

**National Wind Coordinating Committee
Western Transmission Workshop
Draft Meeting Summary**

**Salt Lake City, UT
January 22, 2003**

Introductions

After introductions of all participants, Abby Arnold, RESOLVE, reviewed the purpose of the meeting and the agenda. The purpose of the workshop was to educate participants about efforts underway to address transmission planning in the Western US and to enhance transmission planning coordination in the region. Workshop participants were to discuss and consider strategies that will affect future transmission issues in the region and to identify planning needs in the region. Based on input from all stakeholders, the NWCC will consider possible activities that can assist the development of transmission planning processes in the West.

Session I: Background on Prior NWCC Meetings and Lessons Learned

Ed DeMeo, Renewable Energy Consulting Services, Inc., began the workshop by providing an overview of the NWCC. Mr. DeMeo explained that the NWCC is a multi-stakeholder collaborative group. Its diverse members are united by a single vision of economically, environmentally, and politically sustainable commercial markets for wind power development. The group identifies key issues affecting wind power, establishes dialogue to achieve consensus views on those issues, and catalyzes activities moving toward the overall vision. The group convenes workshops and produces documents on a wide range of topics affecting wind energy development, including transmission, economic development, avian, siting, and credit trading concerns. The NWCC prides itself on presenting high quality information in the workshops and documents. All of the information receives thorough technical review, and most is approved on a consensus basis.

Mr. DeMeo concluded that these types of meetings provide a unique opportunity for stakeholders from diverse perspectives to become informed of NWCC activities and allow for discussion and debate. Through these efforts, the NWCC provides a substantial contribution to progress being made on transmission issues in the western US.

Session II: Regional Planning Activities in the West

Vickie VanZandt, Bonneville Power Administration (BPA), discussed the status of transmission service in the western US from the BPA's perspective. According to Ms. VanZandt, no major transmission development projects have been initiated in the Pacific Northwest since 1986. Development of transmission infrastructure has been lacking throughout the country as well in the past fifteen years. Utilities have been successful in utilizing good communications, system controls, and reactive additions to maximize the transmission capacity region-wide. BPA, however, has reached the physical limits of its system capacity and believes that transmission system upgrades are necessary to provide a reliable system. A number of constrained paths exist, several of which are seasonal in nature. For instance, east-west transmission paths are heavily utilized in the winter months, when heating loads are high in the metropolitan areas. During the summer months, north-south lines are mostly used to provide power from hydro resources in the

NW to southwestern states as the mercury frequently rises into the 90s and 100s. The nature of electricity load has seasonal variations, also. Summer load (primarily from air conditioning and irrigation pumps) is more difficult to serve as it draws more reactive from the transmission grid when voltage levels drop. Preventing voltage instability is more difficult as a result. Summer heat also affects the wires' ability to carry current to load. All of these factors result in decreased reliability in the transmission system.

To address these problems, BPA has proposed the construction of new transmission lines to relieve congestion and restore a small reliability margin in the transmission system. BPA currently has more than one hundred generation interconnection requests, including over 5000 megawatts (MW) of wind in that queue. Ms. VanZandt noted some technical and operational issues that must be addressed to ensure successful integration of wind generation into the grid. BPA has integrated three types of wind turbines, each with differing interconnection characteristics. Operational issues resulting from the nature of wind resources and the characteristics of the turbines must also be tackled, including the tendency of wind generators to shut down production, or "trip off", as the generators approach frequency and voltage limits. This occurrence can have an adverse affect on system reliability if not mitigated.

Jeff Miller, California Independent System Operator (CAISO), briefed participants on methods the CAISO is using to address short-term transmission needs within the context of longer-range planning. California has approximately 1800 MW of wind capacity in the state, with a coincident maximum of about 1200 MW showing up in real-time. Primary wind resource areas lie east of San Francisco and northeast of Los Angeles. These areas are also known for thermal and voltage constraints.

California has instituted a two-stage Planning Process. The first stage includes an interconnection analysis where the California Independent System Operator (CAISO) oversees technical studies to identify reliability and congestion impacts of interconnection requests. Generators are required to mitigate reliability impacts, but are not obligated to alleviate congestion effects. The second stage is a continuous planning process that is completed for a minimum five-year planning horizon.

