

Summary of Deliberations by the FERC Advanced Transmission Technologies and Public Policies Discussion Group

May 16, 2008

A Discussion Group convened on May 16, 2008, at the FERC to identify emerging technologies and techniques that may improve the performance of high voltage electric transmission lines and the grid as a whole. Members of the Group reviewed technologies and applications, and then discussed implementation impediments.

As industry and public sector representatives interested in developing a more robust national transmission system, we appreciate Commissioner Moeller's facilitating the discussion, and Commissioner Wellinghoff and more than 50 staff members joining us. One of our Discussion Group members quoted a Washington, D.C. taxi cab driver, "The architects of the City of Washington, D.C. were smart, had foresight, and wanted to leave a legacy." The members of the Transmission Discussion group have the same aspirations for our individual and collective endeavors – to contribute to the development of a more robust, reliable, and economically beneficial high voltage electric transmission system.

Based on the comments of individual Discussion Group members, the Chairman developed a list of policy recommendations and points to ponder. No vote was taken by the Group members and the "recommendations" could just as easily and aptly have been called "suggestions," "ideas to consider," or any number of other titles. They are provided to stimulate thought and discussion at the FERC and with whom the FERC Commissioners and staff wish to share them. All Group members are prepared to elaborate, from their perspective, on the issues raised by the "recommendations" and general discussion. A list of Group members follows this summary.

Recommendation 1: Stimulate Cross RTO/ISO Collaboration

- a. *Seams Agreements: The FERC is encouraged to actively and aggressively urge RTOs/ISOs to develop seams agreements – especially in the realms of planning and cost allocation.*

Commentary: While significant contacts and discussion occur already between RTOs/ISOs, Discussion Participants noted that more extensive collaboration can accelerate the movement of electricity cost-effectively between regions with the overall advantages of reducing consumer costs and increasing over-all system reliability.

For example, should anticipated energy demands (generation, consumption, transmission needs, and conservation) internally guide transmission planning within each RTO/ISO, but also in its negotiations and collaborative planning activities with adjoining RTOs/ISOs?

As we note below, such seams agreements can be especially beneficial when generation and load served are not within the same RTO/ISO. This becomes particularly important as large amounts of renewable energy generation are developed.

Recommendation 2: Resolve Differing Perspectives on Cost Allocation:

- a. *Cost/benefit allocations for proposed projects vary significantly based on the length of time determined appropriate in which to recover and earn upon the investment (e.g., 5 years, 15 years). The FERC, public utility commissions (PUCs), the Wall Street financial community, RTOs/ISOs, utilities, and elected officials are encouraged to engage in discussions regarding appropriate rates of return on investment in high voltage transmission lines relative to the earnings capability of the lines.*

Commentary: Discussion Participants noted that some transmission upgrades have full cost-recovery through participant charges in as little as 18 months (e.g., KCPL's LaCygne-Stilwell line); while other projects have cost recovery timelines of 20 years or more (e.g., projects in Western Kansas). The value of transmission projects can be assessed on at least three dimensions: 1) reduction of constraints, 2) economic potential (e.g., in wind development areas), and 3) system robustness. Cost recovery, and the corresponding cost and benefit allocations, vary significantly – based on the type of transmission project.

What is not often addressed are the conflicting priorities among the participants. For example, removal of constraints allows the most economic dispatch of resources and lower over-all operating costs – thereby proving most attractive to utilities and investors. For public policy-makers, development of renewable energy resources frequently has a higher value because of over-all economic development and perceived political benefits. RTOs/ISOs may perceive the greatest system benefits being derived by a redundancy or capacity expansion to enhance over-all system reliability (e.g., in areas that are prone to weather related outages).

To accommodate the different policy objectives and risk factors, the above-mentioned policy discussions might focus on identifying formally differentiating rate of return categories. The objective would be to balance financial incentives with the amount of risk associated with the three types of transmission projects that system operators and policy-makers identify as necessary and appropriate.

