

**Electricity Advisory Board
Transmission Grid Solutions
Subcommittee**

Draft Report
August 13, 2002

August 13, 2002

Dear Electricity Advisory Board Members:

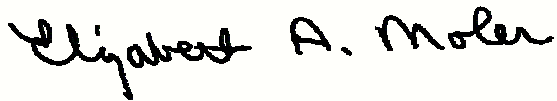
The members of the Transmission Grid Solutions Subcommittee present the attached Draft Report for your review in preparation for our next Electricity Advisory Board (“EAB”) meeting.

This Draft Report also has been posted on the EAB’s website, www.eab.energy.gov, and noticed in the Federal Register to allow the public full access and an opportunity to comment. It is the desire of the Subcommittee to have a full and open discussion of the Draft Report with the members of the EAB that considers any comments received from EAB members not serving on the Subcommittee, as well as the public, at our next EAB meeting.

The views and recommendations offered in this Draft Report reflect the consensus of the Subcommittee members only. As with any consensus product, the views of any individual member of the Subcommittee may differ slightly from the specific detailed recommendation contained in the Draft Report. This Draft Report is not a Department of Energy or Administration document and will not be transmitted officially to the Secretary of Energy without the consideration of any public comments received and approval of the Electricity Advisory Board.

The members of the Transmission Grid Solutions Subcommittee, listed below, are volunteers from the EAB.


Sincerely,



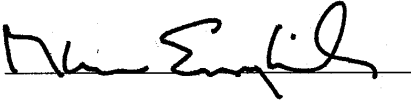
Elizabeth A. Moler
Subcommittee Chairman
Senior Vice President
Government Affairs and Policy
Exelon Corporation



Marce Fuller
Chairman
Electricity Advisory Board
President and Chief Executive Officer
Mirant Corporation



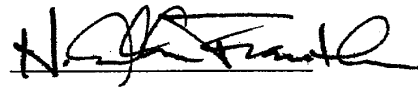
Hon. Laura Chappelle
Chairman
Michigan Public Service Commission



Glenn English
Chief Executive Officer
National Rural Electric Cooperative Association



Steve Fleishman
First Vice President
Merrill Lynch



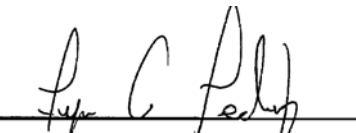
Allen Franklin
Chairman, President and Chief Executive Officer
Southern Company



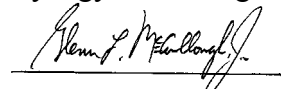
Michehl R. Gent
President and Chief Executive Officer
North American Electric Reliability Council



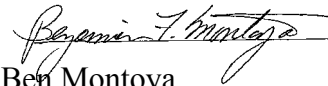
Dr. Matthew Holden
Professor Emeritus of Politics
University of Virginia



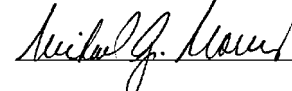
Lynn A. Lednický
Sr. Vice President - Power Origination
Dynegy Marketing & Trade



Hon. Glenn McCullogh
Chairman
Tennessee Valley Authority



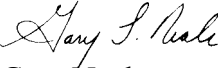
Ben Montoya
Chief Executive Officer
Smart Systems Technology



Michael Morris
Chairman, President and Chief Executive Officer
Northeast Utilities System



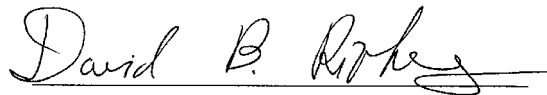
William Museler
President and Chief Executive Officer
New York Independent System Operator



Gary Neale
Chairman, President and
Chief Executive Officer
NiSource, Inc.



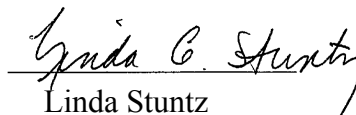
Jim Pope
Director of Electric Utility
Silicon Valley Power/City of Santa Clara



David Rivkin
Partner
Baker & Hostetler LLP



Rick Sergel
President and Chief Executive Officer
National Grid USA



Linda Stuntz
Principal, Stuntz, Davis & Staffier, P.C

FRONTISPIECE AND SUBCOMMITTEE CHARTER

Secretary of Energy Spencer Abraham established the Electricity Advisory Board (“EAB”) in November 2001 to provide the Secretary and the Department of Energy with independent advice and recommendations on electricity policy issues. The EAB charter permits the formation of subcommittees to undertake specific studies and to provide information and recommendations to the EAB for its consideration. On April 23, 2002, the EAB approved the formation of the Subcommittee on Transmission Grid Solutions. The objective of the Subcommittee on Transmission Grid Solutions is to provide recommendations to the Board and the Secretary of Energy on how to improve the physical and financial state of our nation’s transmission infrastructure, so as to facilitate the most reliable, economically efficient and environmentally sound delivery of energy to consumers and businesses at affordable prices. The Subcommittee’s work was organized around a review of the Department of Energy’s May 2002, National Transmission Grid Study (“Grid Study”). This Draft Report reflects the Subcommittee members’ comments upon the most important policy recommendations contained in the Grid Study. It reflects where we agree with the Grid Study; where we disagree; and provides our sense of priority and urgency about the recommendations.

EXECUTIVE SUMMARY

The Secretary of Energy recently chartered a new Electricity Advisory Board. The Board, in turn, has established the Transmission Grid Solution Subcommittee in light of the vital importance that our nation's electricity grid has for our economy and daily life. The Grid is experiencing unprecedented growth, changes, and challenges. These changes and challenges were highlighted in May 2002, when the Secretary of Energy released the Department of Energy's National Transmission Grid Study ("Grid Study"). The Grid Study describes both the major problems facing the grid and potential remedies to solve the problems. The purpose of this Draft Report is to highlight major elements of the Grid Study and offer the Subcommittee's views on how to improve the physical and financial state of the nation's infrastructure.