California has instituted special wind protocols to aid scheduling and settlements. As a result of the new protocols, wind generators pay CAISO a small forecasting fee. CAISO develops day-ahead, hour-ahead, and real time forecasts that can then be utilized by generators for scheduling their supplies of electricity to the power grid. Net deviations for each generator are then aggregated and settled at the end of each month. Mr. Miller noted that hour-ahead forecasts have been very close (within 95% accuracy) of actual measured wind generation. There have also been no problems due to physical limits placed on the transmission system as a result of the special protocols. He did note that at higher levels of wind penetration, CAISO is unsure as to the potential impact of wind projects on the operation of the transmission system.

Jeff Burks, Utah Energy Office, discussed the convergence of energy and environmental policy in the West and its relevance to transmission policy throughout the region. Following the findings of the Grand Canyon Visibility Transport Commission (GCVTC), the Western Regional Air Partnership (WRAP) determined that increased use of renewable energy resources can effectively reduce regional haze and result in emission reductions. Section 309 of the Regional Haze Rule promotes a regional approach to reducing regional haze. Section 309 sets the "10/20 goal", whereby states will include 10% of its electricity generation from renewable sources by 2005 and 20% by 2015. Achieving the goal is not mandatory or enforceable; however, the states are required to assess and document progress toward the goal and to explain why goals cannot be

met, if necessary. This program provides an opportunity for the proliferation of renewable resources in the West. The Air Pollution Policy (AP2) Forum of the WRAP is charged with implementing the GCVTC recommendations and has developed policy scenarios to examine the costs, emissions, and secondary regional impacts of implementing the 10/20 goals.

ICF Consulting has modeled the costs and emissions impacts of the AP2 scenarios. The region will need 20,000 MW on new renewable energy resources to meet the goals set forth by the GCVTC. In its cost analysis, the cost-effectiveness of wind and its ability to mitigate air pollution impacts lead to displacement of fossil-fuel capacity. The 10/20 goals increase regional electricity production costs 2-5% assuming no improvement to existing technology. At the same time, the ICF model predicts a drop in wholesale energy prices by 2018. Modest NOx reductions were concluded in the model, while carbon dioxide emissions fell by approximately 10%. The study also found modest positive economic benefits region-wide, although localized economic impacts tended to be higher in areas that host resource development.

Ed Weber, Transmission Planning Manager with the **Western Area Power Administration (WAPA)**, described the Montana-Dakotas Regional Transmission Study. This region benefits from significant energy resources, including wind resources. As such, the area suffers from excess electricity generation. Because of sparse population, the Upper Great Plains region must export as much as one third of its generation to other areas. WAPA has received funding from Congress to conduct a regional transmission study to assess alternative transmission scenarios for the region and to consider opportunities for integration and any necessary transmission additions that will be required to move power to load centers outside the area.

Montana essentially is a transmission constrained island, rich with energy resources and sparsely populated. The goal for Montana is to transfer generation to load centers east and west of the state. However, the existing transmission system is constrained on both sides. The study is geared to find ways to remove these constraints. To identify best alternatives to relieve transmission constraints and move generation to load centers, the study will examine local integration issues, voltage profile and system stability impacts, and cost estimates for alternatives. The study considers several generation options through the region, including coal, gas, thermal, and wind projects. The study also considers transmission options, primarily at 230/500 kilovolt (kV) options. The study has so far concluded that the wind plants, including one 600 MW plant and six 100 MW facilities, place too much strain on the existing system, so that their addition is infeasible without transmission upgrades. These failures may occur for several reasons, such as line overloads or voltage collapse. A more detailed analysis is needed to determine necessary upgrades that can address these issues. WAPA will continue the study into the spring to produce a detailed summary of constraints in conjunction with BPA and to refine cost estimates.

John Nielsen, Land and Water Fund of the Rockies (LAW Fund), described the substance and components of the Interior West Clean Energy Plan (IWCEP). The study aims to develop a long-term clean electrical energy plan for the seven states of the interior Western US (Montana, Wyoming, Nevada, Utah, Colorado, Arizona, New Mexico), with significant attention paid to increased reliance on renewable energy and energy efficiency. The study is funded by the Hewlett Foundation and involves the LAW Fund, and several other groups and consultants who will provide research expertise to the project. The PROSYM software, used in the electric industry to model generation scenarios, will be used to model the electric system under the IWCEP, comparing costs, air emissions, and transmission impacts. A risk analysis will also be conducted, modeling the impacts of volatile gas prices, possible future carbon regulation, and drought or other adverse hydropower conditions. The PROSYM modeling will include California and the Pacific Northwest, but will not create clean energy plans for those states,

relying instead on existing information and studies for those jurisdictions. The IWCEP study aims to determine how renewable energy and energy efficiency can help alleviate transmission system constraints and identify transmission upgrades necessary to bring remote renewables to market. The study will provide some insight on the question of tapping remote renewables (with higher transmission costs) versus utilizing lower quality resources closer to load. The study will also examine how energy efficiency, rather than increased generation and transmission, may be used to meet electrical needs in the region.

