



Transmission Workgroup

Meeting Summary

March 1-2, 2000

March 1, 2000

Welcome and Introductions

Facilitators: Abby Arnold and Gabe Petlin, RESOLVE

After introductions and adoption of the agenda, Abby Arnold reviewed the purpose of the meeting:

- Provide a forum for discussion and coordination among sectors on wind energy transmission issues
- Identify key issues for wind energy transmission in the context of FERC RTO proceedings
- Review NWCC transmission case study conclusions, identify new case studies, and review DOE/WAPA transmission studies
- Agree on proposed role and NWCC activities in transmission

Introductory Remarks by Administrator Michael HacsKaylo of Western Area Power Administration

- Western Area Power Administration (WAPA) operates in fifteen western states and maintains 17,000 miles of high voltage transmission in the west.
- As a matter of policy WAPA complies with FERC Order 888 and has filed open access transmission tariffs with FERC. Administrator HacsKaylo and WAPA support wind power development and look forward to future work with wind.
- WAPA subscribes to PSCo's windsource program for some of its electricity needs.

Presentation of NWCC Transmission Case Studies and Conclusions Summary

Charlie Smith, Electrotek Concepts, Inc. and UWIG

[Refer to Attachment A 'Summary of NWCC Transmission Case Study Conclusions' and Attachment B corresponding slide presentation]

Charlie Smith presented a summary of conclusions on the revised NWCC Transmission Case Studies. The conclusions summary and related slide presentation include the following topic areas:

- Background explaining the inception and development of the case studies
- The approach used to create the case studies
- A one-paragraph summary of each case study
- The conclusions gleaned from each study
- A proposal for NWCC next steps

The conclusions presented for each of the case studies are cited below:

CASE 1: *Transmission Policy and Pricing in Texas under ERCOT*

- Have a strong presence, seek a level playing field, and work for inclusive and transparent processes in regional transmission governance proceedings
- Do not seek special treatment for wind
- Find common interests with other participants and build alliances on broad issues to be more effective
- Promote a view of the transmission system as a common carrier operating in the public interest
- Use simplicity as a guiding principle to reduce the adversarial aspects of transmission issues; e.g., simplify the transmission reservation process and transmission pricing

CASE 2: *Virtual Wheeling*

- Not a panacea for wind energy, does not obviate need for new transmission
- Fossil-based replacement power can raise some issues of concern; decisions must be clearly communicated
- Green marketing programs using virtual wheeling face public perception challenges if energy is delivered from local fossil generation
- Financial transactions can enable wind development to occur in the best wind resource areas while giving utilities flexible least cost options to meet regulatory requirements for renewables

CASE 3: *Transmission System Upgrades in the Midwest*

- Additional education and dialogue on transmission issues would be beneficial to fostering common understanding among diverse interests about both the impacts of the transmission infrastructure to society and its benefits.
- The current transmission planning process is not sufficient for bringing new transmission projects to fruition. An improved regional approach to resolving transmission planning disputes must ultimately be found.
- Transmission upgrades will face continued opposition from environmental and community advocate interests. A new approach which will produce renewable energy and environmental benefits, and will provide compensation for those along the transmission rights of

way, may be required.

Case Study Discussion and Next Steps:

Workshop attendees thought the case studies captured many of the key issues and offered the following comments, reactions, and recommendations:

- The Postage Stamp Rate may not be sustainable in ERCOT and is not likely to be applied to the entire U.S. system under FERC Order 2000.
- ERCOT will manage congestion by applying an uplift charge to the Postage Stamp Rate that will be applied uniformly across the ISO. Over time the cost will be allocated to those wheeling across congested zones.
- It may be important to focus on the market aspects of the transmission tariff in Texas.
- Texas has very different land use concerns as compared to other parts of the country. Most of west Texas is privately owned and one can readily self-build, whereas in other parts of the country there is greater regulatory oversight for self-building transmission.