Recommendation 3: Overcoming Least-Cost Planning:

- a. *The FERC, PUCs, RTOs/ISOs, utilities, and elected officials are encouraged to address transmission system planning by agreeing on how robust the new system should be and designing accordingly. For example, should new and rebuilt transmission lines be designed for minimum or maximum anticipated load and demand growth on an individual RTO/ISO basis or on a larger regional basis? What should be the length time that public utilities commissions should consider effective life expectancies (and resulting load demands) of proposed new transmission service?*

Commentary: Discussion Participants noted that employing new technologies is dependent on several factors: cultural change within the utilities, questions about performance and reliability, cost, and risk management. Frequently, the cost of new technologies is higher until general acceptance results in price reductions as demand and production capacity increase. Investment decisions are often based on least initial cost options, rather than either life cycle or projected system needs (*e.g.*, anticipated growth in transmission capacity in 20 years).

If the above referenced discussions could result in an agreed upon electric demand planning horizon of 20 or 50 years (for example), then decisions regarding what technologies to purchase would all be based on the same decision-making framework. The present approach of addressing short-term considerations (*e.g.*, 5 years or less) results in skewed cost-recovery perspectives based on lowest cost technology options. Instead, attention should be focused on life-cycle costs and long-term performance needs.

Recommendation 4: Providing Regulatory Assurance Can Mitigate Risk:

- a. *Construction work in progress (CWIP) versus used and useful; and prior regulatory approval of proposed investment for ratemaking purposes versus prudence reviews for ratemaking purposes have been the traditional considerations in utility-regulatory-legislative debates. The FERC, PUCs, utilities, RTOs/ISOs, and elected officials are encouraged to address how utilities can invest in emerging technologies that have the potential to increase system reliability, reduce congestion, and manage costs, among other benefits – while recognizing that such investments may fail in achieving the goal(s).*

Commentary: Discussion Participants discussed risk management options that include: prior approval for investments in new technologies, exempting a defined percentage of capital expenditures from prudence reviews, instituting a form of performance “assurance” by vendors to both utilities and regulators/elected officials, and having PUCs recognize that technologies “certification” by approved equipment testing organizations constitutes “prudent” investments by utilities and is not subject to reconsideration – even in the event that the innovative technology does not meet expectations.

A general consensus was expressed that managing risk in technological innovations is both a financial and a policy matter. In both cases, regulators and elected officials must accept that early innovators striving to improve system performance and customer benefits may make potentially “costly mistakes,” but that without early adopters of new technologies, change does not occur.

Recommendation 5: Examine Costs Associated with Not Constructing Projects:

- a. *The FERC, PUCs, utilities, RTOs/ISOs, and elected officials are encouraged to develop models detailing the cost associated with not constructing transmission projects. The above groups routinely address the costs/benefits for each affected utility (and the consumers) for each proposed project, but typically do not calculate and report the costs of not constructing the transmission project, especially on a larger regional basis. As part of the above recommendations that longer term and larger regional planning analysis be conducted, the recommendation is for the costs associated with not constructing the proposed projects be examined.*

Commentary: Discussion Group participants noted that economic factors are the “driver for determining the viability of proposed transmission projects. But, just as participants noted that determination of cost allocations is significantly impacted by the time frames selected (see above), political discussions are also impacted by the presence or absence of data outlining the consequences of non-action. Ratepayers objecting to the cost of transmission expansion contact elected officials. If those officials have data detailing the cost of non-action, it is easier to address the concerns of constituent and persuade them of the necessity to construct.

Recommendation 6: Pursue Load Balancing Planning:

- a. *The FERC is encouraged to urge RTOs/ISOs and PUCs to consider the availability and deliverability of fuels/generation to sustain a robust electric system.*

Commentary: Discussion Participants noted that considering the transmission needs of renewable generation in isolation of the availability of fuels to balance generation requirements presents an unrealistic image to elected officials and the public. Renewable energy is often not dispatchable, prompting the need for either stand-by generation or paired generation, unless the balancing area is sufficiently large to include significant other generation assets. Planning for renewable generation’s transmission needs does not necessarily include natural gas pipeline capacity and natural availability considerations. The full costs/benefits associated with transmission projects serving renewable energy generation centers should be included in the public and official discussions regarding feasibility and public education.

Recommendation 7: Consider Who Benefits and Who Pays:

- a. *The FERC can encourage PUCs, elected officials, and utilities to actively consider non-traditional methods of funding and constructing high voltage transmission lines (e.g., state transmission authorities). Such encouragement can include the collaborative development of “model” state legislation, regulatory approval or cost recovery adjustments, or other mechanisms.*

Commentary: Discussion Participants noted that individual transmission project approved generally have at least a 2:1 benefit/cost ratio. However, Participants also noted that states with renewable energy or other generation attributes may not contain the load centers to which the power will be sold. States without either the generation or load center specifically object to participating in the cost of transmission projects that will not provide tangible direct benefits.