The IWCEP study goes a step beyond both the WRAP Air Pollution Policy study, which focuses on the renewables scenario with limited transmission modeling, and the Western Governors Association Conceptual Plan, which focuses on transmission modeling while limiting its study of renewable resource impacts. The IWCEP study will focus on both areas and include an energy efficiency component. The study will then provide inputs into the renewable scenario for a more detailed SSG-WI load flow analysis.

Steve Waddington, PacifiCorp, provided an overview of PacifiCorp's Integrated Resource Planning (IRP) Process. The current IRP process began in December 2001. At that time, PacifiCorp held its first public meeting to solicit input from stakeholders (public input meetings were held with stakeholders every six weeks throughout the process). This information was coupled with other data and analysis using a selected IRP model. The IRP process introduced risk as an important factor, and risk models were run to inform the process. After preliminary results were developed, the input data and assumptions were updated to reflect new knowledge discerned from the earlier model runs. Technical workshops were held to discuss new resources selected for prospective portfolios and risk models were finalized. PacifiCorp then initiated another set of model runs, and portfolios were refined based on the findings of those model runs. After a final run of the new resource portfolios, PacifiCorp produced a final set of IRP results and developed an Action Plan and IRP Draft Report. After incorporating public input into the draft report, PacifiCorp was scheduled to file the report with all state Public Service Commissions on January 24, 2003.

The results of the IRP process indicated a need to add 4000 MW of new generating capacity over the next ten years, with an estimated cost of \$2 billion. Renewable resources were estimated to represent 35% of that total, or 1400 MW. PacifiCorp plans to submit a Request for Proposals to begin acquiring renewables. Following an acknowledgement of the IRP report and Plan by state commissions in May 2003, PacifiCorp will conduct a Wind Impact Analysis for its transmission system and update the IRP plan. PacifiCorp plan to update the plan at least annually. Information on the IRP process and products is available at: www.pacificorp.com.

Scott Powers, Bureau of Land Management (BLM), discussed a BLM initiative to plan for utility corridors and rights-of-way on federal lands in the West and how wind energy can become a part of this effort. BLM is undertaking actions to implement the National Energy Policy. These actions focus on establishing right-of-way planning and corridor designations, giving priority to energy right-of-way applications. Mr. Powers stated that utility corridors address many interests. Well-defined corridors reduce time and costs of the permitting process for transmission development. Well-defined corridors also provide certainty for infrastructure planning and meet NEPA requirements with regard to public involvement.

The BLM has adapted work initiated by the Western Utility Group during the early 1990s to establish priority corridors that address existing transmission constraints and active requests for interconnection, future energy development, and existing and future land use constraints.

BLM is now in an aggressive resource management planning mode. Over 81 planning and NEPA efforts are now underway, with 21 of these projects involving time-sensitive plans.

New land use planning guidance for rights-of-way will help identify areas closed and open to development and those areas that should be avoided. From this information, planners will make site and corridor designations for transmission development.

This new Implementing new planning guidance will be implemented on a plan-by-plan basis. Planners will assess the status of all existing land use plans to see if those plans can accommodate corridor needs. The BLM will conduct a series of programmatic Environmental Impact Statements (EISs) for each proposal. When land use plans are revised or amended, right-of-way sites will be designated. BLM's general policy is to encourage development of wind energy in acceptable areas. The criteria for locating corridors should be applied to "siting" wind energy sites.

Mr. Powers noted that the National Renewable Energy Laboratory (NREL) provided information for the BLM analysis of renewable energy sites across the Western US.

Doug Larson, Executive Director of the Western Interstate Energy Board, discussed highlights of the Western Governors Association Conceptual Transmission Plans Report, published in 2001. The report was requested by Western governors to articulate what transmission needs exist in the Western US. The report began to answer the first of three questions the governors posed: (1) what transmission is needed; (2) how can needed transmission be financed; (3) how can needed transmission be expeditiously permitted. The study provided the first proactive assessment of transmission needs in the Western Interconnection and considered both new transmission needs and possible improvements to better utilize existing transmission routes.