The following items were proposed as next steps in the case study process:

- Technical editing of Case 3: Transmission System Upgrades in the Midwest
- Writing a conclusion section to the three case studies that ties illustrations of NWCC RTO principles, based on the case studies, to FERC Order 2000's Required Four Functions and Eight Characteristics
- Researching and writing a new case study on the California ISO

Action: Jim Caldwell will look for an existing case study on how the California ISO system is working for intermittent resources and the NWCC will follow up with Jim in March/April 2000.

Review DOE/WAPA Transmission Studies

Brian Parsons, NREL; Ed Weber, WAPA

[Refer to Attachment C booklet 'Dakotas Wind Study, NREL/WAPA, February 2000' and Attachment D corresponding slide presentation.]

Ed Weber presented Phase I of the NREL/WAPA Dakotas Wind Study highlighting the results of a screening study of potential sites for possible interconnection of wind farms to the Integrated Transmission System (IS) in North and South Dakota.

Presentation Overview:

- Western is a member of the Mid-Continent Area Power Pool (MAPP)
 - a. MAPP has Re-stated Agreement principles - a contract between members and MAPP with agreed to penalty clauses, approved by FERC.
 - b. The Regional Tariff (Schedule F) may not be approved given FERC Order 2000.
 - c. MAPP has growing and diverse membership - "it's a moving cloud."
- North Dakota's generation capability includes Western hydro at 500 MW, Basin Electric Power Cooperative fossil at 1700 MW, and other fossil generators at 2500 MW, for a total generation capability of 4700 MW.
- North Dakota's Summer Peak was approximately 2500 MW and the amount of generation exported was 2200 MW. Generation peak varies across the service area.

Study Results:

- Twelve Potential sites were selected for the study; seven sites in North Dakota and five sites in South Dakota. Wind generation was added to each of these sites to examine local transmission limitations using steady state power flow analysis.
- The North Dakota transmission system is severely constrained due to the instability of the interconnected system during periods of high power transfer. During certain conditions, the transmission system is incapable of delivering all existing generation in North Dakota to the load centers of the region.
- The measures of the system constraints are Steady State Criteria consisting of overload, and voltage violations and Dynamic Criteria consisting of voltage swings, generator swings, and cascading outages. The Steady State Criteria violations were the limiting criteria in most cases. Each site was tested independently, not simultaneously.
- Based solely on power flow analysis, one site in North Dakota (Jamestown) and two sites in South Dakota (New Underwood and Watertown) may be capable of integrating 150 MW of wind generation without a power flow criteria violation.
- Additional wind generation in some locations will exacerbate the problems associated with exporting power from the Dakotas.
- Further study is needed before a wind project can be recommended at any of the twelve sites.

Brian Parsons presented ideas for Phase II of the NREL/WAPA Dakotas Wind Study which will focus on what can be done with the existing system. The proposed plan for Phase II is cited below:

- Select a subset of promising sites
- Perform dynamic stability analysis
- Review MAPP available transfer capability analysis
- Undertake system upgrade cost/benefit
- Take a critical look at system criteria for wind compatible flexibility

Questions, comments and insight from workshop members and presenters:

- The dynamic stability analysis will likely show that the region can handle between 25-100 MW.
- There is 200 MW of untapped coal capacity in North Dakota.
- The interaction of wind and hydro should be examined.
- The existing transmission system has very limited capacity to transport wind power from North Dakota to Minnesota.
- The MAPP transmission approval process is very long and cumbersome. In order to submit studies in a timely fashion, it is predicted that developers will need to have their own transmission planners

that developers will need to have their own transmission planners.

- Can new technologies be used to solve transmission issues? Why haven't new technologies been adopted?

Action: Brian Parsons and Ed Weber will keep the NWCC Transmission Workgroup informed as the Phase II study progresses and notify them if any additional input is needed.

