

To: SSC Members
From: Kevin Gunn and Roy Thilly
Date: October 17, 2012
Re: Proposed Resolution of Sensitivity Issues for Production Cost Runs

This memo sets forth our recommendation for selecting the six sensitivities for the production cost runs that will be before the SSC for decision on October 23. The MWG has worked very hard on this matter with CRA and Keystone over the last several months and deserves all of our thanks.

First, we recommend that the SSC approve the four sensitivities on which the MWG has reached consensus:

1. High gas in S3 (the BAU)
2. High load in S3
3. High load in S1 (the national low carbon case)
4. Increased flexibility and availability of spin in S1

Each appears to be designed to provide useful information.

This leaves two sensitivities for decision. Four options have been presented by members of the MWG. They are:

1. High load in S2 (the regional implementation of RPS case)
2. Low gas in S1
3. Targeted flowgate relief in S1
4. Reduced wind generation in highly wind-constrained regions in S1

We understand that there are strongly held views in some sectors on several of these options. We also recognize that there are legitimate concerns with each. Frankly, we believe, given the broad-brush nature of the study we are doing and the fact that time and resource constraints do not permit iteration and optimization, that the remaining sensitivity decisions are not crucial to our undertaking. We have learned a great deal in this exercise, but the scenarios developed are not actionable and the production cost runs are only very broadly indicative. The question is which sensitivities will yield information that will best help us understand the results to date and provide value for future analyses.

In reviewing the options presented, we believe the major anomaly encountered in the runs is the large wind curtailment in S1. Clearly, the curtailments make a significant portion of the intended wind build-out uneconomic. This is unfortunate and suggests a mismatch between the NEEM run and the GE MAPS modeling for the scenario. While the flexible spin sensitivity should help relieve the congestion, it is unlikely to solve the problem. Therefore, further examination appears reasonable.

Two options would provide additional information: the flowgate relief proposal and the wind capacity reduction proposal. We suggest that we do both, recognizing again that there are valid concerns with both approaches. With respect to the flowgate proposal, given the number of flowgates proposed for relief, our recommendation is conditioned on whether CRA can accommodate all of the changes proposed or some reduction will be required.

The flowgate proposal is based on an assumption that the transmission build-out is not adequate in that it did not effectively address some intra-regional upgrade needs and that, if some of the resulting flowgate constraints (which are primarily intra-region flowgates) are relieved, the power will flow. The proponents assert that in the real world the wind build-out would not be done without addressing this issue. We agree. However, whether the flowgate relief proposed, which is fairly extensive, will in fact reduce the curtailments substantially or instead move the congestion to other facilities is not known. Also, this sensitivity needs to be carefully caveated in the report with two points: i) this approach would increase the cost of the transmission build-out in the case, and ii) the impact of any such change will not be reliability tested, which would be a requirement in actual transmission planning. However, if the sensitivity does work, it should provide valuable information, together with the spin sensitivity, for future analyses of this sort of major wind build-out.

Conversely, reducing the wind build-out in the highly constrained wind regions may test whether the emission reduction target that is the driver for S1 would be achievable through optimization with a significantly lower cost wind build-out and a relatively small impact on production costs. This would be valuable information. However, we need to recognize that the scenario will not allow for optimization and reliability testing of the related transmission build, so we will not know if transmission costs could also be reduced. Also, the results of the sensitivity, when combined with information from the flowgate and spin sensitivities, may suggest that such a large wind build-out in low load areas where wind availability is highest in shoulder and low load periods may be quite difficult without storage that allows for economic dispatch. We recognize that whether such information will be forthcoming is uncertain, but believe it is worth pursuing in comparison with the alternatives discussed below.

The other two options appear to be of lower value for the future exercises. We question the point of doing a high load run in S2 simply to do sensitivity in S2. We believe that stressing the systems in S1 and S3 with high load will provide sufficient information for the purposes of this exercise and any future efforts.

We also question the value of a low gas run in S3. In the light of the fact that our study does not include increased gas delivery costs from new pipeline investment likely to be needed because of greater gas demand, and given the fact that such demand, coupled with supplier incentives, is likely to prop up prices, we believe that any reduction in gas prices, which are already quite low from a historical

perspective, would have to be modest. The result of such a run is likely predictable: some displacement of demand response that competes with gas in peak periods, and perhaps some substitution of gas for coal in dispatch, although with only a modest price change, these impacts are likely to be modest also.

In taking this position, we recognize that current gas prices are somewhat lower than our base assumption and that some are predicting gas price stability for the long term. Given history, we are skeptical of any long-term gas price or stability predictions. Also, many of our assumptions are off somewhat from current conditions.

We believe the proposal in this memo provides a reasonable path forward. Sensitivities proposed by both sides of the wind debate would be run and we would probe the major anomaly found through our production cost runs for the benefit of future studies. We hope you agree.