

**Comments of the State/Provincial Steering Committee and
Committee on Regional Electric Power Cooperation
to the Western Electricity Coordinating Council and E3
on the EIM Cost/Benefit Study Phase 2 Methodology**

The State/Provincial Steering Committee (SPSC) and the Committee on Regional Electric Power Cooperation (CREPC) commend the efforts of WECC staff and E3 to include a broad range of stakeholders in the study design process and appreciate their willingness to find methods to address stakeholder concerns in the Phase 2 analysis.

A thorough evaluation of the benefits and costs of an Energy Imbalance Market (EIM) is a priority of the Western states and provinces. In April 2010, the Western Interconnection Regional Advisory Body urged WECC to undertake a benefit/cost study and approved a \$25,000 contribution to the work. Also in April 2010, the SPSC approved funding of \$25,000 to support the WECC benefit/cost study.

The SPSC and CREPC submit the following concerns and recommendations for the Phase 2 analysis of the benefits of a Western EIM.

Granularity

The SPSC and CREPC are concerned that the study results will not be sufficiently granular to enable all BAs to make a decision on implementing an EIM. The SPSC and CREPC support the planned increase in the number of zones that will be modeled in Phase 2. We encourage further separation of LADWP and the BAs embedded in BPA (Seattle City Light, Tacoma and the Mid-C PUDs) to the extent that this does not impede or compromise the remainder of the analysis.

Hydro modeling

The SPSC and CREPC support the use of the TEPPC hydro modeling improvements (HTC module) to model partially price-responsive hydro resources. This will continue to be a conservative assumption on the dispatch of hydro generation, which understates benefits of an EIM. We also recommend that E3 and WECC run a sensitivity analysis using a hydraulic model with greater hydro price-responsiveness.

Unit Commitment

The SPSC and CREPC have concerns that the unit commitment methodology proposed for Phase 2 will not take into account increased unit commitment efficiency resulting from the “learning” that is likely to occur through experience with an EIM. As entities become more familiar with the EIM, they will likely make more efficient unit commitment decisions in order to maximize their benefits. This was the experience in the Southwest Power Pool after it started its Energy Imbalance Service Market. The efficiency of the EIM dispatch is bounded by the efficiency of participating entity unit commitment. As unit commitment decisions become more efficient, the efficiency and benefits of the EIM will increase. These potential benefits need to be analyzed. Therefore, the SPSC and CREPC recommend that a sensitivity analysis be used to identify the maximum level of benefits that can be realized from more

efficient unit commitment under an EIM. We recognize that such a modeling approach will overstate benefits but it will allow WECC and E3 to provide a range of potential benefits, which will include the actual benefit of improved unit commitment.

Reliability Benefits

The SPSC and CREPC recommend that WECC include an analysis of the potential reliability benefits associated with an EIM. For example, an EIM has the potential to avoid reliability problems (e.g., violations of system operating limits) through automated five minute dispatch within reliability constraints. At a minimum, these benefits should be qualitatively described; however, WECC should also attempt to quantify the level of reliability benefits from an EIM.

WECC's August 2009 analysis of the benefits of the Western Interconnection Synchrophasor Project used a simple methodology to estimate the net present value of benefits of synchrophasors in avoiding outages at between \$1.2 and \$3.5 billion over 40 years. WECC could apply a similar methodology to an EIM reliability benefit analysis. Data available to WECC, such as violations of system reliability limits that led to outages, could be used to provide a rough quantitative range of reliability benefits of an EIM.

Costs associated with wind and solar curtailment

The SPSC and CREPC are concerned that the study results do not reflect the reduction or elimination of opportunity costs associated with present levels of generation curtailment, especially wind and solar curtailment. Currently, wind and solar resources are curtailed to maintain balance within a BA, which may result in opportunity costs to entities. Under an EIM, some of these curtailments may not be necessary. Thus, there might be a cost savings that would occur under an EIM and the benefits analysis should account for these potential savings. These benefits could be substantial given new wind and solar generation that will come on line in the future as a result of Renewable Portfolio Standards.¹ We recommend that WECC and E3 include an analysis of the potential benefits realized by a reduction in wind and solar curtailments under the EIM case.