Overview of FERC RTO Order 2000

Kevin Porter, NREL

[Refer to Attachment E 'FERC Order 2000 - Implications for Wind Energy' slide presentation]

Kevin Porter presented a comprehensive overview of FERC Order 2000. It consisted of a description of the following topics:

- What the FERC order does
- The four required characteristics of RTO's (Independence, Scope and Regional Configuration, Operation Authority, and Short-Term Reliability)
- The eight functions of RTO's (Tariff Administration and Design, Congestion Management, Parallel Path Flows, Ancillary Services, OASIS, Market Monitoring, Transmission Planning and Expansion, Interregional Coordination)
- Additional discussion areas such as open architecture, transmission pricing innovation, eligibility, PBRs, pancaking, and positives for wind energy
- Unanswered questions
- Proposed draft principles

Discussion:

Discussion focused on key wind transmission issues going into the FERC RTO process and how the RTO Order might positively and negatively affect wind energy. The following issues were expressed:

- Although FERC has remained fuel blind as to what is feeding the transmission system, there is no stated policy in the Order as to whether RTOs must recognize all forms of generation. This is something that the regions will likely consider.
- The current structure of transmission tariffs sometimes presents barriers to intermittent resources like wind. Intermittent resources should be acknowledged and accommodated as well as firm power.
- Environmental issues are not a criteria for FERC. Rather than focus on environmental issues, concentrate on eliminating discriminatory practices and insuring competitive markets.
- Demonstrate present constraints of the market system in order to allow wind and other renewables to be treated fairly.
- Understand who the decision-makers are and what the process is when getting involved in the RTO formation process. FERC set out the Order, participants submit RTO proposals voluntarily to FERC, and FERC is the ultimate decision-maker who approves or rejects applications.
- Transmission owners need to recover their costs and need incentives to build. Congestion price management means the investor must get a return off of a market based pricing scheme which is difficult and makes investors hesitant.
- Although larger RTOs may improve seams issues, they then become harder to form and less functional. Markets should be matched to the size of the RTO.
- RTOs should be open to participation from non-transmission owners.
- When the transmission charge is put on loads, customers become indifferent to the type of energy technology, and wind can better compete with other fuel sources
- How should RTOs handle investment costs? How should sunk capital costs and future congestion costs be treated?
- Should the level of transmission studies required directly reflect the generator's size? Has this historically been a barrier to entry for smaller generators?

Regional FERC RTO Proceedings in MAPP, Western Region, South, Northeast, Southwest, Northwest, and California

This section outlines brief updates from RTO participants and stakeholders in each region. The regional participants' reports describe the priority issues for wind in each region, who will likely be the key players, and what the opportunities are to participate and have an impact on the proceedings.

WEST

Doug Larson, Western Interstate Energy Board

- Electrical interconnections establish the maximum boundaries of power markets.
- Long distances separate generation and load centers in the Western Interconnection.
- In the West, nearly one-half of the high-voltage transmission system is owned by public power and is not subject to FERC's jurisdiction. This could result in RTOs with large holes.
- Multiple RTOs will be formed in the Western Interconnection.
- The priority of western states/provinces is on resolving seams issues between RTOs.
- It will be easier to resolve seams issues before RTOs are formed than waiting until after RTOs are formed.

Bob Fullerton, Western Area Power Administration

- Western is not subject to FERC jurisdiction under the Federal Power Act, but has voluntarily filed an open access tariff with FERC.
- Due to the independence requirement, Western probably does not have legal authority to become an RTO pursuant to existing law. As a Federal agency, Western has unique legal obligations that could limit its participation in RTOs.
- Western supports the formation of RTOs. Although Western has not yet committed to join the California ISO, we have been involved in discussions with the CA ISO and other RTOs.
- FERC's issuance of Order No. 2000 could have an impact on consideration of electric utility industry restructuring legislation by Congress.

NORTHWEST

Wally Gibson, Northwest Power Planning Council

- Transparency across constraints should be a priority for the West. Therefore congestion management protocols are important as well as the elimination of pancaking of access fees across RTO boundaries.
- The west is one market and the markets are not divorced from each other.

Alan Davis, Montana Department of Environmental Quality

- 80% of the transmission facilities in the Northwest are federally owned (Bonneville Power Administration) and are non-jurisdictional to FERC.
- How to combine a public and private system is a major concern in part due to seams issues.
- The eastern and Western parts of the region have agreed to form a non-profit ISO.
- There is still an opportunity to shape the NW RTO, because it has not yet been formed.
- ISO governance really matters.

