North Carolina Transmission Planning Collaborative Process

Overview

The purpose of the North Carolina Transmission Planning Collaborative (NCTPC) Process is more fully described in the Participation Agreement. In general, however, the NCTPC Process was established to:

1) provide the Participants (Duke Power, Progress Energy Carolinas, Inc, North Carolina Electric Membership Corporation and ElectriCities of North Carolina) and other stakeholders an opportunity to participate in the electric transmission planning process for the state of North Carolina,
2) preserve the integrity of the current reliability and least-cost planning processes,
3) expand the transmission planning process to include analysis of increasing transmission access to supply resources inside and outside the control areas of Duke Power (Duke) and Progress Energy (Progress), and
4) develop a single coordinated transmission plan for North Carolina that includes reliability and enhanced transmission access considerations while appropriately balancing costs, benefits and risks associated with the use of transmission and generation resources.

The overall NCTPC Process includes the Reliability Transmission Planning and Enhanced Transmission Access Planning (ETAP) processes, whose studies will be concurrent and iterative in nature. The general scope of these studies is outlined in the attached Appendix. It is expected that there will be considerable feedback and iteration between the two processes as each effort's solution alternatives affect the other's solutions.

The Oversight Steering Committee (OSC) will manage the NCTPC Process. The Planning Working Group (PWG) will support the development of the NCTPC Process and coordinate the study development. The Transmission Advisory Group (TAG) provides advice and makes recommendations regarding the development of the NCTPC Process and the study results.

Figure 1 below illustrates the major steps associated with the NCTPC Process.

Reliability Planning Process

The Reliability Planning Process is the transmission planning process that has traditionally been used by the transmission owners to provide safe and reliable transmission service at the lowest reasonable cost. This transmission planning process is being expanded to include the active participation of the Participants and input from other stakeholders through the TAG.

The Reliability Planning Process will follow the steps outlined in Figure 1. The OSC will approve the scope of the reliability study, oversee the study analysis being performed by the PWG, evaluate the study results, and approve the final reliability study results. The Reliability Planning Process will begin with the incumbent transmission owners' most recent reliability planning studies and current transmission upgrades plans. The PWG will coordinate the development of the reliability studies based upon the OSC-approved scope and prepare a report with the recommended transmission reliability solutions.

The final results of the Reliability Planning Process will include summaries of the estimated costs and schedules to provide any transmission upgrades and/or additions needed to maintain a sufficient level of reliability necessary to serve the native load of all Participants. The reliability study results will be reviewed with the TAG.

Enhanced Transmission Access Planning Process

The ETAP Process will evaluate the means to increase transmission access to potential LSE network resources inside and outside the control areas of Duke and Progress.

The ETAP Process will follow the steps outlined in Figure 1. The OSC will approve the scope of the ETAP study (including any changes in the assumptions and study criteria for the studies used in the reliability analysis), oversee the study analysis being coordinated by the PWG, evaluate the study results, and approve the final ETAP study results.

The ETAP Process will begin with the Participants and TAG members proposing scenarios and interfaces to be studied. The proposed scenarios and interfaces will be compiled by the PWG and then evaluated by the OSC to determine which ones will be included for analysis in the current planning cycle. The PWG will coordinate the development of the enhanced transmission access studies based upon the OSC-approved scope and prepare a report which will identify recommended transmission solutions that could increase transmission access.

The final results of the ETAP Process will include the estimated costs and schedules to provide the increased transmission capabilities. The enhanced transmission access study results will be reviewed with the TAG.