The study showed that little transmission is needed if new generation is gas-fired located near load centers. However, if remote wind and coal resources are used, significant transmission congestion would result. On the second question, how can needed transmission be financed, there was passionate disagreement about financing options for transmission upgrades. Currently, two competing models receive attention: a total cost model, where the cost upgrades are spread widely among consumers in the Western grid, and a market approach, in which the specific beneficiaries of the upgrades pay for the upgrades. Mr. Larson argued for a more proactive transmission planning process in order to get new transmission approved and developed that enables access to more economical and less polluting resources. Western governors are encouraging RTO groups to adopt and implement the proactive transmission planning process currently being developed through the Seams Steering Group – Western Interconnection (SSG-WI).

Session III: Interconnection-Wide Planning Activities – Seams Steering Group-Western Interconnection (SSG-WI)

Dean Perry, Seams Steering Group – Western Interconnection (SSG-WI), gave the audience a brief report on SSG-WI actions to date and planned future efforts. SSG-WI exists to serve as a discussion forum to facilitate the development of a robust Western interstate transmission system capable of supporting a competitive and seamless Western wholesale electricity market. RTO West, West Connect, and the California ISO are all represented in SSG-WI. Mr. Perry heads the transmission planning group.

The RTOs signed a Memorandum of Understanding on December 5, 2002 and filed a report with FERC on January 8, 2003 outlining current transmission planning issues in the region. The report was filed by RTO West, WestConnect and the California ISO. The January 8 document also detailed a schedule for resolving those issues. The Transmission Planning Work Group is considering generation development five to twenty years ahead and the potential impact of that development on transmission needs in the region.

The SSG-WI effort represents the first such attempt at a total interconnection-wide planning effort. Historically, the Western region has worked together on transmission issues through the Western Electricity Coordinating Council (WECC), so the SSG-WI effort is a natural step to look collectively at the needs of the Western interconnection. The Eastern grid, in contrast, is more splintered and requires new relationships to be forged.

SSG-WI recently completed a draft path flow-congestion report. The report analyzes historical power flows on each major transmission path from 1998 through 2002, using WECC real time data. The analysis views historical performance on the Western Interconnection and shows where heavy flows occur and how heavy those flows have been. The report identifies the most heavily congested paths and will provide a basis for future modeling studies.

SSG-WI has also completed a draft planning process for the Western Interconnection. The process details how the planning function will be performed and how stakeholders will fit into the process. The SSG-WI analysis of the inter-RTO system represents the central part of the process. Each RTO will be involved in the planning effort. Load-serving entities (LSEs) and WECC will be involved in the planning process as well. Out of this planning process will come a list of potential transmission projects. These projects will be critiqued and compared with non-transmission alternatives. SSG-WI intends to issue an annual transmission plan for the Western Interconnection. Information on the planning efforts will be disseminated to stakeholders such as marketers and generation developers to show the direction of the planning process.

SSG-WI is also engaged in generating scenario studies. These studies will identify the potential for path congestion in the future under different generation development scenarios and alternative solutions. SSG-WI will generate scenarios for the 2008 and 2013 time frames and focus on varying levels coal, natural gas, and renewable energy generation in the system. SSG-WI is working with other groups to develop the scenarios.

One of those groups contributing to the development of the 2008 and 2013 scenarios is **PacifiCorp. Kurt Granat, senior transmission planner** with the utility provider, gave an overview of those contributions. PacifiCorp has agreed to produce cost models estimating how well plants run over long periods of time, indicating congestion points in the system. To run the model, the following information is required:

- ? Resource location, including major Western interfaces;
- ? Plant capacity, particularly the maximum capacity estimate for the facility, describing how much electricity turbines will actually produce under or over the amount the facility claims to generate; and
- ? Dispatch information, either an estimate of variable costs for dispatchable plants or an estimate of typical hourly generation pattern for non-dispatchable facilities.