SOUTHWEST

Mike Raezer, Tuscon Electric Power Company and "Desert STAR"

- Desert STAR is an ISO operating in Arizona, New Mexico, West Texas and Southwest Colorado.
- It manages 20,000 MW of load.
- There are 130 members in 8 membership classes including: transmission owners, retail customers, independent power producers, transmission dependent utilities, power marketers, and state regulators.
- Desert STAR was incorporated in September, 1999 and their goal is to file with FERC in Summer, 2000 with anticipated FERC approval by the end of the year and operations to begin December, 2001.
- Use of the transmission system will be reserved and scheduled through Desert STAR.
- Load will pay a single access charge for access anywhere within Desert STAR, an example of "license plate" pricing.
- It is a priority for Desert STAR to minimize cost shifting between members.
- Annual membership costs \$250 and entitles members to participation in ISO Workgroups.
- The Southwest is less of a priority for the wind community given it's relative wind resources.

SOUTH and NORTHEAST

Jim Caldwell, CEERT

South

- There is very strong resistance to FERC's jurisdiction in the South.
- This is not a priority wind resource region.

Northeast

- In the Northeast there is a history of regional organization and cooperation. New England, New York, and PJM have each been, in essence, RTOs for almost 50 years.
- The Northeast is ahead in some ways and behind in others. For example; there is a good governance structure and stakeholder involvement, and a good imbalance penalty policy in NY, but they haven't adequately addressed ancillary services.
- Jim Caldwell (CEERT) and Terry Black (NRDC) both sit on the PJM Users Board. If you have a wind issue in PJM, they can work with you on it.
- There are allies in NY and NE who sit on ongoing committees as well. (Mollie Lampi of PACE in NY and Allan Nogee of UCS in NE)
- There is not a large MW potential of wind power in the Northeast, but there is an opportunity to focus on precedent-setting issues which could potentially apply in the Midwest.
- The region's best wind resources are in the NY State hills and in the hills of West Virginia.

CALIFORNIA

Steven Kelly, Independent Energy Producers Association

[Refer to Attachment F for Steven Kelly's presentation overheads]

Steven Kelly's presentation describes transmission trends affecting intermittent resources and the new paradigm of integrating intermittent resources into competitive markets.

- Independent transmission grid operations are advantageous for wind, because of open grid access, market/development opportunities, and a regional focus. They are disadvantageous because no preference is given to assist individual technologies.
- A network system vs. a contract path is advantageous, because scheduling and portfolio strategies can help intermittent resources. It is disadvantageous, because congestion is resolved through FERC approved ISO/RTO protocols/tariffs - which are difficult to change.
- There are three kinds of energy markets in the CA ISO: day ahead, hour ahead, and real-time balancing markets.
- When integrating intermittent resources into competitive markets the paradigm is restructured in three ways:
 1. There is a risk shift. Before wind shifts had to be estimated, now estimations must be made on when prices 'go negative'.
 2. Intermittents combine with other resources (e.g, biomass) as "single product" portfolio bidding to mitigate uninstructed deviations.
 3. "Green Markets" combined with regional grid "sinks" mitigate delivery risk to customers.

MIDWEST (MAPP)

Dave Blecker, MSB Energy Associates

- The Midwest has confounding transmission issues. There is a checkerboard pattern of participation of non-contiguous utility members in The Alliance ISO. As well, the Midwest ISO is now trying to form and appears to be in competition with the Alliance ISO for membership.
- There are significant transmission congestion issues between large low-cost and dirty central generation west of the Mississippi and load centers east of the Mississippi. (e.g. Minnesota to Chicago)
- Tribal ownership of lands in the Great Plains is a significant opportunity for wind generation. However, the transmission network may not support the transfer of this power from the plains to the load centers. The potential merger of the MAPP and SPP reliability councils further complicates the creation and fair operation of a Midwest ISO.