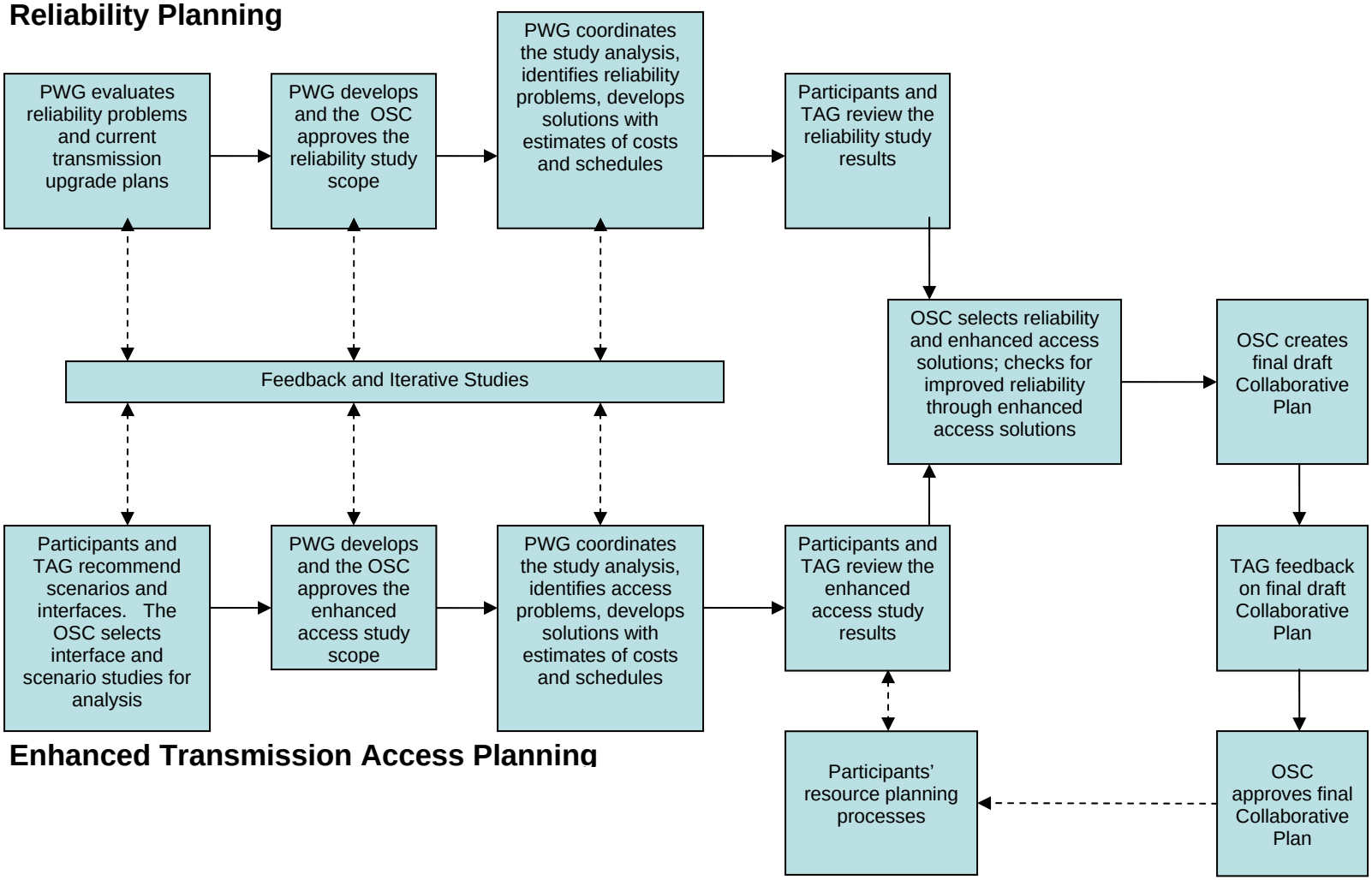
Collaborative Transmission Plan

Once the reliability and ETAP studies are completed, the OSC will evaluate the results and the PWG recommendations to determine if any proposed enhanced transmission access projects will be implemented. If so, the initial reliability study will be modified accordingly. This process will result in a single Collaborative Transmission Plan being developed that appropriately balances the costs, benefits and risks associated with the use of transmission and generation resources. The final plan will be reviewed with the TAG.

The Collaborative Transmission Plan information will be available for Participants to identify any alternative least cost resources to include with their respective Integrated Resource Plans. Other stakeholders can similarly use this information for their resource planning purposes.

Figure 1

North Carolina Transmission Planning Collaborative



Appendix

North Carolina Transmission Planning Collaborative Process

Transmission Planning Study Process - General Scope

The scope of the study processes for both the Reliability Planning and the Enhanced Transmission Access Planning activities are very similar and share many of the same steps such as assumptions, study criteria, methodology, etc.

The typical study process includes the following steps:

1. Assumptions

- Select the study assumptions for the analysis
- The study assumptions normally include the following:
  - Years to study
  - Load levels to be studied (e.g., peak, shoulder and light loads)
  - Load forecasts
  - Resource supply projections
  - Interchange capabilities
  - Firm reservations including TRM / CBM
  - Transmission contingencies
  - Special protection schemes, special operating schemes
  - Financial (e.g., time value of money, financing costs, duration of analysis for present value analyses, etc.)

2. Study Criteria

- Establish the criteria by which the study results will be measured
- The criteria should promote consistency in the planning criteria used by all Participants, while allowing for circumstances that are unique to individual systems
- Typical study criteria involve the following elements:
  - NERC reliability standards
  - SERC Requirements
  - Individual company criteria (voltage, thermal, stability, short circuit, and phase angle)

3. Case Development

- Prepare the base case model
- Develop change case models as required to evaluate different resource supply scenarios

4. Methodology

- Determine the methodologies that will be used to carry out the study
- Determine the specific software programs that will be utilized to perform the analysis

5. Technical Analysis and Study Results

- Perform the study analysis (thermal, voltage, stability and short circuit) and produce the results
  - Study thermal and voltage limits first thermal limits are typically the most difficult to resolve and the most limiting, with voltage issues usually being identified within the same power-flow analyses
  - Study stability and short circuit analysis as needed

6. Assessment and Problem Identification

- Evaluate the results to identify problems / issues. The key questions are:
  - What causes the issues / limits?
  - If the limit were removed or increased, what would the next limit be and what would limit it?

7. Solution Development

- Identify potential solutions to the problems / issues
- Test the effectiveness of the potential solutions through additional studies (thermal, voltage, stability, short circuit) and modify the solutions as necessary such that all study criteria are met
- Perform financial analysis and rough scheduling estimation for each of the proposed transmission solutions (e.g., cost, cash flow, present value)

8. Selection of Preferred Transmission Plan

- Compare alternatives and select the preferred solution alternatives – balancing of cost / benefit / risk

- Select a preferred set of transmission improvements that provides the most reliable and cost effective transmission solution while prudently managing the associated risks

9. Report on the Study Results

- Prepare a report on the results and recommended solutions for the final plan