TO: State-Provincial Steering Committee

FROM: Steve Oxley, Chair
Grid Utilization Work Group

DATE: April 16, 2010

SUBJECT: **Report of the Grid Utilization Work Group and Recommendations for SPSC action**

The Grid Utilization Work Group held a meeting via conference call on March 29, 2010, to discuss logistical matters, the formation of subgroups, the creation of a work plan, webinars, and support for a cost/benefit and reliability study of the proposed WECC Energy Imbalance Service and Seams Coordination Tool.

Subgroups

The GUWG discussed formation of three subgroups to address the topics assigned by the Steering Committee. They may be consolidated into two subgroups as follows:

1. *Variable Generation Integration Subgroup; John Savage, Chair*

2. *Grid Utilization and New Technology Subgroup; Chair to be named*

Work Plan

The GUWG has created a work plan, which it proposes be incorporated as an amendment to the SPSC work plan. The work plan in Attachment 1 outlines the activities of the subgroups.

ACTION ITEM:
The GUWG recommends the SPSC incorporate the GUWG Work Plan into the SPSC Work Plan.

Webinars

The GUWG held a webinar on April 12 on the SIS Energy Imbalance Service and Seams Coordination Tool proposal. Webinar presentation materials can be found on the GUWG Website.

The GUWG intends to hold a webinar in May to cover the work of the WECC Historical Analysis Work Group. Details will be announced and posted on the SPSC Website.

WECC SIS proposed EIS and Seams Coordination Tool

The Work Group discussed the funding of a cost, benefit and reliability impacts study of the Seams Coordination Tool and Energy Imbalance Service proposed by the WECC Market Interface Committee's Seams Issues Subcommittee. The Seams Coordination Tool would enable operators and reliability coordinators to see priority-sorted transmission service contributions to real-time congestion in great, real time detail. The Energy Imbalance Service (EIS) would use regional security-constrained economic dispatch within a voluntary market to supply imbalance energy, manage transmission constraints, and settle energy imbalance and redispatch transactions across Balancing Area borders. The Seams Coordination Tool and Energy Imbalance Service appear to be promising approaches that can increase utilization of the existing transmission system and lower the cost of integrating variable generation.

The Seams Issues Subcommittee is proposing a study of the costs, benefits and reliability impacts of the Seams Coordination Tool and the energy imbalance market (and the proposed Energy Imbalance Service). The cost of the study is estimated to be between $450,000 and $500,000. The SIS is seeking to utilize some of the study work being developed by WECC's Variable Generation Subcommittee on Balancing Area coordination.

It is important that the study proposed by the SIS address issues of interest to decision-makers, including states and provinces, Balancing Authorities, and the WECC Board of Directors, who will need to act to implement any positive findings from the study. Therefore, the GUWG recommends [i] that a high-level oversight committee be established consisting of these key decision-maker; and [ii] that the state and provincial regulators participating on the oversight committee be drawn, to the extent possible, from among GUWG members. A technically oriented committee will be needed to manage the elements of the study work; and states and provinces should also participate on this technical committee.

ACTION ITEMS:

The GUWG recommends that the SPSC demonstrate support for this initiative by committing $25,000 to the study.[1]

The GUWG recommends that the SPSC make the commitment of funds contingent upon [i] the creation of a high-level oversight committee; and [ii] the commitment of remaining funds by WECC.

Steve Oxley, Chairman
Grid Utilization Work Group

[1] On April 8, the Western Interconnection Regional Advisory Body (WIRAB) offered advice to WECC urging the WECC Board to approve funds for the study proposed by the SIS, proposing a high-level oversight committee, and committing $25,000 of seed money for the study. http://www.westgov.org/wirab/site/advice.htm.

Proposed SPSC Work Plan Amendment

*(replace existing language on "integration of variable generation" and "grid utilization" with the text below***)**

A. Variable Generation Integration Subgroup

Objective: Minimize the cost of integrating large amounts of wind and solar energy reliably into the Western Interconnection.

Strategies and Actions:

1. Strategy: Quantify the benefits of cooperative operational strategies, market reforms and other measures to reduce the cost of integration and develop implementation plans.

   Actions:

   a. Develop a comprehensive issue paper on *current* Integration of Variable Generation (IVG) activities. As part of the paper, assess (by cost-effectiveness in reducing integration costs) proposed reforms to minimize costs of integration.
   b. Identify and quantify the costs/benefits of specific *potential* actions to improve BA cooperation and coordination either subregionally or interconnection-wide.
   c. Shape future subregional or interconnection-wide variable generation integration studies to identify specific measures necessary to achieve the benefits of BA cooperation and coordination.
   d. Sponsor conferences and joint multi-jurisdictional hearings on the findings and recommendations of the Western Wind and Solar Integration Study. Develop a coordinated five-state strategy to implement the recommendations. Facilitate expansion of the strategy to other states or regions.
   e. Monitor work of WECC's Variable Generation Subcommittee. Build upon VGS efforts to create action strategies to reduce the cost of integration.
   f. Examine impacts of California renewable energy credit (REC) policy.