The Draft Report begins with a brief primer on the nation's transmission grid and how it functions. The Draft Report highlights the importance of eliminating "bottlenecks" on the Grid. It focuses on what it will take to upgrade the Grid so that it will continue to meet the nation's needs for a reliable transmission system. Specifically, the Draft Report:

- Calls upon the Department of Energy to identify "*National Interest Transmission Bottlenecks*" that need to be relieved by construction of new facilities to upgrade or expand the transmission grid. The Draft Report suggests criteria that the Subcommittee believes should be used to identify bottlenecks of national importance, including whether the bottleneck jeopardizes national security, or creates a risk of widespread grid reliability problems, or the likelihood that major customer load centers will be without adequate electricity supplies, or whether it creates the risk of significant consumer cost increases in electricity markets that could have serious consequences on the national or a broad regional economy.
- Calls upon the Congress to enact legislation that would provide the Federal Energy Regulatory Commission ("FERC") with "backstop" authority to approve applications to site "*National Interest Transmission Facilities*" to relieve DOE-

identified bottlenecks. The Subcommittee Draft Report calls for FERC to have authority to act if a State authority (or authorities) or another Federal agency has failed to act on a pending application to site such a facility within 12 months.

- Highlights the importance of forming Regional Transmission Organizations (“RTOs”) to facilitate grid expansion and to improve the operation of competitive wholesale electricity markets. The Draft Report highlights three main challenges that are beyond the scope of RTOs alone to address: transmission planning and siting; allocation of costs among RTO customers for both existing and new facilities; and infrastructure investment. These broad challenge areas will require the engagement and cooperation of Congress, the Department of Energy, regulators at both the Federal and State levels, and various stakeholders to resolve.

The Draft Report also addresses other current topics, including improving the transmission infrastructure through merchant transmission; technology; demand response and distributed generation; enhanced physical and cyber security; and the need for mandatory reliability rules.

The Subcommittee members come from a broad cross-section of our nation’s economy. Many Subcommittee members frequently disagree with one another on important aspects of electricity policy. However, in this Draft Report the Subcommittee speaks with one voice in identifying important initiatives that must be undertaken in order to ensure that the nation’s transmission grid continues to be a reliable, strong engine for our economy and way of life. The Subcommittee hopes that this Draft Report will prove to be a valuable set of recommendations to the Secretary of Energy as the Bush Administration and the Congress continue to address measures necessary improve the nation’s transmission infrastructure.

INTRODUCTION: A PRIMER ON “THE GRID”

“**The Grid**” consists of interconnected, high-voltage electric transmission networks that span North America. It electrically ties together points of electricity supply (generators) with points of electricity demand (customers). In the United States, electric generators, transmission lines, transformers, and electric demand distribution centers (substations) comprise three large integrated, synchronous, and non-switchable networks¹ that operate like giant machines that deliver electricity from generators to customers.

“**The Grid**” is an interconnected system for the flow of electricity from where it is produced to where it is used by customers. This system must accommodate constantly changing electricity supply and demand conditions, unexpected outages or shutdowns of generators or transmission equipment, weather extremes, fuel shortages, and other challenges.

“**The Grid**” can move large amounts of electricity from one part of the network to another, either to support areas that are in short supply of electricity (reliability) or for economic opportunity exchanges to take advantage of the lowest priced electricity at any given time. However, the ability of transmission networks to transfer electricity for either of these purposes is not unlimited. No matter how strong an individual transmission system is, there will always be an upper limit – known as a reliability limit – on the system’s ability to transfer electricity. Bottlenecks occur when the system is constrained such that it cannot accommodate the flow of electricity and systematically inhibits transactions. Thus, a bottleneck has economic and/or reliability impacts.

As a technical matter, a bottleneck is not always the inability to transfer electricity from point A to point B due to a single transmission circuit, but can be due to the inability to transfer electricity over a group of lines (sometimes called an interface or flowgate) or a system voltage or system stability limit that occurs at a given level of

¹ The Eastern Interconnection, the Western Interconnection, and the Electric Reliability Council of Texas (ERCOT) Interconnection.

electricity transfer. Therefore, relieving a “bottleneck” may involve more than just replacing or upgrading one facility. In some cases, it may not even involve a transmission line at all, but rather the addition of voltage support equipment (capacitors or static var compensators), local generation or stability enhancing devices, such as power system stabilizers on generating units. Even after an identified reliability limit is relieved, another facility or group of facilities will show up as the next higher reliability limit. As such, the reliability limits to the transfer of electricity should be thought of as “system” reliability limits that require a “system” solution, not just the upgrade or replacement of one facility.

In sum, bottlenecks can create an economic problem or a reliability problem. They should be “fixed” or “relieved” if they threaten reliability or if an economic (cost-benefit) analysis justifies doing so. More particularly:

1. Bottlenecks, constraints and congestion on transmission networks describe reliability limits to the transfer of electricity from one part of the network to another. No matter how strong or robust a network is there will always be a reliability limit at some level and direction of electricity transfer.
2. Reliability limits occur when one or more facilities in the network, following the prospective loss (outage) of another network facility, would reach its maximum safe current-carrying capability (thermal limit), or when parts of the system would experience voltages outside of safe limits, or when the system would experience electrical stability problems.
3. Relieving a particular reliability limit (by reinforcing or replacing a limiting transmission line or other system reinforcement) will allow electricity transfers to increase, but only up to the level where the next higher reliability limit is encountered.
4. Some reliability limits prevent one area of the network from importing sufficient electricity to serve all firm customer demands in that area, regardless of price. As a result, the adequacy of customer supply is affected. In other cases, reliability limits restrict the amount of electricity trade between buyers and sellers, resulting in some economic/opportunity transactions not being able to take place.

NATIONAL INTEREST IN RELIEVING TRANSMISSION BOTTLENECKS

Summary of Issue as Addressed in the Grid Study: Transmission of electric power, undertaken in ways that facilitate the most economically efficient, reliable and affordable service to consumers and businesses, is a vital service to our nation's economy and way of life. The United States' transmission system is in serious need of improvement. Congestion on transmission lines has resulted in bottlenecks that reduce reliability and increase costs to consumers and businesses. The Grid Study identified a number of bottlenecks that impact the national interest. According to the Grid Study, congestion on a "National Interest" transmission bottleneck facility "significantly decreases reliability, restricts competition, enhances opportunities for suppliers to exploit market power, increases prices to consumers, and increases infrastructure vulnerabilities."

