

## PLANNING METHODOLOGY AND PROTOCOLS

The following methodologies and protocols apply for internal and regional studies.

### A. Definitions

**Planning Assessment:** Documented evaluation of future needs by the use of performance studies that cover a range of assumptions regarding system conditions, time frames, future plans including capital reinforcements and operation procedures and other factors.

**Study:** Analysis of performance or response using system simulation, representative model calculations, or other analytic techniques.

### B. Transmission System Reliability Studies

Transmission System Reliability Studies will be conducted to analyze system performance, and may include any or all of the following:

- Power Flow – The analysis focusing on steady state continuous thermal loadings and voltage magnitudes in the system for precontingency and post-contingency.
- Transient Stability – Analysis of system responses during the transient period after disturbances (contingencies) and small signal stability.
- Voltage Stability – Power Flow and Stability analysis of reactive power margins for steady state.
- Short-Circuit – Analysis of fault current magnitudes.
- Switching Studies – Analysis of voltages during system energization and switching.
- Protection Studies – Analysis to determine that a protection system can detect faults and cause such faults to be cleared.
- Harmonic Resonance – Analysis of natural resonant frequencies.

The Planning Assessment will identify the studies required to address the specific requirements of the Assessment. The Planning Assessment will identify software used for the studies.

### C. Planning Reliability Criteria

Transmission system performance will comply with the following applicable reliability criteria:

- NERC Transmission Planning Standards TPL-001-0 through TPL-004-0.
- WECC/NERC Planning Standards

- BCTC Power System Planning Standards
- BCTC Methodologies and Procedures required by NERC and WECC Reliability Standards
- Other regional and Northwest Power Pool requirements and obligations.

The Planning Assessment will identify the criteria applicable to the specific requirements of the Assessment.

#### **D. Planning Assumptions**

Assumptions shall include updated load forecasts and any service requests (and associated upgrades) pursuant to the Tariff, where the requestor has executed a service agreement with BCTC. Additional planning assumptions will be based on information provided by customers and other stakeholders with responsibility for the information. Planning assumptions will be available for stakeholder comment; however, stakeholder information may be treated as confidential if designated by the applicable stakeholder. BCTC will not engage in review of information provided by third parties in cases for which the responsible third party has its own review process. However, when third parties do not have such a process, BCTC will provide for facilitation of this review.

Assumptions will clarify any aspects of the use of third party information that are not clear from the documentation provided by the third party. For example, the Assumptions will clarify how generation capacity, such as maximum capacity and dependable capacity, and how demand response are addressed in the study.

#### **E. Base Case Description**

Base cases for the BCTC system will include, as appropriate:

- The existing system,
- BCTC planned (proposed) transmission system reinforcements,
- Planned (proposed) publicly available utility generation additions/replacements,
- Regulated utility load forecasts including committed identified customer loads at transmission voltage levels (with signed service agreements) under NITS Agreements (retail native load), net of forecast DSM,
- Other specific potential customer loads that customers agree to make public,
- Generic customer load representation based on confidential customer information, and
- Contracted transmission service.

WECC base cases will be used to represent other interconnected systems unless the Planning Assessment requires otherwise. A reduced representation (equivalent system) may be used.

Confidential customer and stakeholder information will not be provided in the base cases.

#### **F. Base Case and Associated Files Availability**

Power flow and stability data base cases for the BCTC system representation will be made available, upon request to the planner responsible for the Planning Assessment.

Data for other interconnected systems must be obtained from those systems or from WECC.

Associated files, such as contingency lists, if not included in the report, will be provided directly to all study participants and/or posted on the BCTC web site upon request.

BCTC reserves the right to post base cases and associated files only in formats available from software programs used for the study or in formats used by the planner.

#### **G. Economic Planning and Congestion Studies**

Planning Assessments will identify alternative future transmission reinforcement plans meeting reliability criteria and compare relative economic and other benefits associated with these plans. Economic benefits may include market efficiency improvements such as transmission system losses reduction and congestion reduction. Other benefits may include reduction in Expected Energy Not Served (EENS). These Planning Assessments will provide information so that others, for example Resource Planners and Load Serving Entities, can undertake informed assessments of the alternatives and costs available to them.

Congestion Studies will analyze transmission reinforcement alternatives or enhancements of planned reinforcements that BCTC may consider to reduce existing or forecast congestion resulting from drivers such as:

- The aggregate of firm requests from customers;
- Potential for redispatch of generation at output levels higher than nominated;
- Need to provide flexibility for allocating reserves; and
- Forecasts of additional non-firm use.

Congestion Studies will be informed by the Planning Assessments and Transmission System Reliability Studies with respect to reliability limits and will consider reinforcement cost, forecast revenue to BCTC, and estimated customer benefits.

BCTC will also participate in western interconnection congestion studies.