NON-REGIONALLY SPECIFIC PRESENTATIONS

Terry Black, Project for Sustainable FERC Energy Policy

[Refer to Attachment G 'Public Interest Policy Agenda for RTO Development']

The Public Interest Policy Agenda for RTO Development presented by Terry Black is the product of a coalition largely representing renewable energy advocates, environmental organizations, and consumer interests. This agenda includes but is not limited to the following items: RTO Structure, Competitive Markets, Congestion Management, Pricing Policies, Scope and Configuration, and Grid Interconnection Requirements. It will be shared with allies to refine agenda items, prioritize issues, and facilitate alliances.

Specific points to consider:

1. Environmentalists and wind representatives are not powerful, but they do hold similar issues as the large players.
2. It is important to have a seat at the table.
3. Fashioning alliances is critical; in order to get a seat at the table that counts there is a need to work with allies.
4. FERC staff may be helpful; three or four commissioners highly regard the NWCC.

Toward an NWCC Action Plan: Synthesis of Priority Transmission Issues for Wind Energy

The following question was proposed to all attendees of the workshop: "If you were directing the NWCC about what it ought to do to assist you in addressing transmission issues, what types of activities or research would you suggest we do?" The following notes provide the responses put forth to the above question.

Discussion:

- Develop a policy agenda on behalf of wind that focuses on the big picture issues in Order 2000.
- Look at whether RTOs under Order 2000 would present impediments or facilitate aspects of the NWCC case studies that work for wind.
- Develop consensus on Kevin's RTO wind principles.
- Document the day-to-day problems of interconnecting wind to the transmission grid.
- Recognize the increased uncertainties of the new RTO future. Insure necessary returns on investments for transmission are realized and provide incentives to build new transmission.
- Be careful about price mechanisms that create distortions.
- Send NWCC members to RTO workshops and formation meetings in near-term; develop a set of transmission principles for wind in the medium term; conduct substantive research white paper on RTOs and wind energy issues, e.g. transmission expansion. Do not do additional case studies.
- Shape RTO policy by emphasizing: 1) what is cost effective; 2) how have people been successful in getting wind development to occur; and 3) how to make wind attractive economically.
- Develop a white paper on what states can do relative to transmission and reliability issues.
- The transmission paradigm is changing and we should recognize that transmission owners have vested interests and have been operating in the public interest. Carefully word all statements to be sensitive to this.
- NWCC education and outreach on FERC RTO priority issues for wind: 1) fair and equitable energy imbalance penalty policy -what's right for wind is right for other generators; 2) fair and equitable access fees to enable wind to access transmission services; and 3) get wind representation in RTO governance.
- Separate the wheat from the chaff and decide on "needs vs. wants," and focus on core issues.
- Open and efficient markets should work for wind and is a principle other interests can align with.
- Write a paper on imbalance penalties.
- Advocates need to show up at Workgroup meetings of RTOs in formation and share experience among other RTOs.
- Provide legislators with information so that they can become experts on transmission and wind issues.
- Develop a set of RTO principles quickly and let the advocates run with them.
- Pick 2-3 RTOs to have an impact on: Midwest and Western Interconnect.
- The time to act is now.
- FERC Orders 888 and 889 were developed absent of advocate involvement and as a result we are living with tariffs that don't allow wind to participate fully in the market for energy. FERC Order 2000 is a second chance for life to get transmission "right."
- Wind community: get involved, develop principles on: pricing, congestion management, and transmission expansion.
- Agree on a set of principles that advocates can use.
- RTO development under Order 2000 represents a fairly strong paradigm shift. This is a new game being played largely by players who do not know how to balance the needs of asset owners with consumer issues. Infuse the process with public policy-minded people who do understand these issues. Consumers need more voice in the RTO process.
- Keep in mind that RTO principles don't address wind's needs the way renewable portfolio standards (RPS) or system benefit charges (SBC) do. RTOs do not appear to be very forward thinking.
- Consider technology assisted transmission solutions.
- Remember that postage stamp pricing is just one rate. The Post Office offers several rate tiers as could RTOs.
- Look for opportunities to coordinate with other energy generators and management units, e.g. Tribes and the Army Corp of Engineers. Explore the potential marriage between wind and WAPA hydro/transmission resources with tribal involvement.