The Grid Study recommended that DOE, through a rulemaking, should determine how to identify and designate transmission bottlenecks that significantly impact our national interest in maintaining an adequate transmission infrastructure. DOE will further develop the analytic tools and methods needed for comprehensive and continuous analysis of "*National Interest Transmission Bottlenecks*." DOE will use an open public process to make such designations; the designations will be updated.

Subcommittee's Views: The Subcommittee agrees with the Grid Study that increased demand for electricity, and new uses for the system due to developing wholesale competition, command our attention to the need for new transmission infrastructure. The Subcommittee agrees with the Grid Study that there are well-known transmission bottlenecks that simply must be addressed in order for our nation's transmission system to continue to operate reliably and efficiently. Most transmission bottlenecks are only of local concern. Some, however, may impact large areas of the country or have national significance. We agree that DOE has an important role to play in identifying "*National Interest Transmission Bottlenecks*" and in encouraging industry participants to propose economically efficient solutions to relieve the bottlenecks. Industry participants would be encouraged to submit their proposed solutions to FERC. The Subcommittee believes

it is important for FERC to have “backstop” authority to issue a certificate of public convenience and necessity to site the transmission facilities necessary to relieve the bottleneck if State and/or Federal authorities have not acted to approve a pending application within 12 months of its filing at the State level, or with another Federal agency. The specific facilities would be known as “*National Interest Transmission Facilities*.” We call upon the Congress to enact legislation providing FERC with Federal backstop siting authority to provide the necessary right-of-way to site “*National Interest Transmission Facilities*” as explained below.

The DOE should begin by identifying known bottlenecks. A number of studies already exist, or are underway, which identify these bottlenecks. The Subcommittee strongly urges DOE, in identifying “National Interest” transmission bottlenecks, to take full advantage of information available from others, including the North American Electric Reliability Council, Regional Reliability Councils, Regional Transmission Organizations (“RTOs”) or Independent System Operators (“ISOs”), and others with a first hand knowledge of transmission network conditions and limitations.

The Grid Study recommends that DOE should use a rulemaking process to determine how to identify and designate transmission bottlenecks. We would urge the Secretary to develop the criteria and process for determining which existing bottlenecks should qualify for special status as “*National Interest Transmission Bottlenecks*” because the bottlenecks affect the reliability and security of the nation’s electric grid. The DOE must work with state, regional and local government officials to encourage proposals from industry participants and to monitor progress toward elimination of designated bottlenecks. The Subcommittee would expect DOE to do an initial analysis of the benefits of relieving a bottleneck that affects the national interest. The following are some suggested questions that should be applied in determining whether a transmission bottleneck affects the national interest and thus qualifies as a “*National Interest Transmission Bottleneck*”:

- Does the bottleneck jeopardize national security?
- Does the bottleneck create a risk of widespread grid reliability problems or the likelihood that major customer load centers will be without adequate electricity supplies?
- Does the bottleneck create the risk of significant consumer cost increases in electricity markets that could have serious consequences on the national or a broad regional economy or risk significant consumer cost increases over an area or region?

A “*National Interest Transmission Bottleneck*” must meet at least one of the above criteria.

In addition to the national interest criteria specified above, the Subcommittee believes that the following factors could appropriately be used to provide additional support for particular facilities being identified as a “*National Interest Transmission Bottleneck*”:

- Does the level of congestion result in an unacceptable number of transmission loading relief (“TLR”) events?
- Does the level of congestion result in unacceptably high price differentials across an interface?
- Does the transmission deficiency increase the likelihood that market power will be exercised in a manner contrary to the public interest?

To ensure that “*National Interest Transmission Bottlenecks*” are addressed expeditiously, DOE should establish a firm timetable for its criteria development rulemaking and for publishing an initial list of such bottlenecks. The DOE should propose promptly to FERC, in the form of a proposed rulemaking, what regulatory treatment should be provided for “*National Interest Transmission Facilities*.” The list of such bottleneck facilities should be updated on a regular basis to support competitive markets that serve consumers. We encourage DOE, and the Tennessee Valley Authority (as a separate, independent entity), to allocate appropriate resources to ensure that

federally-owned transmission assets could take a lead in the process. To the extent federal land management agencies are involved, they should place priority on processing permits for such projects if DOE designates them as necessary to address national interest transmission deficiencies. To further this development of nationally necessary rights of way, we encourage Congress to pursue the designation of energy corridors on Federal lands.

The Subcommittee believes that once a particular bottleneck is identified, industry participants are likely to come forth with proposed solutions. If Congress responds favorably to our suggested legislation, the prospects for voluntary proposals from the industry will be enhanced considerably because any applicant will have a much higher degree of confidence that a project will not get bogged down in endless permitting problems, which is often the case today. If applicants do not come forth with proposed solutions, we would call upon the Secretary of Energy to highlight the national interest concerns.

We would expect any application to build a “*National Interest Transmission Facility*” would be given a thorough, but expeditious, review by FERC. In so doing, we would expect FERC to require applicants to include a detailed cost-benefit analysis of any solution proposed in the application as well as an analysis of alternative solutions (transmission-related or not) that might provide greater net benefits. We would expect FERC to perform a thorough review of any cost-benefit analysis. The FERC would have the authority and responsibility to require the detailed studies of options to resolve “*National Interest Transmission Bottlenecks*” considering transmission, generation, and demand-side options. The purpose of the cost-benefit analysis is to answer the primary question of whether a particular national interest bottleneck should be removed to relieve congestion. A cost-benefit analysis evaluates the costs of congestion to consumers versus the costs of relieving such congestion. Congestion relief should be economically reasonable – that is, the costs of relieving congestion should be less than the value of the reduction in congestion – in order to justify a “National Interest” designation. If FERC

determines that the best solution is transmission-related and that it would provide net benefits, then it would issue a certificate.

