

Memorandum

To: SSC Chairs
From: EISPC Modeling Working Group
Date: 5/13/2011
Re: Additional Sensitivities

This memorandum was requested by Catherine Morris of Keystone for the May 18 SSC meeting and explains a concern raised during the April 29 SSC web conference by Denis Bergeron. The memo provides more detail on the concerns expressed by Denis and provides recommendations for utilizing additional sensitivities in the generation expansion modeling.¹ The concern is that the currently established sensitivities will not provide adequate data on the economic value of transmission expansions modeled in the futures established by SSC. We believe this valuable information can be obtained by conducting sensitivity runs with the transfer limit expansions and no other changes from the future's base run. Our concerns are explained in more detail below.

We assume that knowing the economic value of expanding the transmission system will be helpful information to the SSC in the transmission build out selection process. Unfortunately, the sequence of sensitivities selected by the SSC to date will not develop the complete information needed to make this assessment. In essence, the economic value of the transfer limit expansions will be obscured by additional changes to input assumptions in the remaining sensitivities. A description of the generation expansion modeling process the SSC has developed illustrates our concern:

- First, we have selected 8 futures with various sensitivities. Each future has an initial run under a "base case" set of assumptions. The output from the base case run is compared to the other sensitivity runs for that future to understand how the isolated assumptions in the sensitivities affect outcomes such as the generation portfolio, total cost and transmission flows.
- Second, for most futures the first sensitivity will be a transmission sensitivity which allows the model to dispatch generation as though physical transfer

¹ See the April 29 Meeting Summary at page two, available at:
http://eipconline.com/SSC_Meetings.html.

limits of the existing system were relaxed through the “soft constraint” method. Comparing the output of the transmission sensitivity to the “base case” run enables the SSC to decide¹ a) whether and, b) at what level, the Baseline or Stakeholder Selected Infrastructure should be expanded.²

- A decision to expand transfer capacity sets a new “hard” transfer limit for all remaining sensitivities in that particular future.³ The new fixed transfer limit capacity will be used by EIPC to develop high-level cost estimates of the required transmission facilities that represent the selected expansion.
- Once the new transfer limits are fixed, shadow prices and other modeling outputs from the transmission sensitivity will lose relevance whenever the newly established transfer limits are encountered.
- Since the work plan calls for conducting all remaining sensitivities with the new constraints, and does not contemplate a run in which the new, “hard” constraint is tested against the initial base case, it will be impossible to isolate the impacts of the new transfer limits and determine their effect on the base case. It will also be difficult, if possible, to distinguish the impact between the sensitivity (e.g. higher gas cost) intended to be tested and the new transfer limits.

This situation could be remedied by running an additional “hardened constraint” transmission sensitivity for each future in which the SSC determines an expansion of the pipes between regions is appropriate. Outputs from that sensitivity will enable the SSC to understand how the operational savings made possible by the new transmission expansion compare to the cost of building it. That information will be valuable in future discussions regarding the three transmission build-outs. (During the April 29 web conference, the CRA representative indicated that an additional sensitivity using the hardened transfer limits would provide beneficial information.) Unless this is done, any conclusions about the impacts of transmission expansions will be subject to question.

We recommend that the SSC approve a “hardened constraint” transmission sensitivity for all futures in which transmission expansion is selected.

¹ The transmission subgroup of the modeling working group is currently developing a method for determining the level of transfer limit expansions based on results of the base case and transmission sensitivity run to inform the SSC.

² Note the “soft” constraints allow power to flow with unlimited capacity based on a predetermined difference in price between regions; power flows anytime the price difference is reached. A “hard” constraint is different; prices and resources between regions can diverge widely when the physical limit is reached depending on conditions between zones.

³ EIPC Project Management Report and Project Schedule Update (3/29/2011 SSC meeting)