Mr. Granat spoke for a few minutes about dispatch information. For dispatchable facilities, such as gas cycle or coal-fired plants, the modeling information needs to include:

- ? Fuel type

- ? Variable fuels
- ? Average full load heat rate
- ? Variable operation and maintenance
- ? Minimum online time for the facility
- ? Minimum down time for the facility
- ? Ramp-up rate

For non-dispatchable plants such as hydropower facilities, model input includes an estimate of hourly generation, adjusted for floods and droughts. Wind facilities are more difficult to model. To date, planners have used estimates for hourly generation output to create hourly models. These models utilize frequencies of output levels and transition periods. Mr. Granat expressed a need among planners for a model that illustrates the ability for system operators to move power to specific locations during needed time periods. This type of model requires a random variable for wind to see fluctuations at hourly intervals. Using the seasonal matrix developed by SSG-WI, planners can observe peak generation and load periods, clarifying congestion periods and transmission constraints. This information can also show where additional transmission capacity exists. Using this model, PacifiCorp can now integrate data from wind facilities. This model will generate good representative data that informs scenario development.

Jayson Antonoff, of the consulting firm **grnNRG**, next addressed the meeting on the elements of renewables scenarios being developed by PacifiCorp and SSG-WI. Three scenarios are under consideration: a gas scenario which serves as the reference scenario for the region, a high coal scenario, and a high renewable resources scenario. Wind, solar, biomass, and geothermal resources have been included in the development of the renewables scenario. The scenario development will help to answer a key question: how much wind or other renewable resource can be placed on the grid, and how will this inclusion impact transmission?

The scenario development has been broken into three phases. The first phase includes validation of generation plants that were online as of 2001. This phase will help create a picture of generation resources that are currently using transmission. The next phase of the renewable scenario development will be to project what generation resources will be in operation by 2008. Mr. Antonoff noted that for such a relatively short time frame some ambiguity will emerge about new facilities, particularly since wind facilities can be constructed in short time frames. Hence, planners will need to make reasonable estimates for projected new facilities in the 2008 time frame. In the third and final phase planners will project new facilities to be operational by 2013.

Two initiatives in particular will inform the scenario development efforts. The Interior West Clean Energy Plan (IWCEP) discussed earlier by John Nielsen will examine transmission control areas and model generalized seasonal characteristics of wind plants. The project will then use this seasonal generation data for wind facilities and determine the number of seasonal hours plants can be expected to operate at seasonal capacity factors. This data will then be used in the modeling process.

The American Wind Energy Association (AWEA) is currently working with wind developers to determine how much wind power can be economically developed in the region and to understand where those projects will be located, including injection points. Current AWEA projections show that all projects identified to date are feasible given existing turbine technology and prices of \$4/MBtu for natural gas. The rate of development projected is consistent with the state and federal policies encouraging wind development.

Mr. Antonoff noted several key issues to consider in the scenario development process:

- ? The modeling of non-dispatchable resources presents a key challenge to the scenario development efforts. Developing a method to analyze transmission system constraints given the possible fluctuations and inaccuracies with wind power generation will be important to the process. SSG-WI will work with AWEA and other organizations to accumulate good data on capacity factors for wind farms.
- ? The IWCEP will help determine the need and potential for conservation measures to augment new resource development.
- ? Changes in technology, particularly low speed wind turbines, open opportunities for distributed generation. The scenarios will attempt to consider this potential development.

Session IV: Market, Technical, and Policy Issues Affecting Western Transmission Today and Into the Future

Alison Silverstein, Federal Energy Regulatory Commission (FERC), addressed the audience on the impact of FERC policy on the Western wholesale electricity market design. Ms. Silverstein began her remarks by applauding the Western Governors Association conceptual plan to create a region-wide seamless market and encouraged decision makers to expedite the planning process to install such a system.

The major policy issues in the Western Interconnection amount to a lack of transmission and generation resources. While great plans exist for remedying both issues, little action has taken place in the last decade. Ms. Silverstein noted a gap between knowing improvements that are needed and executing those improvements. She expressed hope that the SGG-WI planning process would help to eliminate this gap and turn plans into built reality. Ms. Silverstein pointed to a number of issues for the SSG-WI process to consider, including:

- ? Location of generation needs and desirable locations for development
- ? Load movement in the region
- ? Fuel and geographic diversity
- ? Role of conservation and distributed generation in regional electricity needs
- ? Level of desired generation and resource adequacy
- ? Level of willingness to pay for resource adequacy

While SGG-WI is moving the region towards a coordinated planning process, such regional coordination does not exist with respect to policy issues. Ms. Silverstein believes Multi-State Entities (MSEs) could play a significant role in coordinating linkages between resource development plans and potentially competing state policy issues and values. In particular, such efforts would help promote acceptance of resource development plans by state siting authorities.