The question remains as to how best to ensure that the bottlenecks are relieved. Ensuring that stakeholders will want to participate in the construction of “*National Interest Transmission Facilities*” may require incentives. The Subcommittee would call upon FERC to use its existing authority² to develop and approve a mix of balanced, appropriate incentives to ensure that these new facilities are built and to consider favorably methods of reducing risks (such as securitization). For example, where necessary to attract investment, “*National Interest Transmission Facilities*” should be eligible for incentive returns, accelerated depreciation, tax credits, and where appropriate, the ability to receive durable transmission rights in return for the investment that relieved the bottleneck. We would also call upon FERC to explore methods of reducing risks associated with construction of these “*National Interest Transmission Facilities*.”

We would encourage the Secretary of Energy to support, and FERC to adopt, a policy statement or a rule that will specify in advance the types of incentives that will be available to an applicant proposing a solution to bottleneck problems. Doing so would lessen the risk and regulatory uncertainty for those who seek to relieve a bottleneck.

As noted above, the Subcommittee believes that if FERC concludes that the most efficient and economic solution requires the siting of new transmission facilities, FERC must have “backstop” authority to grant a certificate of public convenience and necessity to an applicant proposing a solution to the bottleneck problem. It is worth noting that the authority being proposed by the Subcommittee for the “*National Interest Transmission Facilities*” for FERC is a considerably narrower power than the power FERC already has under existing law in the case of interstate natural gas pipelines. Under the Natural Gas

² Section 205 of the Federal Power Act establishes FERC’s authority to approve “just and reasonable” rates. We would expect any incentive rates to meet the “just and reasonable” rate standard.

Act, FERC has authority to issue a certificate of “public convenience and necessity” for interstate natural gas pipelines. The certificate covers both siting of the facilities, and grants Federal eminent domain authority for all such pipelines. The Subcommittee believes that the possibility of securing Federal siting authority must be made available to the limited set of transmission facilities necessary to relieve the national interest bottlenecks. Facilities to relieve those national interest bottlenecks should rightfully be considered “*National Interest Transmission Facilities*” subject to “backstop” FERC siting authority. Transmission facilities may not be the only solution to a particular bottleneck; if additional generation, or demand-side management, were the most cost-effective means of relieving the constraint we would not expect FERC to grant the certificate.

In defining appropriate “backstop” siting authority, the Subcommittee believes that FERC should have authority to act if a State, or States, or another Federal agency has failed to act on a pending application to site a “*National Interest Transmission Facility*” within 12 months of receiving an application. Under the proposed process, an applicant could apply simultaneously with State authorities and with FERC so that the “clock” would begin to run in a parallel fashion at both the Federal and State levels. Thus, both entities could begin immediately to process the application and to conduct any necessary environmental review. If a State, or other Federal agency, were to complete its review and approve a project in a timely fashion, there would be no need for “backstop” FERC siting authority to come into play. If a State does not approve the project, or if there were conflicting State or Federal actions, FERC could step in.

We believe that identifying these critically important bottlenecks facilities through a public process, and then giving FERC the “backstop” authority necessary to grant a right-of-way for such facilities, would increase the likelihood that these vital facilities will be built in a timely fashion. The Bush Administration’s National Energy Policy plan called upon Congress to enact legislation giving FERC authority to certificate new transmission lines. Thus far Congress has resisted, fearing the implications of a Federal override of existing State authority.

This proposal is carefully crafted to provide the Federal siting authority only for a limited set of facilities identified and designated as “*National Interest Transmission Facilities*.” In addition, this proposal is responsive to those who have opposed a very broad grant of federal siting authority thereby overriding existing state siting processes. We believe that this approach is carefully balanced to address successfully the need to ensure that real “National Interest” projects can be built without providing an overly broad Federal override of more conventional State siting processes.

RELIEVING TRANSMISSION BOTTLENECKS BY ENHANCING COMPETITIVE WHOLESALE ELECTRICITY MARKETS

Summary of Issue as Addressed in the Grid Study: The Grid Study identified a number of initiatives to relieve transmission bottlenecks by completing the transition to competitive regional wholesale electricity markets. The Grid Study places a great deal of emphasis on the establishment of Regional Transmission Organizations (“RTOs”) as means of improving transmission system operations, increasing regulatory certainty, and encouraging investment.

Subcommittee’s Views: We strongly support the formation of RTOs. RTOs can facilitate the development of competitive market structures that operate on a regional basis, and also plan for expansion of the transmission system on a regional basis in order to maximize efficiencies and improve reliability. RTOs can provide the key to the success of a long-term, dependable, reliable and competitive wholesale energy market. The Subcommittee supports FERC’s initiative to require RTOs to adopt what is known as bid-based, security constrained locational marginal pricing (“LMP”) in order to facilitate more competitive wholesale markets. Our thoughts on LMP are elaborated below.

The FERC first conceived of RTOs as entities that would concentrate principally on transmission related functions. FERC Order No. 2000 outlined the RTOs’ role. However, in the wake of the tremendous difficulties encountered in the California marketplace in particular, as well as elsewhere, FERC is now calling upon RTOs to emphasize market-making functions, putting the transmission-related functions in second place.

In sum, the essential functions of an RTO are to:

- Administer wholesale electricity markets;
- Ensure open access to transmission;
- Establish planning functions that are regional and cover transmission/generation/demand side options;
- Ensure that sufficient transmission infrastructure is available to support robust competitive wholesale markets;
- Tailor regional solutions to fit the characteristics of the specific power markets, which differ across the United States. For example, regional solutions in the Pacific Northwest need to recognize its unique hydro systems and transmission ties to Canada and the West;
- Plan and facilitate construction of transmission to assure reliability and reduce or eliminate congestion where it is economic to do so;
- Ensure that the planning process yields substantial benefits for each region's end-use customers and will result in increased reliability and efficiency;
- Minimize issues created by "seams" between RTOs through adoption and implementation of standard market designs in each RTO, and developing compatible planning processes between regions; and
- Ensure open, collaborative discussions with stakeholders in each region.

