August 8, 2013

Principles and Guidelines for EIPC Stakeholder Scenario Development Associated with the Creation and Analysis of Roll-up Models[1]

In order to ensure that the studies performed by the EIPC provide the greatest value to the participating members and stakeholders, the following guidelines are proposed regarding development of the scenarios to be included in the planning process. Development of these guidelines is based on the following principles:

- All scenarios will be run as changes to a Base Plan created by the EIPC Steady State Modeling and Load Flow Working Group (SSMLFWG), which will be based on rolling up the individual plans of EIPC members and sufficient analysis of the rolled up plan to ensure simultaneous feasibility of the individually submitted plans. Scenarios will be limited to a five or ten-year analysis horizon, consistent with the base cases to be developed by the SSMLFWG.
- Scenarios will be identified for the purpose of developing high-level transmission build-outs to provide information relevant to Federal and/or regional policy development and to provide order of magnitude cost estimates resulting from changes to model the scenarios.
- Scenarios should not be duplicative of any other local or regional planning efforts or transmission requests subject to analysis under the OATT provisions of any party. The EIPC members will work through the EIPC stakeholder process to recommend a portfolio of scenarios representative of the analysis that produces the best value in terms of resources and stakeholder input.
- The assumptions defining a scenario should be provided by the stakeholder sponsors in sufficient detail to allow analysis by the SSMLFWG. These assumptions would include, among others, descriptions of proposed transfers, quantitative variations to load forecasts, specific characteristics of resource technologies to be added (on-peak, off-peak capacity), specific technologies to be removed or retired from the base data, etc. EIPC members will work with stakeholders to identify any restrictions, exceptions or gaps in the definition of assumptions.
- Changes to the base plan resulting from the scenario assumptions will be determined by the EIPC members based on their individual assessments and input from Stakeholders. For example, a specific transmission project may or may not be displaced or removed from a scenario plan depending on its current state of development, e.g. a line that has received a state certification/approval and with construction underway might not be subject to removal or delay. Ultimately, the decisions on base plan inclusions/exclusions resides with the EIPC members.

The EIPC will study up to 3 scenarios per biennial study cycle, with a 10 year study horizon. A scenario is defined as a consistent set of input assumptions defining a future state which may vary from the Base Plan. A scenario may require additional sensitivities, including seasonal analyses using a different roll-up model (e.g. off-peak or shoulder peak model) to be considered. The

[1] Applies to the 2013 - 2014 analysis of the EIPC Roll-up Models and is not funded by DOE.

magnitude of the effort involved to do a thorough job of analyzing the scenario may reduce the number of scenarios that can be considered in each study cycle. EIPC will work with stakeholders to better understand the required analysis for each scenario.

With the above principles in mind, a scenario definition should supply the following information. An example of an acceptable scenario definition is shown in Exhibit 1.

1. A general narrative description of the scenario, including the overall objective. (Example: Wind Generation Transfer Scenario from Midwest to Southeast – The scenario will identify the transmission impacts of transfer of XXX MW of wind energy from Place 1 to Place 2 in 2023.
2. For transfer studies, the source and sink of power transferred should be identified as specifically as possible. Use of a map showing the general region is preferred, particularly for the source information. EIPC will implement transfers consistent with regional system operations and planning practices.
3. The addition or removal of resources should be identified as specifically as possible. Identification of a specific technology to be added or deleted from the base data is acceptable. For the addition of new resources (e.g. solar generation), the expected MW (energy or capacity) contribution should be specified initially, consistent with the scenario being presented, as well as the reactive capability of the resource. Whether resources are added or removed, the scenario should specify how a corresponding amount of generation in the base data should be removed or added, based on the assumption that the rolled up base case represents a balance between load and resources. For a scenario in which resources are being removed, the Stakeholders should initially identify an equivalent replacement resource, including the location of the replacement. If no location is specified, replacement power will be assumed to be available at the location of the retired resource (effectively negating the impact). For a scenario in which resources are being added, the Stakeholders should identify the location and amount of resources to be removed or displaced.
4. Scenarios that include storage technologies should identify the location, size, and mode of operation (source or sink depending on the scenario). Additional advanced technologies will be considered on a case-by-case basis.
5. Changes to the peak demand forecast should be specified as a change to the aggregate demand in the Base Plan or in sufficient detail to allow modeling by the EIPC.

Format to be Used in Suggesting a Scenario and Sample Scenario

Scenario Title: Impact of Advanced Energy Efficiency and Local Solar on Current Eastern Interconnection Transmission Plans

Scenario Submitted by: Name, Title, Company

Study Case: 2023

General Description and Premise

Assume public implementation of energy efficiency and local solar (e.g. roof top solar), whether through government mandate or economic drivers, by the year 2023 increases to the point where end-use net demand is 10% below today's actual loads. Recognizing this change did not occur in just one year, the amount of other resources that are added between 2013 and 2023 is reduced to minimum reserve requirements to maintain reliability based on the reduced net load levels.

Questions to be Answered Based on Power Flow Analysis

1. What planned transmission facilities could be eliminated or deferred beyond the study time frame (2023)?
2. What additional transmission plans would be required?
3. What generation expansion assumptions by control area, technology and amount would be avoided?

Modeling Parameters

- Model increase in EE and local solar by decreasing customer demand at each power flow bus by 10% from today's loads and inserting them into the 2023 case.
- Remove enough future generation (working backward from generation in-service date of 2023) so as to meet planning reserve requirements – i.e. do not assume an increase in reserve requirements.
- Assume plans for existing generation removals between 2013 and 2023 do not change.
- For market areas, assume queued generation is only installed up to the planning reserve – i.e. the market decides it isn't worth installing generation once the planning reserve is satisfied.

- Provide a dispatch consistent with expected results from clearing the energy markets or expected economic stacking order in non-market areas.