State transmission authorities (*e.g.*, Kansas Electric Transmission Authority, Wyoming Authority) have different funding options (*e.g.*, state bond authority) and longer cost recovery options (*e.g.*, 30 years) than do traditional electric utilities. For economic projects with benefits for development of renewable resources or increased robustness of the grid that will have longer cost-recovery times or difficulty exists in identifying beneficiaries, alternative construction options may be the most viable “for the good of the system” as a whole.

Discussion and development of alternative ways of ascertaining participant funding, to recognize the fact that some systems/states simply serve a “pass through” role, would be beneficial in securing regulatory and other approvals and support.

It was noted that some state statutes authorize the state’s bonding agency to help arrange financing for inter-state projects (*e.g.*, Kansas’ Development Finance Authority).

Recommendation 8: Consider Alternative Means to Fund New Transmission:

- a. *The FERC, in collaboration with PUCs, utilities, and elected officials, is encouraged to convene one or more discussion sessions to explore non-traditional transmission funding options. One option that was suggested specifically addresses the inability of wind developers to pay for the necessary transmission line construction projects. The proposal, for discussion, was that part of the production tax credits be provided to RTOs/ISOs to help pay for transmission planning and construction.*

Commentary: Increased taxes and fees are politically not very well received at the federal or state levels. Redistributing existing resources, while, damaging to the original interests, has the potential to be politically more popular. Creative re-allocation of part of the production tax credits through the FERC-approved RTOs/ISOs has the potential to raise significant amounts of money to support the construction of “lower” benefit-cost ratio projects that have great economic potential over the long run.

Recommendation 9: Reduce Technological Adaptation Risk

- a. *The FERC, NARUC, NCSL, CSG, and other interests is encouraged to convene a meeting to address the “certification” of technologies (e.g., a “Good Housekeeping Seal of Approval”) such that utilities adapting the technologies or techniques would receive automatic cost recovery approval (whether through a pass-through or within the traditional rate case) from their PUC.*

Commentary: As one Discussion Group participant noted, vendors are not selling to a utility, but rather to multiple individuals within the utility and then to the PUC staff and Commissioners. The Rural Utilities Service (RUS) has an approved list of technologies that, if used by the cooperative, have been pre-qualified for competence and performance. Discussion Group members suggest that if a process by which IEEE, ASTM, and other certification entities review and certify technologies and techniques can be universally accepted within the regulatory and political processes, then the reluctance to adopt such technologies, even on a pilot project basis, would be reduced. International experience in the use/adoption of technologies and techniques should be recognized as an indicator of potential benefits in the U.S. and utilities that adopt internationally proven technologies/techniques should be accepted as a reasonable “risk”/investment.

Discussion Group members recognize that managing risk by utilities, PUCs, elected officials, and others is a continuous objective and responsibility. Acceptance of “certified” technologies and techniques would not change the underlying responsibility to manage risk, but would recognize that “best practices” have been followed by all parties and that assured cost recovery is warranted.

The above concept may be equated with a type of “risk insurance.” Just as most Americans purchase health, life, and property insurance packages to protect against catastrophic loss, so too the identification of “approved” technologies and techniques can serve in that same risk management role. The FERC is encouraged to work with PUCs and industry trade organizations to further develop the concept of “risk” insurance as it applies to the adoption of technologies and techniques.

Recommendation 10: Develop Model State Legislation

- a. *The FERC is encouraged to convene a discussion among regulatory and elected officials, utility executives, and RTO/ISO leaders to identify “best practice” legislation that facilitates the development of transmission projects (e.g., Kansas’ statute authorizing the construction of upgraded transmission lines on existing rights-of-way without prior regulatory approval). Collaboratively developed model legislation can be distributed through such organizations as the Council of State Governments, National Governors Association, and the National Conference of State Legislatures.*

Commentary: Development and distribution of best practice ideas to facilitate development and cost-recovery of transmission system upgrades, especially economic projects, is in the best interests of each state and the nation. The FERC has the opportunity to convene the necessary discussion partners to identify those best practices and the necessary partners to disseminate the information.