Critical Mass

The SPSC and CREPC are concerned that the study will not provide a clear picture of the scale of benefits from EIMs of different sized footprints. This kind of information would help inform the discussion of the critical mass of participants necessary to implement an EIM. Critical mass has become a central issue in the discussion of a Western EIM. The SPSC and CREPC believe that any benefits analysis of the EIM must include some evaluation of critical mass. WECC and E3 plan to conduct a sensitivity analysis that will remove BPA and WAPA from the EIM footprint. The SPSC and CREPC recommend that WECC and E3 include an evaluation of a discrete number of other participation levels as well. We recommend WECC provide a scale of benefits resulting from different levels of participation. This will allow stakeholders to draw more informed conclusions about the critical mass of participation.

¹ For example, the 2009 WECC synchrophasor study estimated the net present value of increased wind utilization over 40 years to be between \$323 million to \$3.6 billion. TEPPC is estimating that there will need to be more than 40,000 MW of renewables in the West in 2020 to meet existing RPS requirements. Today we have roughly 11,000 MW of wind and solar in the Western Interconnection.

Intra-hour benefits

The SPSC and CREPC are concerned that there is no analysis of the benefits of an EIM derived from five-minute dispatch—one of the key capabilities of an EIM. We understand that E3 is using only an hourly production cost model. However, this approach leaves unanswered questions about the benefits from intra-hour dispatch under an EIM. In addition, we are concerned that there is no analysis of how many of the potential intra-hour benefits might be accounted for by the Joint Initiatives, such as dynamic scheduling and I-TAP (a fast electronic bulletin board to arrange bi-lateral transmission and power sales).

Matching model to actual flows on east side paths

The SPSC and CREPC are concerned that flows on the east side transmission paths are not modeled accurately. We recommend the adjustment of hurdle rates to better match historical flows with model results for paths on the east side of the interconnection.

Reduced participation of units within participating BAs

The SPSC and CREPC understand the importance of evaluating reduced participation of units within participating BAs. We recommend that WECC and E3 clarify the methodology for this analysis. An appropriate methodology might reflect the ramp up of participation by generating units experienced in the SPP Energy Imbalance Service as more potential participants became acquainted with the benefits of an EIM.

Sensitivity Cases

The SPSC and CREPC support the expansion of the study, to the degree possible given time and resources, through the execution of several important sensitivity cases. The SPSC and CREPC recommend the following sensitivity cases (listed in order of priority from highest to lowest).

1. Reduced participation. In addition to a sensitivity case that excludes WAPA and BPA, E3 should run additional participation sensitivity cases assuming a discrete number of alternative participation levels to provide additional information on the issue of critical mass..
2. Maximum unit commitment benefits sensitivity analysis. Removal of hurdle rates between the EIM and CAISO to reflect a maximum EIM market-to-ISO market coordination. The current proposal illustrates benefits assuming no market-to-market coordination. Removal of hurdle rates between the EIM and the CAISO would provide an upper bound on market-to-market coordination benefits, recognizing that reality likely lies somewhere in between these bookends.
3. Natural gas price and CO2 price sensitivities.
4. Unit participation at start-up. Regarding reduced participation of units within participating BAs, we recommend that this sensitivity case be used to identify a reduced level of benefits at the start-up of an EIM, similar to when SPP first started their EIS market.
5. Of lower priority are hydraulic modeling for dynamic hydro, assignment of portion of Northwest flexibility reserve requirements to California to reflect intra-hour scheduling, and high/low hydro availability.

Combination of costs and benefits

The SPSC and CREPC recommend that the benefit/cost study combine the findings on reduced participation (critical mass) and the range of EIM implementation costs to make findings on the critical mass needed for the benefits to exceed the costs of the EIM.

Ramp capability and load following/flexibility reserves

The SPSC and CREPC are concerned about the accurate modeling of reserves. We support the more accurate modeling of contingency and regulating reserves proposed for Phase 2. We also support the modeling assumption that flexibility reserves will be procured from across the EIM footprint, rather than by individual BAs. This will better reflect the ability of participating entities to leverage the diversity of resources across the EIM footprint to procure these resources and meet ramp needs. SPSC and CREPC emphasize the importance of NREL's participation in providing data to WECC and E3 data on flexibility reserve needs for both the benchmark case and the EIM case.

Wind forecasting assumptions

The SPSC and CREPC are concerned that the assumption of perfect wind forecasting used in the Phase 1 analysis is not appropriate. We support the proposal to reflect wind forecasting uncertainties in the Phase 2 study.