- Public goods include clean power with local benefits and external benefits, e.g. cleaner air in the Northeast.
- Educate decision makers on the important characteristics of this technology: 1) wind is new, 2) wind is intermittent, and 3) wind is remote.

March 2, 2000

DRAFT NWCC Transmission and RTO Activity Plan

Based on the previous day's discussion about what the NWCC could do to address transmission issues, the RESOLVE staff drafted overnight a Draft NWCC Transmission and RTO Activity Plan. The draft included here was subsequently edited after the meeting:

DRAFT NWCC TRANSMISSION AND RTO ACTIVITY PLAN

Role NWCC could have in RTO process

- Serve as a resource to stakeholders who are directly engaged in RTO process.
- Engage in the regional RTO discussions; e.g. coordinate participation of NWCC members within constraints of budget and NWCC staff time; and present NWCC RTO Principles and relevant materials in neutral non-advocacy fashion
- Place emphasis in those areas where strategic opportunities are apparent: Midwest, Northwest, and eastern part of the Western Interconnect.
- Coordinate with potential allies including UWIG, CREPC, consumers, environmentalists, large industrial customers, AWEA.
- Disseminate RTO Principles to NWCC members and encourage them to present the information to the constituencies they represent and at forums in which they participate.

Near-Term Activities - March, 2000

- Work for full NWCC approval of RTO Principles
- Broadcast e-mail and web dissemination of RTO Principles
- Identify NWCC member/key participant to write lay guide to RTO Principles: 1 paragraph for each principle
- Transmission Workgroup Conference Calls to discuss NWCC plan and agree on who will do what, go where, and when
- Identify NWCC members and key participants who will present RTO Principles at FERC RTO Workshops and regional RTO formation meetings:
 - Philadelphia March 15-16
 - Las Vegas March 23-24
 - Kansas City March 29-30
- Gather information at FERC Workshops and present preliminary summary/lessons learned and possible future RTO outreach/follow-up steps for discussion on March 30th NWCC Steering Committee conference call and Workgroup conference calls.

Medium-Term Activities - April - October, 2000

- Focus RTO follow-up outreach activities on the following regions:
 - Northwest
 - Eastern part of Western Interconnect
 - Midwest
- Finalize detailed RTO outreach/follow-up strategy
- Hire technical editor/analyst to complete three case studies:
 - Technical editing to complete Case Three
 - Further develop Conclusions Overlay that ties illustrations of RTO principles, based on the case studies, to FERC Order 2000 Required Four Functions and Eight Characteristics
- Hire same or additional analyst to research and write new Case Study(s) on the California ISO (1st priority), with coverage of New York, PJM, and New England ISOs if feasible. (e.g. New York: - the rise and fall of punitive imbalance penalties).
- Distribute materials (hard copy and WEB)
- Continue to collect information at RTO discussions and report back to NWCC
- Conduct NWCC Wind Transmission Workshop in Fall either before or after October 15th, depending on when it would be most useful, on current RTO status and assess impact of NWCC outreach activities.

Longer-Term Activities

- Annual Transmission Wind Energy Workshops
- White Paper on new context of RTO's; possible topics include:
 - Transmission additions (highest priority)
 - Congestion management (next highest priority)
 - Pancaking
 - Pricing
 - Reliability
 - Imbalance in markets
- Fact Sheets and Issue Briefs on:
 - Technical Issues (as listed above)
 - Views of respective parties (why they are for or against certain policies and projects)
- Additional Case Studies as needed
- As RTO's unfold keep stakeholders informed on events and developments
- Continue to post relevant RTO and Transmission information on NWCC website

How could wind energy be potentially hurt by FERC Order 2000?

The following question was proposed to all attendees of the workshop: "How could wind energy be hurt by FERC Order 2000 or the regional

the remaining question was proposed to an audience of the workshop: "How could wind energy be made by 1. the end of 2000 or the regional responses to the order?" The group brainstormed ideas and a summary of these ideas are listed below.