Because of their unique role, RTOs must be fairly constituted and balanced and the governance of RTOs must be truly independent. (Provisions should be made to encourage Federal transmission providers, which have unique statutory missions and governance, to align with RTOs in a manner that preserves their independence while meeting the objectives and intent of Order No. 2000.) In general, the governance structure of RTOs must include:

- Independence from all stakeholders
- Independent Board of Directors
- Independent Market Monitoring Unit

The Subcommittee is concerned, however, that too much faith is being put in the ability of RTOs to solve problems they are not well designed, or equipped, to solve. For example, RTOs on their own volition cannot address three of the most problematic issues in transmission infrastructure development. These critically important issues are: (1) transmission facility planning and siting; (2) allocation of costs among RTO customers for both existing and new facilities; and (3) infrastructure investment. The Congress, DOE and regulators at both the Federal and State level as well as various stakeholders must quickly address these problems if RTOs are to succeed in providing consumers with the full benefits of competitive wholesale markets and reliable electricity service.

LMP—An Essential Tool for Wholesale Markets

As part of its Standard Market Design for transmission services,³ the Federal Energy Regulatory Commission has proposed to use “bid-based, security constrained locational marginal pricing” (the pricing regime is known by its initials, LMP) to address transmission congestion costs. LMP reflects three unique and distinct elements of the cost of electricity. The first element is the price of the power at the source of the generation. The next element is the cost of the transmission from the generation source to the ultimate user. Finally, LMP reflects the time element of the transportation (the cost of redirection of the transportation when at specific times the volume is higher than the system can handle and the “overflow” must follow a different path). Thus, LMP is the transparent price of energy at a specific point and at a specific time on the transmission grid, and the purpose of an LMP system is to reveal the true cost of congestion in a power system. LMP systems also provide for financial transmission rights (“FTRs”), which are called “Congestion Rental Rights” in the SMD NOPR, that reflect the economic value of congestion between two points on the transmission system. An investor in transmission between congested points on the Grid would be awarded the

economic value of the associated FTRs created by the investment. An LMP system with FTRs gives players the clearest information necessary to make economic decisions regarding generation and transmission placement. We applaud FERC’s efforts to continue to implement LMP systems throughout the country, recognizing that LMP alone cannot address all bottlenecks.

Improper pricing signals lead to additional congestion. LMP will assist in identifying the facilities necessary to relieve congestion. However, LMP alone will not solve all of the problems of an inadequate transmission infrastructure. More needs to be done, as outlined in this Draft Report, to ensure that congestion is relieved and that consumers benefit. In the meantime, we support FERC’s initiative to implement LMP, with the goal of minimizing the adverse impact of congestion on consumers, and particularly consumers in load pockets.⁴

³ Federal Energy Regulatory Commission Notice of Proposed Rulemaking, Remedying Undue Discrimination through Open Access Transmission Service and Standard Electricity Market Design, Docket No. RM01-12-000, August 1, 2002 (“SMD NOPR”).

⁴ A load pocket is an area that has undue constraints in the transmission system that limit the ability to import generation to serve customers in that area.

CHALLENGES OF TRANSMISSION INFRASTRUCTURE DEVELOPMENT

TRANSMISSION PLANNING

Summary of Issue as Addressed in the Grid Study: The Grid Study cites the challenges of uniting the generation and transmission system planning perspectives to support wholesale markets as a critical challenge. Because generation and transmission frequently are complements and substitutes, and because different parties today often make generation and transmission decisions, unless the transmission planning process conforms to these new realities, decisions will be made that increase overall costs to consumers and jeopardize reliability.

Subcommittee's Views: The Subcommittee believes that there is no traditional integrated transmission planning process available today to ensure that generation and transmission expansion decisions will result in the lowest overall cost to consumers. Generation decisions are driven by a variety of factors, including market forces. Generators, regulators, and a variety of other players participate in making decisions about where and when to build based on market and economic conditions. Because generation is no longer centrally planned, the best way to ensure that the decisions made by generators will result in the lowest overall costs to consumers is to ensure that generators face the right price signals. For short-term operation and dispatch, LMP-based electricity markets will provide that price signal. The question is how to ensure that long-term expansion decisions by generators (*i.e.*, for new plants) are made in a way that ensures the lowest overall costs to consumers. This issue is being addressed by the Electric Resources Capitalization Concerns Subcommittee of the Electricity Advisory Board in a report entitled "The Value of Long-Term Capacity Markets."

TRANSMISSION PRICING

Summary of Issue as Addressed in the Grid Study: The Grid Study did not address transmission pricing policy as a general matter.

Subcommittee's Views: The Subcommittee believes it is very important to address the issue of cost allocation for new or upgraded transmission facilities. Our view can be summarized simply: Those who cause the system to incur increased costs should bear the responsibility of paying them. Those who create benefits by enhancing the system should also reap those benefits.

Under any system of congestion management, the most important goal should be to reduce the level of congestion for the benefit of customers where it is economic to do so. It is also critically important to properly allocate the costs of new construction in order to properly align both benefits and costs. Performing this type of “cost causation” analysis and developing rates that reflect the cost allocation resulting from such an analysis means simply that those who cause the costs should pay for them. The Subcommittee supports implementing such a policy and calls upon FERC to do so promptly. We urge the Commission to issue a rule, or policy statement, that will clearly enunciate the Commission’s transmission pricing policy and provide guidance to industry participants in advance of constructing new facilities.

As a general matter, the Subcommittee believes that where the building of new transmission facilities, or an upgrade of existing facilities, primarily benefits the system as a whole, the cost of those facilities should be borne by all users of the transmission system and thus “rolled in” to the system-wide rates.⁵ For example, the cost of facilities necessary to maintain or improve the reliability of the system is one example of costs that

⁵ For purposes of calculating rates and minimum revenue needs, a “rolled in” rate means that FERC, in determining that the additional new transmission facilities provides sufficient system-wide benefits, will allow the costs incurred in constructing and operating the new facilities into the existing transmission rate base and to be shared by the entire set of customers being served by the transmission system.

should be “rolled in” to system-wide rates. In contrast, where there is not a system-wide benefit for customers that have paid for the existing facilities, the cost of the new facilities should be borne by the individual customer, or customers, who benefit and thus should be “incrementally priced.”⁶ For example, in most instances the cost of a radial line should be “incrementally priced.” The Subcommittee believes that the cost causation principles and procedures should not be used to allocate costs to a specific generator due to changes in the electrical system after the generator has already negotiated an interconnection agreement and has obtained the required transmission service for the energy generated at its interconnected facilities. Attempts to make generators individually responsible for such costs after the decision to build would have a chilling effect on the generation market.