Ms. Silverstein discussed the FERC Strategic Plan for the next 18 months. The Strategic Plan attempts to address three main challenges for the agency and ways to organize corrective action.

Infrastructure: The FERC has moved from a more theoretical approach to regulation to one that incorporates past experiences from Texas and other states where agency commissioners and staff has previously worked. One year ago, no consolidated information existed about actual implementation of regulatory changes. As a result, the FERC convened a series of regional infrastructure conferences commencing in November 2001. Conferences have been held in the Midwest, Southeast, and West to address resource adequacy and the real issues and challenges

that impact each region. While lots of varieties in issues exist, one constant concern across region is that generation appears to go where load does not exist, and a lack of transmission seems to hamper expansion of generation resources. The FERC will hold future conferences to update this information, which can be found on the agency's website: www.ferc.gov.

The FERC interconnection rulemaking seeks to create standard rules and conditions applied from lessons in Texas and other states to simplify interconnection procedures for generators and transmission owners and operators. The new rulemaking should be completed by the summer of 2003. Ms. Silverstein acknowledged a workshop on interconnection issues held in Washington, DC, a day earlier to discuss interconnection issues. Diverse interests were able to listen to one another and share insights in transmission interconnection concerns. Ms. Silverstein noted that the FERC had adopted the California ISO wind provision eliminating imbalance penalties for wind facilities and suggested that other regional transmission organizations (RTOs) adopt similar provisions in their tariffs. Ms. Silverstein also suggested that RTOs approve merchant transmission rules, where users of transmission facilities are required to pay for that use, so as not to dump costs of transmission onto ratepayers.

Market Rules: The FERC has proposed Standard Market Design (SMD) rules to ensure regulatory certainty for new transmission. Ms. Silverstein stated that the rules seek to provide complete neutrality for all fuels to promote equal access to the market.

The FERC favors institution of locational marginal pricing (LMP) and encourage such pricing methods in the SMD proposal. Ms Silverstein acknowledged the value of LMP. She stated that the value of electricity changes over time and space, and buyers should bear that cost, whether applied at different nodes or zones. In theory, LMP measures will accomplish that task.

SMD recognizes that bulk power provision is not the only option to improving system reliability. Resource adequacy and system expansion planning are equally important to ensuring a reliable electricity market. Regional planners need to determine the most cost effective means for achieving reliability. SMD promotes demand response measures to encourage a healthy market. Once a mature market emerges, the removal of price caps for electricity becomes a legitimate option.

SMD incorporates a standard resource requirement of 12% of total capacity. Each region should decide how much reserve capacity is needed to ensure system reliability. Ultimately, market rules should encourage investment in new transmission and technology to promote an efficient, reliable system. The FERC will produce a white paper in April 2003 that evolves from the SMD proposal. A final rule will be promulgated in July or August 2003.

Customer protection: The FERC is currently engaged in research to understand situations where market rules do not succeed in allocating resources efficiently, such as during the California crisis in 2000-01. The FERC seeks to create transparent and trustworthy energy prices and to restore public trust in energy prices. Better price information will enable better locational decisions to sell electricity.

Ms. Silverstein outlined some challenges that await the FERC in the coming months. She hopes that FERC can move forward its plans to actuality so that new transmission is developed quickly. Good leadership, currently exhibited by the existing RTOs and through the WGA, is vital to implementing needed changes regionally. The FERC hopes to institute policies that lower investment risks and to help utilities become more credit worthy.

Jim Souby, executive director of the Western Governors Association (WGA), responded to policy issues facing the Western electricity market. The complexity of the Western transmission system is important to acknowledge. The WGA is focused strictly on this area. Mr. Souby stated that many Western governors believe the FERC is oriented to Eastern market considerations and responses, ignoring the complexity of the Western Market.

The WGA has addressed electricity market issues for some time. In May 2001, during the height of the California energy crisis, the WGA convened many of the region's best transmission owners to raise questions concerning the future of electricity transmission in the West, including understanding the amount of transmission needed, its cost, and permitting needs. The WGA concluded that to become more effective, the region needed a proactive planning process. The Western governors asked that planning be undertaken principally by the private sector with public involvement. One good example of such an effort is embodied by the corridor planning process on public lands sponsored by the Bureau of Land Management (BLM).

