Stakeholder Steering Committee Guidance for RETI Phase 2

December 17, 2008

Acceptance of Phase 1B Report

The Renewable Energy Transmission Initiative (RETI) Stakeholder Steering Committee (SSC) accepts the Phase 1B Final Report (Report) submitted December 12, 2008, by Black & Veatch and the RETI Environmental Working Group (EWG) as the basis for conceptual transmission planning in Phase 2. This Report is the most ambitious assessment ever undertaken of the economic and environmental aspects of renewable energy resource areas capable of providing electricity for California consumers. The SSC appreciates the efforts of the many participants who assisted in the preparation of the Report.

Conceptual plans will be developed in Phase 2 of the RETI process to provide transmission access to resources assessed in Phase 1. This document describes SSC guidance for the preparation of these plans in Phase 2.

Summary of Report Findings

Assessment of renewable resource areas required a number of assumptions and estimates, as described in the Report, and the numerical results are therefore necessarily subject to some uncertainty. Nevertheless, the major findings of the Report appear to be robust and adequate as a basis for initial conceptual transmission planning. These findings include:

- Given adequate transmission access, a large amount of potentially competitive and environmentally sensitive renewable energy resources are available to meet California's Renewable Portfolio Standard (RPS) goals. Many of these potential energy resource areas are located in Southern California. A smaller number of renewable energy areas are located in Northern California;
- Significant amounts of economically competitive renewable energy are potentially available for import into California from neighboring states and countries; and
- Adequate transmission access exists or is being planned to provide access to some important California renewable resource areas, which the Report has identified as attractive economically and environmentally.

Need for Additional Information

The assessments described in the Report were based on the best available estimates of potential renewable energy resources, in and out of state. However, considerable uncertainty remains. Some, but not all, of the uncertainty associated with future renewable energy development can be reduced if additional detailed information becomes available. Additional information should be collected in Phase 2 to refine the assessments described in the Report.

This additional information will include:

- Commitments by developers made to the California Independent System Operator (CAISO) in its Generator Interconnection Process Reform (GIPR);
- Updated renewable energy procurement information provided by the California Public Utilities Commission (CPUC) and local regulatory authorities;
- Data on parcelization and ownership fragmentation of lands underlying project areas;
- Data on local environmental and regulatory issues, such as the presence of uniquely valuable environmental resources and BLM development limitations, that could not be considered in the Phase 1B Competitive Renewable Energy Zone (CREZ) level assessment;
- Environmental data for designated resources outside California;
- Updated transmission cost and rights of way estimates;
- Information on potential physical and/or market barriers to intrastate energy transfers;

- Potential development of renewable resources not considered in the Report; and
- Estimates of the costs of transmission upgrades which may be needed to deliver renewable energy from Southern California CREZs to Northern California load centers in order to reliably meet electricity demand while achieving both renewable energy supply and greenhouse gasses emission reduction goals.

Guidance for Conceptual Transmission Planning in Phase 2

Planning, permitting and/or construction of transmission projects now underway to access renewable resource areas should proceed as quickly as possible and must not be interrupted by RETI conceptual planning.

Additional information on resource areas will reduce but will not eliminate uncertainty associated with the location and amount of future renewable energy development. The challenge for Phase 2 is to develop conceptual transmission plans that are flexible enough to accommodate this uncertainty while providing the basis for development of detailed plans for specific major transmission projects in RETI Phase 3.

The SSC provides the following initial guidance for Phase 2 conceptual transmission planning:

- The statewide plan included in the Phase 2 report should prioritize CREZ and out-of-state (OOS) resource area transmission projects in terms of development timing and feasibility, considering both economic cost and environmental concern;
- RETI conceptual transmission plans should identify transmission facilities needed to provide some level of access to the California CREZs and OOS resource areas described in the Report, giving priority consideration to CREZs or areas with demonstrated commercial activity;
- Planning should also assume that approximately 15,000 GWh/yr or more of renewable energy could be imported economically from out-of-state as described in Table ES-3 of the Report, net of exports of renewable energy to other regions;
- The Environmental, Phase 2 CREZ Refinement and Phase 2 Conceptual Transmission Planning Work Groups should, to the extent feasible, conduct all additional data gathering and analysis in a timely fashion in order to compare out-of-state resources to California CREZs for use by the SSC in transmission decisions;
- Conceptual plans should seek to reduce environmental impacts and economic costs by:
  a) utilizing existing transmission corridors to the extent practical with consideration of system reliability;
  b) minimizing rights-of-way requirements when new transmission corridors are necessary;
  c) should consider the protected and limited areas identified in Phase 1; and
  d) maximizing efficiencies by considering system reliability needs for which transmission will be needed during the study period, including increased intertie capacity;
- Conceptual planning should emphasize a no-regrets approach consisting of upgrades likely to be needed in the largest number of development scenarios and capable of being able to be phased to accommodate development in different areas at different times;
- With the exception of Tehachapi and Imperial North-A CREZ, planners should assume that approximately 40% of the potential energy development in all other CREZ, as identified in the Report, will be developed by the year 2020. For Tehachapi, where transmission projects are already underway, planners should

assume that most of the wind energy identified in the Report will be developed, together with approximately 40% of the identified solar energy. For Imperial North-A, where transmission projects are in the planning and permitting stages, planners should assume that most of the energy identified in the report will be developed;

- Planning should assume that reductions in electric energy from fossil generation to accommodate increases in renewable generation will be divided between in- and out-of-state generators. California Energy Commission and Air Resources Board (ARB) modeling can help inform Phase 2 assumptions of fossil generation displacement;
- Plans should facilitate all California entities in meeting their renewable energy and greenhouse gas emissions reduction goals; and
- Planning should consider potential impacts on the California electricity system due to in-state and out-of-state renewable energy development sufficient to supply the renewable "net short" described in the Report.