The Subcommittee believes that allocating the costs to the customer or customers who primarily benefit from the new or upgraded facilities is the best way to reconcile environmental, energy and economic goals. FERC should develop rules outlining the methodology, factors and presumptions to be used in making such cost allocation decisions so that industry participants will have clear guidance before decisions to add new facilities are made. A clear, objective and unbiased set of rules is essential to achieve fair and efficient cost allocation without unintended consequences.

The Subcommittee believes that the best way to ensure that the marketplace recognizes the true impact of facility additions is to align the costs of new transmission with those who create the costs and, by the same token, ensure that benefits of transmission expansion go to those who create the benefits. If a generator wants to locate somewhere where new transmission must be built, it should do so only if the total costs of that location are lower than the total costs of an alternative, uncongested location. To

⁶ For purposes of calculating rates and minimum revenue needs, “incrementally priced” means that FERC, in determining that the additional new transmission facilities do not provide sufficient system-wide benefits but rather primarily benefit only a subset of customers, will not allow the costs incurred in constructing and operating the new facilities into the existing transmission rate base and thus to be shared by the entire set of customers being served by the transmission system. Only the customer, or subset of customers, that primarily benefit from the new facilities will pay (incrementally) for them and those customers will be entitled to the benefits the new facilities.

make the correct decision, the generator must see the true costs of its location decision on the transmission system. In addition, the generator must have a clear understanding of the rights afforded it if it chooses to incur the transmission costs at a particular location. The fact that some locations, no matter how attractive from a cost perspective, may be “off limits” for regulatory or political reasons (*e.g.*, it may be impossible to site generation in some urban areas) does not vitiate the need for a careful cost-driven analysis applied to alternative generation locations. It may still be much more cost-effective to locate generation just outside an urban area than it is to locate that generation hundreds or thousands of miles away. Unless the generator actually sees the true cost of its location decisions, it will not make efficient, cost-effective decisions from an overall consumer cost perspective.

The Subcommittee recognizes that the suggested principles must be applied flexibly by FERC in fact-specific circumstances. For example, new transmission facilities may initially benefit one subset of customers, but later, after a variety of changes to the dynamic system, the same facilities may provide system-wide benefits. In such a circumstance, the “cost causation” principle would be applied to provide incremental pricing for the facilities as an initial matter; thereafter the costs of the facilities may later be rolled in, or the generator could get some credit for its initial investment. In other words, what is incrementally priced today may be rolled in tomorrow if the circumstances change sufficiently to conclude, after reapplying the cost causation principle, that the facilities provide sufficient system-wide benefits to justify rolling in their costs.

The Subcommittee believes that the pricing principles enunciated here are entirely compatible and appropriate for use with an LMP regime and will provide the proper price signals for efficient real-time use of and expansion of the system.

The Subcommittee believes that an “up front” financing mechanism for new transmission facilities may also be a means to properly allocate the risks and rewards associated with transmission investment. FERC, in its transmission pricing policy,

should provide transmission owners and operators with the option to file rates with FERC that reflect such an “up front” financing mechanism to be implemented in conjunction with an LMP market design.

RTOs are being called upon by FERC to develop transmission pricing proposals to be implemented once the initial rates approved by FERC for the RTOs end following an initial transition period. The Subcommittee would urge FERC to give considerable deference to pricing proposals developed by RTOs, after genuine consultation with appropriate stakeholders, even if an RTO’s proposed pricing regime differs from the preferred pricing policy elaborated above. We believe that RTOs, working with local stakeholders, will be in an excellent position to determine what infrastructure pricing policies are likely to be most appropriate for their region. In the case of facilities that span more than one RTO, the Subcommittee would urge FERC to adopt rules that are consistent with the “cost causation” principles enumerated above.

Once price signals and an efficient and clearly understood cost allocation regime are in place that help to ensure efficient real-time use and expansion decisions for transmission, then the transmission planning process can focus on ensuring that transmission is built when needed. In essence, by ensuring that generators have taken transmission costs into account in their decisions, then remaining transmission expansion needs can be more easily economically justified, and regulators can be assured that such transmission investment is the lowest cost option for consumers. LMP alone, however, may not provide an adequate incentive to site either generation or transmission in an “ideal” location because access to such a location may be ruled out by other factors.

TRANSMISSION INVESTMENT

Summary of Issue as Addressed in the Grid Study: The Grid Study encourages effective investment as a means of relieving transmission bottlenecks and discusses the potential for performance-based rate regulation (“PBR”) as way to offer incentives for an enhanced transmission system.

Subcommittee's Views: There is a clear reluctance from the financial community to finance transmission projects. Investment in the Grid will only occur when regulatory policy provides (a) reasonably certain cost recovery, (b) regulatory certainty, in terms of who can operate the system and under what rules and (c) provides a return that makes investment in transmission a reasonable option, considering other available investment options.

The difficult issue of the intertwined nature of Federal and State jurisdiction related to cost recovery will challenge the formation of RTOs. Today, ninety percent of transmission costs are recovered in retail rates. For RTOs to be effective tools, States will have to be in accord with the transmission plans or RTOs will face resistance from States on cost recovery. More in depth discussions between FERC and the States can advance the cooperative federalism needed to sustain RTOs. If the State barrier is not removed, the efficient amount of transmission will not be developed. Without further collaboration between States and FERC about the pass-through of costs, investment in transmission infrastructure will be inhibited.

While any proposal about the mechanisms for cost recovery are beyond the scope of this Draft Report, the Subcommittee suggests that the Department of Energy may have a role as a mediator between FERC and the States when rate making becomes a barrier to transmission infrastructure development. The failure to address this rate making challenge leaves transmission owners in a precarious situation.