Two important documents shape the WGA stance on transmission development policy. The WGA Conceptual Transmission Plans report was released in August 2001. This report surmised that financing options were the most critical issue facing the development of new transmission in the West. This document was followed by a WGA white paper in February 2002 that highlighted disagreement on two financing models: a total cost model that seeks to spread costs to all participants, and a market model where only direct beneficiaries of the transmission system are required to pay costs for using the system. Decision makers believe that some distribution of costs to all market participants will need to occur. Likewise, they find the market model attractive, but unable to provide the amounts of money needed to finance the system. Ultimately, a hybrid approach adopting both the total cost and market models will probably be employed to provide the necessary financing for transmission improvements. None of the necessary financing will materialize, however, unless a proactive transmission planning process is developed.

The regionalization of the Western power market requires more collaboration in permitting interstate transmission facilities. In the 2001 report WGA Conceptual Transmission Plans, the WGA directed Western governors to enter into protocols with key federal agencies to create a means to conduct collaborative review of interstate transmission proposals. The new Western Protocol required states to obtain planning information upfront, create a cooperative siting process across states, and arrive at decisions on a collective basis early in the process, rather than at the end. The Western Protocol does not preempt existing authority; rather, it exists as a means of organizing the transmission planning and siting process, involving decision makers and stakeholders early in the process. More information on the protocol can be found on the WGA website at www.westgov.org/wieb.

Mr. Souby then responded to comments made by Alison Silverstein in her preceding presentation. The WGA agrees with the FERC on the gravity of many issues that Ms. Silverstein presented. Western Governors, however, disagree with the general nature of the SMD proposal process and the political accountability for the process. Mr. Souby stated that Western governors believe the development of policy related to transmission planning should fall within their jurisdiction, and primary accountability is a matter of gubernatorial discretion. The current debate over the SMD proposal is diverting attention from problem solving and planning that ought to be occurring on a regional basis.

Western governors believe that SMD will evolve and, in time, such a national mechanism may work. The existing environment, however, emphasizes regional markets requiring regional solutions. Western governors are best able to realize these solutions in partnership with the

FERC. Western governors are interested in establishing a functional regional planning system. A regional decision-making model is important to allow all western states to integrate decision-making. An entity such as the Western Siting Protocol may offer a means to integrate decision making across states.

Ms. Silverstein made a brief comment on Mr. Souby's remarks. She stated that the FERC agrees that regional decision-making is important, and the SMD proposal allows for regional variation. The SMD represents a set of principles allowing significant variety so that regions, including the Western Interconnection, can solve its own problems. She views the SMD debate as not a distraction but rather an opportunity to consider ways of integrating resource allocation needs with other policy decisions.

Jim Caldwell, policy director for the American Wind Energy Association (AWEA), provided some insights on market issues impacting Western transmission planning and development. Three issues must be addressed to create a functional, reliable electricity market for diverse fuel sources. Operational and wind integration issues are key to the development of such a system. Mr. Caldwell believes that proper engineering modeling tools to analyze integration and operational concerns are about one year away. While turbine technology has improved dramatically to address integration concerns, the analytical capabilities need improved information sources in real time to catch up with these improvements.

Mr. Caldwell identified tariff reform as a second area for action by wind proponents. Wind proponents favor the tariff aspect of SMD. The architecture of the tariff system proposed in the SMD proposal treats transmission issues as a network activity, rather than a discrete set of actions and responses. The proposed tariffs address market imbalances and incorporate a congestion management system that is fair to all fuel types. Mr. Caldwell noted that while AWEA favors the implementation of SMD characteristics, the reality is that SMD will not become standard in the West in the near future. SMD implementation requires a major investment in control issues such as accountability. Mr. Caldwell stated that the wind industry needs to identify those provisions in the SMD tariff that are important, and determine the means by which to incorporate those provisions into existing tariffs. In the Midwest, discussions of incorporating these characteristics into tariffs are underway. Meanwhile, those discussions have yet to occur in the West. Wind proponents will need to encourage these discussions in policy conversations soon.

On the policy front, Mr. Caldwell pointed to a need for advanced policies concerning interconnection queuing. He also noted the need for renewable portfolio standards (RPS) and a long-term production tax credit (PTC) at the federal level to spur wind facility production. Congress has recognized market forces that make wind cost effective and is pushing towards a federal RPS, evidenced by passage of a RPS with real numbers in the Senate in 2002.