Recommendation 11: Other Policy Issues to Consider:

- a. *One of the Discussion Group members noted that the resolution of cost allocation and recovery is an empirical decision, with some complexity, but the primary issue is “who carries the risk” until the cost is recovered. The obvious answer is the utility assumes that risk, but the underlying assumption is that utilities will not act without assurances from the FERC, PUC, RTO/ISO, and elected officials. As our Group addressed the cost allocation issue, it became clear that regional and inter-regional agreements are necessary. As we have recommended above, the FERC has the opportunity to encourage the necessary discussions and agreements to reduce risk directly and indirectly through encouraging non-traditional parties (e.g., independent transmission companies) and practices (e.g., alternative funding mechanisms).*
- b. *The size of the transmission backbone can greatly be influenced by direction provided by the FERC. In the Midwest, a 765 kV backbone is proposed, but encouraging comments from the FERC as to its appropriateness as a long-term investment with significant economic and reliability benefits would reassure elected and appointed officials, as well as utility executives. Similarly, the FERC can encourage development of DC or other AC voltage lines to address inter- and intra-region long-term energy and reliability needs. Statements, as much as orders, from the FERC constitute risk reduction opportunities for RTOs/ISOs, utilities, and public officials. As Discussion Group members noted, generation and transmission constructed today will produce and deliver the least expensive power in 10 years. Getting the public, government, and industry interests to look beyond “least cost” solutions to “best capacity to meet evolving needs” solutions will benefit all of our stakeholders.*
- c. *Renewable energy is politically a very intriguing issue. Intermittancy and non-dispatchability, as a practical matter, are not politically significant, but are operationally important to system operators. Above we suggest some ways that the FERC can encourage development of alternative funding mechanisms for transmission lines serving areas with great renewable energy generating potential. In addition, the FERC can lead development of inter-region transmission overlays to guide development of projects to move the generation from rural areas to load centers. As discussed above, frequently generation and load are separated by hundreds of miles and several states or RTOs/ISOs. Assisting in developing planning and decision-making processes by which the economic and non-economic benefits of renewable generation/transmission are*

identified and addressed is a role in which the FERC is eminently qualified to assume.

- d. *We raise the issue of “risk insurance” in terms of pre-qualifying technologies and techniques so that utilities adopting them will be assured that PUCs will permit full recovery of the investment – even if the technology is less than fully successful. We also suggest that the FERC develop dialogues between equipment developers, manufacturers, testing organizations, NARUC, and elected officials to identify other “risk insurance” steps that might be beneficial (e.g., some form of “guarantee” by the manufacturer that transcends performance guarantees to utilities, but addresses the need that PUCs have). While such assurances and “insurance” ultimately may not be feasible, stimulating the discussion among individuals and organizations committed to finding solutions would be a beneficial role for the FERC.*
- e. *The FERC can also facilitate the development of indices of “robustness and reliability” for proposed transmission lines that can assure public officials that the projects, and their costs, are beneficial. Economic projects have been difficult to fund because the reliability value and the long-term economic benefits are under represented in ‘present time’ determinations of cost/benefit ratios. If a measure of future value can be developed and generally accepted by the industry and RTOs/ISOs, the public officials will have a tool with which to address constituent concerns about project need and costs.*

Summary:

Transmission Discussion Group members focused on how the FERC, RTOs/ISOs, utilities, PUCs, and elected officials can better manage risk through education, planning, inter-region negotiations, and the establishment of inter-operability standards. The Group encourages the FERC to convene further discussion groups to address the opportunities identified above – with the caveat that the persons engaged in such discussions have the same non-parochial perspective and commitment to resolving problems/seizing opportunities in a collaborative manner, as did the members of our group.

We again express our appreciation to Commissioner Moeller, Commissioner Wellinghoff, and the FERC staff members who participated in and observed our discussions. Collectively and individually we appreciated the opportunity to contribute to the discussion related to building a more robust and reliable high voltage electric transmission system.

Transmission Technology Discussion Group Members:

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Rep. Jeff Morris, Washington State

Mike Proctor, Missouri Public Utilities Commission Staff

Jay Caspary – Southwest Power Pool

Kay Gehring – 3M

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