NEED FOR COORDINATION BETWEEN FERC AND THE STATES

Summary of Issue as Addressed in the Grid Study: This issue was not addressed in any detail.

Subcommittee's Views: For many utilities, most of the costs incurred in constructing transmission facilities used for both State and FERC jurisdictional transmission service are recovered through retail rates which are set by State Public Utility Commissions ("PUCs"). Thus, Federal-State cooperation in this area has always been important. With the advent of RTOs that cover multi-state service territories and that, in the years ahead, are expected to play a leading role in planning new transmission facilities, the ability to recover wholesale costs in retail rates will become even more critical. There is a real possibility that one or more State PUCs, when presented with cost recovery stemming from transmission construction that they do not feel benefits customers within their state, could refuse to allow the pass-through of the costs involved into the retail rates that they control. This possibility is even more likely to occur if there is inadequate advance consultation between FERC and the State PUCs, or if transmission facilities are constructed in the face of opposition at the state or local level.

To the extent that such problems occur, negative public policy consequences are certain to ensue. For example, if investor-owned utilities are unable to recover a large portion of their transmission-related costs, then the utility will face trapped costs and will be unlikely to be willing to build facilities. Years of litigation could ensue. The market's assessment of the risks associated with the transmission business would be adversely affected. The costs of capital for transmission facilities would go up, making such projects more difficult and expensive to build, and could slow the process of improving critical infrastructure.

The Subcommittee recognizes the long-established doctrine that, in appropriate circumstances, the prudently incurred cost of facilities constructed, or purchases made, to

serve wholesale customers may be passed through at the retail level.⁷ However, that doctrine may, at times, prove to be ineffective as a practical matter if a State, or States, oppose RTO formation or construction of RTO or FERC-mandated facilities. The Subcommittee believes that the best way to deal with this problem is to foster a dialogue between FERC and the relevant states over cost allocation and cost recovery issues associated with transmission projects and other RTO-requested decisions early in the planning process. Toward this end, FERC should take a proactive approach and convene a series of regional meetings with States and other stakeholders involved in the formation of RTOs.

The objective of such meetings should be to reach a formal agreement between the States in each RTO and FERC on the key principles to govern the cost recovery associated with RTO-requested decisions. Such regional meetings should also tackle a broader set of issues relating to the formation and governance of each RTO. The Secretary of Energy can and should also play a major role in facilitating this dialogue between FERC and the States. The adoption of this proactive strategy by FERC and DOE should help eliminate up-front regulatory uncertainties, minimize transaction costs and foster long-term productive “cooperative federalism” relationships among FERC, DOE and the States. Moreover, providing certainty will attract capital into the transmission sector at the lowest cost to customers.

⁷ The “filed rate doctrine” establishes the right of utilities to recover the cost of wholesale purchases in retail rates. *Natahala Power & Light Company v. Thornburg*, 476 U.S. 953, 966 (1986). A recent decision of the Federal District Court for the Northern District of California reaffirms the validity of the doctrine, even in the case of deregulated generation markets. *See Pacific Gas and Elec. Co., v. Lunch*, No. C-01-3023 VRW, 2002 U.S. Dist. LEXIS 13895 (N.D. Cal. July 25, 2002).

OTHER INFRASTRUCTURE DEVELOPMENT ISSUES: INCENTIVE RATES, TAXES AND DEPRECIATION

Subcommittee's Views: Earlier in the Draft Report, the Subcommittee addressed incentive pricing for “*National Interest Transmission Facilities*.” Subject to the caveats in the earlier discussion, we believe that incentive pricing is an appropriate component of any transmission pricing policy if necessary to attract new investment in transmission infrastructure. Another barrier to transmission infrastructure development is tax policy. Tax treatment should facilitate, rather than inhibit, the transfer of transmission assets to efficient owners/operators. In addition, providing reduced depreciable lives/accelerated depreciation for transmission assets would allow their owners to fund increased investment in transmission. FERC, for example, approved a reduced depreciable life for the Path 15 project. While FERC can address depreciation as a matter of regulatory accounting, only Congress can direct reduced depreciable lives for transmission assets for tax purposes. We would encourage Congress to do so.

Federal tax laws, designed to prevent tax beneficial financing from being used to construct facilities not dedicated to the “public use” may limit the ability of publicly owned entities, such as cooperatives and municipals, from building transmission required for the public good. For example, municipal utilities that issue tax-free bonds may also find it difficult to build transmission required for regional reliability because those bonds include a “public use” restriction. Similarly, non-taxable cooperatives may find it difficult to build transmission required for regional reliability due to the “85-15” member income test to which they are subject. Restrictions on Rural Utility Service (“RUS”) borrowers may also make it difficult for them to build regional transmission facilities.

IMPROVING INFRASTRUCTURE THROUGH MERCHANT TRANSMISSION

Summary of Issue as Addressed in the Grid Study: Historically utilities have built all of the transmission grid facilities, and put them in rate base to serve both wholesale and retail customers. As electricity industry restructuring evolves, a number of “merchant” transmission projects, and companies, are coming into being. These merchant transmission projects are frequently undertaken by an entity other than the traditional integrated utility owner/operator. Some state laws, however, may limit these entities from obtaining a certificate of public convenience and necessity. Given proper rate policies, merchant transmission firms would have the incentive to construct new transmission so that they could earn a reasonable rate of return on their facilities.

Subcommittee’s Views: Merchant transmission projects may be an attractive, partial solution to encourage greater transmission development. In some instances, merchant transmission projects are financed by private investors with no regulatory support (*i.e.*, no regulator ensures that the investor has the opportunity to earn a reasonable return on that investment). However, this option is not likely to have a substantial near-term impact unless merchant transmission investors believe that they will earn a profitable return on their investment. Merchant investors need access to certain planning data (subject to appropriate confidentiality protections) to justify their investments. In other instances, a merchant transmission company, rather than the incumbent utility, may build a line identified as needed through the RTO planning process and may seek authority from FERC to charge traditional cost-based rates. The Subcommittee supports such projects. Merchant transmission investors must deal with the same challenges today’s transmission owners face when attempting to construct new transmission facilities. These challenges include regulatory uncertainty, adequate rate of return, loop flows, obsolescence and siting.