2. Strategy: Improve site-specific and regional wind and solar forecasting and incorporate forecasting in BA and WECC Reliability Center operations.

   Actions:

   a. Evaluate the effectiveness of regional and sub-regional forecasting methodologies.
   b. Identify opportunities to improve the accuracy of wind forecasting and site assessment.
   c. Develop implementation plans for the adoption of regional and sub-regional forecasting and site assessment methods.

3. Strategy: Encourage the development of additional flexible system resources throughout the Western Interconnection.

   Actions:

   a. Sponsor seminars and webinars encouraging development of flexible resources through changes in utility planning and resource acquisition.
   b. Write white paper identifying opportunities for increasing system flexibility through state of the art gas technology, storage technologies, and demand response. Sponsor seminar on storage technologies.
   c. Ask national labs to examine best practices in IRPs for examining the value of a flexible resource portfolio.

B. Grid Utilization and New Technology Subgroup

Objective 1: Analyze the existing utilization of the transmission system in the Western Interconnection (e.g., scheduling, marketing and operational practices), identify areas of inefficiency and current efforts at improvement and reform, assess usefulness.

Strategies and Actions:

1. Actively engage transmission users and providers, regulators, federal agencies and national laboratories, and other stakeholders in all phases of the work.

2. Strategy: Establish a baseline understanding of the current level and efficiency of grid utilization and how power sales and associated transmission transactions are arranged presently.

   Actions:

   a) Sponsor a webinar on the work of the Historical Analysis Work Group at WECC concerning, among other things, transmission paths which merit further examination.

   b) Write a paper on current practices in executing power sales and arranging associated transmission. Evaluate existing reform efforts, the advisability of expanding their use in the Western Interconnection, barriers to implementation and the value of their continued use.

   c) Identify specific transmission paths that are candidates for in-depth study based on degree of current path utilization. Among the factors used to identify paths for further examination are:

i) The importance of the path in helping to achieve state and provincial policy goals (e.g., RPS); and

ii) The impacts of tradable RECs on path utilization.

3. Strategy: Identify and support the analysis of reforms to expand usability and flexibility of the existing grid.

   Actions:

   a. Examine proposed reforms.

      i) Support the study of the costs, benefits, and reliability impacts of the WECC Seams Issues Subcommittee's proposed Seams Coordination Tool and Energy Imbalance Service.

         (a) Provide $25,000 in support for the study.

         (b) Advocate creation of a high-level study oversight committee consisting of a subset of BA CEOs, states/provinces, and WECC Board members and arrange state/provincial participation in such a committee.

         (c) Monitor and participate in the study work

      ii) Monitor the work of the Joint Initiatives of NTTG, WestConnect and Columbia Grid regarding, e.g., intra-hour scheduling and purchasing, ITAP bulletin board, dynamic scheduling system.

      iii) Monitor ongoing WECC field trial of Reliability Based Control.

   b. Develop strategies to implement promising reforms.

Objective 2: Identify current and new grid technologies that could enable greater and more efficient transfers over existing transmission lines and in existing transmission corridors.

Strategies and Actions:

1. Strategy: Identify new transmission technologies to increase transfer capacity on *existing wires* and evaluate the potential effects they might have on the grid. Identify new technologies which could be deployed as additions to existing wires and corridors.

   Actions:

   a. Write a paper on current and new transmission technologies (e.g., high capacity conductors, synchrophasors, supersizing lines, DC transmission, underground transmission, FACTS) which would examine deployment issues (e.g., cost, timing, technological maturity, etc.), assess the impacts of deploying the technology and identify obstacles to the deployment.

b. Sponsor a webinars on "Smart Grid" investments that provide balancing and capacity flexibility. Examine related Demand Response issues and their technological merits.

c. Monitor the development and deployment of new technologies that might impact the available capacity on the existing transmission grid (e.g., high penetration of PHEV or roof-top solar, ICE storage).

d. Actively engage national laboratories and others engaged in studying the grid and its more efficient use.

2. Strategy: Identify obstacles (e.g., path rating process, current reliability standards and practices on topics such as contingency analysis and line separation) to expanding transfer capacities in *existing transmission corridors*.

Actions:

a. Identify existing WECC and NERC requirements that limit transfer capacities in corridors.
b. Explore the tradeoff between reliability and land use inherent in the WECC and NERC requirements.
c. Monitor WECC, subregional planning group and individual transmission project developments related to increasing transfer capacity in corridors.

C. Joint Activities of the Variable Generation Integration Subgroup and the Grid Utilization and New Technology Subgroup regarding Balancing Authorities

1. Strategy: Expand/create markets for Balancing Authority services.

Actions:

a. Support and accelerate broad adoption within the region of intra-hour transmission purchase and scheduling and dynamic scheduling.

b. Support the study the costs, benefits and reliability impacts of an interconnection-wide energy imbalance service.

2. Strategy: Increase Balancing Area cooperation and coordination.

Action:

a. Write an issue paper evaluating various approaches to actual or virtual Balancing Area consolidation. Describe status of approaches being considered in the Western Interconnection.