This guidance is discussed in further detail below.

Access to Phase 1B CREZ and Out-of-State Resource Areas

Given the remaining uncertainty associated with the location and scale of future renewable energy development, for purposes of conceptual planning in Phase 2 it should be assumed that renewable energy development may occur in all of the California CREZs and out-of-state resource areas identified in the Report. Transmission facilities required for access to CREZs should be identified in initial Phase 2 work, giving priority to CREZs and resource areas with demonstrated commercial activity. The Phase 2 report will prioritize these facilities in terms of development timing and feasibility, and consider how their development might be staged to accommodate generation additions over the period to 2020.

Transmission Corridors

To minimize the footprint of facilities included in the conceptual transmission plans developed in Phase 2, plans should make maximum use of existing and planned transmission corridors. It is likely, however, that new transmission corridors will be needed for network facilities to provide access to CREZs and out of state resource areas. Corridors for radial ("trunkline") facilities also may be needed to connect CREZs and out of state resources to the network. Plans for all transmission corridors necessary to provide access to CREZs and out of state resource areas should minimize the need for and size of new corridors while maximizing system reliability.

Transmission Costs

Transmission costs used in the economic assessment of CREZs and required rights-of-way (ROWs) used in the environmental assessment were obtained by Black & Veatch from their transmission model using assumptions vetted with the Phase 1A and Phase 1B Work Groups and the Environmental Work Group. These costs and associated ROW will be updated based on the conceptual plans developed in Phase 2, and CREZ and out of state resource area rankings adjusted accordingly.

Energy Development Assumptions

The renewable "net short" in the year 2020 that may require new transmission facilities, estimated in the Report to be approximately 68,000 GWh/yr, depends on future load growth and

on deployment of distributed generation in load centers. Conceptual transmission plans developed in Phase 2 should be reassessed periodically to ensure that California's energy goals can be met with a minimum of new remote renewable projects requiring new transmission facilities. All of the energy potentially available from all California CREZs and out of state resource areas assessed in the Report will not be required to meet the renewable net short in 2020, and Phase 2 planning should assume that only facilities needed to meet the state's energy goals will be constructed. However, Phase 2 planning should lay the foundation for the potential of future renewables needs beyond 33 percent.

Transmission is already being planned or is under construction to access renewable energy in the Tehachapi and Imperial Valley regions. Phase 2 planning should assume that most of this energy in these two areas will be developed. Large additional amounts of renewable energy not considered when these transmission projects were proposed have applied for interconnection in these areas in recent years.

In addition to the energy from the Tehachapi and Imperial areas, planning should assume that approximately 40% of the other energy identified in the Report for each California CREZ may be developed for a total of approximately 96,000 GWh/yr from California CREZs. Together with approximately 15,000 GWh/yr of net imported energy described below, the conceptual transmission plan developed in Phase 2 should accommodate a total of approximately 111,000 GWh/yr, 63% above the estimated net short.

Planning transmission to support substantially more energy than required by the renewable net short accommodates the uncertainty in resource assessments described in the report and for the uncertainty in the difference between potential and actual development. It also allows for development in multiple resource areas to ensure diversity and enhance reliability, as well as ensuring competition among developers in multiple resource areas in order to minimize generation costs.

Out of State Generation

As described in Table ES-3 of the Report, an estimated 15,000 GWh of economically competitive renewable energy potentially is available from Oregon, Nevada, British Columbia and Baja California. However, renewable energy may also be exported from California. The conceptual transmission plan developed in Phase 2 should be able to accommodate net imports of approximately15,000 GWh/yr or more.

Displacement of Fossil Generation

Achievement of California's goal of 33% electric energy from renewable resources by the year 2020 would provide energy to meet projected load growth and, in addition, would displace electricity from fossil-fired generators currently used to serve California load. For purposes of Phase 2, planners should assume that the displaced output will be divided between California and out-of-state generation.

Adequate Resources for all Load Serving Entities

The conceptual transmission plan developed in Phase 2 should ensure that all California load serving entities (LSEs) can meet their obligations to secure renewable energy sufficient to supply 33% of the electric energy they sell to consumers and also to meet their greenhouse gases emission reduction goals. The plan also should minimize physical and/or market barriers to intrastate energy transfers that would prevent California LSEs from meeting their renewable energy obligations economically.

System Impacts

The conceptual transmission plan developed in Phase 2 should enhance operation and reliability of the California electric grid.

Identifying Priority Transmission Components for RETI Phase 3 Study

The conceptual transmission plan developed in Phase 2 will identify the components potentially required to enable the state to meet its renewable energy goals by the year 2020. In conjunction with existing planning processes, detailed planning, permitting and construction of these components will be phased over time. In RETI Phase 3, detailed plans of service will be developed for components of the conceptual plan given highest priority, based on the assessments described in the Report, as updated with additional information. The conceptual plan compiled in Phase 2 should prioritize CREZ and out of state resource area transmission facilities for which plans of service will be developed in Phase 3.