We believe that merchant transmission companies that build RTO-approved transmission facilities should have the same powers of condemnation and eminent

domain that are given to the traditional utilities. In order to have eminent domain authority, the merchant transmission company should be able to apply for and receive the necessary “need” certificates from state or local authorities (if the state has such a process) or from FERC if the facility would be a “*National Interest Transmission Facility*” as discussed herein.

In addition to addressing these issues, we believe it would be helpful to have DOE study how merchant transmission has worked in other countries and adapt those techniques that might lend themselves to the United States grid.

In encouraging merchant transmission, we must recognize that the merchant transmission system will have impacts on the existing transmission system. Therefore, it is important that proposed merchant transmission projects be identified as part of the RTO’s regional plan and that the RTO retain functional control of transmission facilities, regardless of their ownership.

IMPROVING INFRASTRUCTURE THROUGH TECHNOLOGY

Summary of Issue as Addressed in the Grid Study: The Grid Study identified a number of strategies to ensure the timely introduction of advanced technologies to enhance the public interest in a robust transmission system.

Subcommittee's Views: We support the recommendations the Grid Study outlined for ensuring the timely introduction of advanced technologies in transmission infrastructure. We would add that we are encouraged by DOE's commitments to partner with the industry to demonstrate advanced technologies in controlled environments, and to work with the industry to develop innovative programs that fund transmission-related R&D, with special attention to technologies that are critical to addressing transmission bottlenecks.

IMPROVING INFRASTRUCTURE THROUGH DEMAND RESPONSE AND DISTRIBUTED GENERATION

Summary of Issue as Addressed in the Grid Study: The Grid Study maintains that demand response programs and targeted efficiency and reliance through distributed generation (“DG”) are important but underutilized approaches that could do much to address transmission bottlenecks today and delay the need for new transmission facilities.

Subcommittee’s Views: We encourage further development of these strategies. A well-developed, comprehensive demand response program is increasingly recognized as a critical tool in reducing system peak load and preserving workably competitive wholesale and retail electricity markets. However, while demand response programs and increased use of distributed generation can assist in reducing peak demand, and hence the infrastructure that would be needed otherwise to accommodate that peak, we do not think that either can offer large-scale improvement for transmission infrastructure.

IMPROVING INFRASTRUCTURE THROUGH ENHANCING PHYSICAL AND CYBER SECURITY OF THE TRANSMISSION SYSTEM

Summary of Issue as Addressed in the Grid Study: The Grid Study offers a limited discussion on physical and cyber security. The Grid Study suggests that the industry should evaluate the costs and benefits of standardizing equipment and maintaining a reserve supply of transmission equipment. The Grid Study also recommends that RTOs factor energy security issues into its decisions about system reliability.

Subcommittee's Views: Transmission planning, siting and equipment selection must consider security challenges now facing power systems. Currently, responsibility for security of the nation's electricity systems is fragmented and in fact there is no statutory responsibility at all at a national level. DOE should work with all the Federal agencies having some involvement in security issues (*i.e.*, DOE, FERC, FBI) as well as the industry (*i.e.*, NERC, RTOs, ISOs) to determine a single point of authority (or at least coordination of security issues).

NERC is leading the electricity sector's efforts to reduce the vulnerability of interconnected electric systems to physical and cyber threats. To date, NERC has prepared an Approach to Action and Business Cases for Action that define the need for vigilance in securing critical assets. It has developed "Security Guidelines for the Electricity Sector" that suggest "best practices" for protecting critical facilities against a "spectrum of threats," ranging from simple trespassing, to vandalism, to civil disturbances, to dedicated acts of terror and sabotage by "insiders" and "outsiders" whose actions may be cyber or physical in nature.

IMPROVING INFRASTRUCTURE THROUGH ENSURING MANDATORY COMPLIANCE WITH RELIABILITY RULES

Summary of Issue as Addressed in the Grid Study: The Grid Study notes that voluntary compliance with reliability rules will no longer be adequate in a competitive and restructured electricity industry, and recommends that Federal legislation should make compliance with reliability standards mandatory.

Subcommittee's Views: We support enactment of Federal legislation giving an independent entity, such as NERC or its successor, authority to make compliance with reliability standards mandatory, subject to FERC oversight in the United States. The nation's transmission grid is only as strong as its weakest link. We need to ensure that all live by the same rules.

DOE’S COMMITMENT AND LEADERSHIP

Summary of Issue as Addressed in the Grid Study: The Grid Study contemplates the creation of an Office of Electric Transmission and Distribution. Among other tasks, the Office would take the lead in developing the rulemaking necessary to establish criteria for designating “*National Interest Transmission Bottlenecks*.” In coordination with the Secretary, the Office would also identify specific facilities that qualify for the designation.

Subcommittee’s Views: The Subcommittee believes that ensuring the development of an adequate, reliable transmission infrastructure for our nation requires executive leadership from both DOE and FERC. We support the creation of the Office of Electric Transmission and Distribution within DOE in order to ensure that the infrastructure issues receive adequate attention at the highest levels of our government. We encourage the new program office to make the rulemaking developing the criteria for designating “*National Interest Transmission Bottlenecks*” a top priority so that further progress on this issue is enhanced by the new Office, rather than slowed down. We also encourage the Office to prioritize its work by paying particular attention to plan for debottlenecking well-known transmission bottlenecks in our nation.

CONCLUSION

While the challenges to improving our transmission infrastructure are many, so are the available solutions. This Draft Report has described how to begin to address the problem, through identifying “*National Interest Transmission Bottlenecks*” and providing special status to encourage the construction of “*National Interest Transmission Facilities*” to relieve those bottlenecks. The importance of working cooperatively on the Federal and State level to improve our transmission infrastructure cannot be overstated.

The ride on the transmission system needs to be a smooth one that is not plagued by the country roads, or arbitrary borders, of a prior century or old economy. Much depends on adopting these solutions.