTOs have the ability to identify transmission upgrades needed for reliability.

Entity Required to Develop load models: The TOs, in coordination with the UDCs and others, develop load models.

Projected Customer Demands: The load level modeled in the studies can significantly impact the facility additions that the studies identify as necessary. The PCS decided that for studies that address regional transmission facilities such as the design of major interties, a 1 in 5-year extreme weather load level should be assumed. For studies that are addressing local load serving concerns, the studies should assume a 1 in 10-year extreme weather load level. The more stringent requirement for local areas is necessary because fewer options exist during actual operation to mitigate performance concerns. In addition, due to diversity in load, there is more certainty in a regional load forecast than in the local area load forecast. Having a higher standard for local areas will help minimize the potential for interruption of end-use customers.

Planned or Controlled Interruption: Load interruptions can be either automatic or through operator action as long as the specific actions that need to be taken, including the magnitude of load interrupted, are identified in the ISO Grid Coordinated Planning Process and corresponding operating procedures are in place when required. The PCS is developing guidelines for the use of load dropping to meet planning criteria.

Time Allowed for Manual Readjustment: This is the amount of time required for the operator to take all actions necessary to prepare the system for the next contingency. This time should be less than 30 minutes.

Appropriate Level of Reactive Reserves: As determined by the WSCC *“Voltage Stability Criteria, Undervoltage Load Shedding Strategy, and Reactive Power Reserve*

Monitoring Methodology” except where a specific area of the system warrants more stringent criteria.

VI. ISO Grid Planning Criteria

The ISO Grid Planning Criteria consists of the following:

- 1) The criteria specified in the WSCC Criteria for Transmission System Planning unless WSCC formally grants an exemption or deference to the ISO.
- 2) The standards specified in the NERC Planning Standards, and the interpretations discussed in Section V of this document, unless NERC formally grants an exemption or deference to WSCC or the ISO.
- 3) The criteria pertaining to the Diablo Canyon and San Onofre Nuclear Power Plants, as specified in Appendix E of the Transmission Control Agreement.
- 4) A single transmission circuit outage with one generator already out of service and the system adjusted shall meet the performance requirements of the NERC Planning Standards for Category B contingencies.

In addition to these criteria, the PCS will be developing planning guidelines to provide guidance on a variety of issues such as the use of load dropping to meet applicable WSCC and/or NERC criteria. These Planning Guidelines may evolve to be specific enough to be incorporated into this document as planning criteria.