The best way to establish the planning process, Mr. Caldwell believes, is to pick a tangible development project and work on it in a cooperative way, involving all stakeholders. He pledged AWEA's support in such an effort.

Greg Lange, chief power dispatcher at the Grant County Public Utility District, provided some perspective on the technical and operational issues of integrating wind into the transmission system from the view of a system operator. The Grant County PUD is a public entity in central Washington State that manages 18 megawatts (MW) of wind generation (out of 350 MW total generation). As a public entity, the Grant PUD has a state mandate to consider renewables in its portfolio.

From a control area viewpoint, a “normal” situation for a system operator involves matching controllable generation with a dynamic load. By adding wind generation to the system, a new situation of matching dynamic generation with dynamic load is created, making the job of the dispatcher more difficult.

In general, system operators express concerns about good interconnection agreements for wind facilities. In particular, the system operator wants an open line of communication with the wind facility and needs to be assured that the facility can be trusted to generate the electricity it claims to be able to produce during the appropriate time frames. This assurance can be solidified by accurate wind data (operators are currently struggling with day-ahead predictability).

Scheduling presents a real challenge to system operators. Mr. Lange noted that day-ahead predictability has been a real problem in his control area. The current winter has been lackluster in terms of wind resource across central Washington, hampering scheduling efforts and requiring backup generation on occasion. Real time generation and load balance is a particular problem at saturation levels where the system has adequate generation available. The Grant County PUD is currently working with wind facilities to address these problems. Mr. Lange noted that larger wind projects have seemed to provide stability to generation output.

Safety requirements are important for any new generating source, not only wind. The site must be interconnected to proper specifications, and fault protection is vital along the earthquake-prone areas along the West Coast.

Discussion Session

After a discussion period among key stakeholders, Roger Hamilton provided the group with a summary of the day’s issues and conclusions. Based the afternoon dialogue, the meeting participants offered a list of key needs and priorities for pro-active, forward-looking, region-wide transmission planning in the Western US not currently addressed.

Data needs:

- ? Model a renewables scenario plus coal and natural gas for future situation analysis (MISO model). SSG-WI is doing this?
- ? Wind resource areas with actual flows on transmission lines to determine feasibility of moving wind on existing wires
- ? Distributed generation and energy efficiency scenarios
- ? Integration of SSG-WI, WGA transmission flow models, WECC reliability, BLM/Forest Service, LAW Fund Rockies, IWCEP, and AWEA data to provide a clear picture of Western transmission issues and alternatives

Research efforts:

- ? Integration of wind into hydro systems
- ? Wind generation profiles on regional basis (WAPA and NREL)
- ? Climate change modeling
- ? Alternatives to new transmission

Regional and sub-regional planning needs :

- ? Institutionalization of the SSG-WI planning effort
- ? Linkage of resource and transmission plans of LSEs to the SSG-WI efforts
- ? Information on Western utility least cost plans and the impact on wind

Policy, market and operational developments that may impact planning:

- ? Develop a semi-firm transmission product w/o waiting for RTOs
- ? Develop case studies on integrating large amounts of wind into utility systems to identify issues and solutions
- ? Share information on best practices on treatment of imbalances between scheduled and actual deliveries from wind farms
- ? Creation of Multi-State Entities (MSEs) to address interstate planning and policy issues
- ? Siting protocol (WGA)
- ? Impacts of SMD and LMP
- ? Impacts of state and federal RPS, SBC, and tax credit programs
- ? Coal/wind synergies and net environmental benefits
- ? Capacity credits/ resource adequacy
- ? Socialization of costs of new transmission vs. participant pays

The group then discussed potential roles that the NWCC could play to promote transmission planning in the West. The group came up with the following ideas:

- ? Develop white papers and case studies on outstanding issues
- ? Facilitate data integration into region-wide planning process
- ? Perform institutional and data gap analysis
- ? Create and facilitate forums for stakeholder input
- ? Develop a set of planning principles to determine best places for generation and transmission including economic considerations and based on diverse regional values (siting)

The NWCC will discuss these options amongst its Transmission Work Group and propose an action plan in the coming weeks. Participants felt that another workshop would be a good idea once SSG-WI has developed its scenarios and can share the results with the public.

The meeting adjourned at 5:00 pm