1. Confusion and competition may slow or stop further development. ISO's may become worse for wind than they are today.
2. RTO's formation is a voluntary process, so their formation may become delayed or not even occur.
3. Failure to promote efficient and competitive markets may create biases against wind.
4. Regional responses could subvert the goal of efficient markets and may lead to punitive penalties for intermittent resources such as wind.
5. Smaller RTO's would probably mean fewer players involved reducing wind's chances of being heard.
6. Seams issues will be a major issue that could negatively impact wind.
7. The mixture of public and private ownership of RTOs could result in uncertainty.
8. If wind does not have an adequate voice, there may not be a proactive push to accommodate wind power.
9. A backlash could ensue if wind is perceived as requesting preferential treatment.
10. RTO rules could be very complex and newer technologies might not have the resources to comply with the rules.
11. Interconnection requirements may pose legal, financial, or technical challenges for newer technologies.
12. New RTO's may first focus on operations thereby delaying consideration of long range planning issues important to wind.

DRAFT RTO Principles

Transmission Meeting attendees agreed to the following preliminary list of 14 principles shown below by the end of the second day of the Transmission Meeting.

1. RTOs should cover large contiguous areas and coordinate with each other to widen trading areas and ensure [transmission system] reliability.
2. Fixed costs of the existing transmission system should be recovered through load-based access charges.
3. New transmission was discussed but agreement was not reached on a principle.
4. Market-based congestion management was discussed, but agreement was not reached on a principle.
5. RTOs should eliminate pancaking of transmission rates within and between RTOs.
6. RTO decision making must provide for transmission owner participation [and governance should be operationally and structurally independent of market participants].
7. RTOs should mitigate seams issues between RTOs and have sufficient authority to resolve seams problems.
8. RTOs should adopt interconnection requirements that are fair, non-discriminatory, and standardized.
9. RTOs need to provide for real-time markets as well as forward markets.
10. Ancillary services and imbalances should reflect market-based rates [or replace with last 2 bullets]
11. RTO pricing policies should support efficient competitive markets that treat intermittent resources fairly.
12. RTO transmission planning processes should be open and transparent and examine all resource options.
13. [Use of penalties should be limited to failure to follow real-time instructions of the system operator and refrain from non-cost-based penalties for routine ancillary services including imbalances]
14. [Ancillary services market including imbalances should be efficient, transparent and reflect system cost impacts of resource types]

The above principals were further refined later on March 2, 2000 at the NWCC Business Meeting and were agreed upon by all Business Meeting attendees. These principals are shown below; and have since been taken back to the NWCC steering committee for review.

- RTOs should cover large contiguous areas and coordinate with each other to widen trading areas and ensure transmission system reliability.
- Fixed costs of the existing transmission system should be recovered through load-based charges.
- RTOs should eliminate pancaking of transmission rates within and between RTOs.
- RTO decision-making must provide for non-transmission owner participation.
- RTOs should mitigate seams issues between RTOs and have sufficient authority to resolve seams problems.
- RTOs should adopt interconnection requirements that are fair, non-discriminatory, and standardized.
- RTOs need to provide for real-time markets as well as forward markets.
- Ancillary services should be based on market prices.
- RTO pricing policies should support efficient competitive markets that treat intermittent resources fairly.
- RTO transmission planning processes should be open and transparent and examine all resource options.

Full NWCC consensus on these RTO Principles has not been achieved, but an annotated version of "Initial RTO Principles" was released on March 22, 2000 incorporating alternative views of NWCC members not in full agreement with the Principles. That document was sent via e-mail to all workshop participants on March 24, 2000.

ISSUES NOT ADDRESSED IN INITIAL RTO PRINCIPLES

Workshop participants also discussed two important issues for RTO development which they could not fully agree on principles for. These were: allocating costs for transmission additions and market-based congestion management. These issues are likely to be further deliberated by the NWCC in future forums.

Copies of handouts and presentations (Attachments A-G) can be obtained by contacting Lori Riggs of RESOLVE, Inc. via telephone at (202) 965-6214 or via email at lriggs@resolv.org.

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