Comments to the Designation of National Interest Transmission Bottlenecks (NIETB) Notice of Inquiry

Comments Received In Response to the Federal Register Notice of Inquiry [FR doc. 04-16724] on the Designation of National Interest Transmission Bottlenecks (NIETB).

The following material comprises the comments received by DOE in response to the *Federal Register* Notice of Inquiry [FR doc. 04-16724] issued on July 22, 2004, which solicited comments related to the Designation of National Interest Transmission Bottlenecks (NIETB). DOE presents the comments as received and without any endorsement of their validity. The comments are listed in order they were received.
Appended 10/15/04

1. Comments of Control for the Process Industry, 8/18/04, 2:26pm

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-----Original Message-----
From: Gunter, Chet [mailto:Chet.Gunter@DSM.COM]
Sent: Wednesday, August 18, 2004 2:26 PM
To: Bottleneck Comments
Subject: From "Control for the Process Industry"

Some ideas that maybe helpful....
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The Energy Internet, Part 2 Dan Hebert, PE, Senior Technical Editor Last month we looked at how electric utilities were planning to transform the North American power grid from a dumb network to a smart, responsive and self-healing system-in short, an "Energy Internet."

Electric utilities are focusing on four main areas of improvement. First, as covered last month, they are looking for ways to produce and store power closer to points of consumption.

Second, utilities are looking at ways to move more power through existing transmission lines. Third, utilities are investigating installation of real-time sensors to monitor the grid in real time. Finally, they are evaluating control systems and power transmission hardware that can control the flow of power fast enough to avoid blackouts.

"A more practical, proven, and less expensive solution is upgrade of transmission network control and sensing systems." There are various ways to push more power through existing transmission lines. Because of the current lack of real-time monitoring and control, many lines run at just 50% of capacity. But as the grid gets smarter in various ways, EPRI officials reckon that it may be possible to squeeze perhaps a third more juice through today's wires.

Alternative power cables are another way to move more power through the grid. Aluminum and carbon-glass fiber composites could carry twice as much power as conventional cables. Superconducting cables can carry five times as much power as ordinary wires.

One of the simplest, most effective methods for increasing transmission line capacity is to switch from AC to DC. "A DC transmission system can deliver almost four times more power than an AC system on an existing right of way-an important consideration for areas undergoing significant load growth," says Randy Schreiber, the vice-president of strategic marketing and operations at ABB (http://www.abb.com/us).

Upgrading transmission lines and producing and storing power closer to points of consumption both require expensive investments, often in somewhat speculative or unproven technology. A more practical, proven, and less expensive solution is upgrade of transmission network control and sensing systems.

Both ABB and Siemens (http://www.usa.siemens.com/energy) have a variety of hardware and software products that address this market. Many of these products are also used in process control applications. Intelligent alarm processing, system simulation, and historical data analysis are familiar tools both within and outside of the power industry.

But some sensors, final control elements, and control system software are unique to the monitoring and control requirements of the nation's electrical grid. Much of this uniqueness occurs because, unlike most real-time process control applications, control of the grid must encompass many different control systems and span a wide area geographically.

"Hierarchical SCADA systems like the one we applied to control Mexico's national grid are the heart of any transmission system. Historically, these systems were designed to serve the control area of the regulated utility, and as such they lacked the capability to "see" beyond their boundaries. This very constraint came into play during the August 2003 blackout," observes Schreiber.

"Our hierarchical SCADA system allows data to be shared between neighboring regions and aggregated for supervisory entities. This is perhaps the most "Internet-like" aspect of the technologies that we apply to power grid control and monitoring," adds Schreiber.

Siemens' uses state estimation in its hierarchical SCADA system. "Our State Estimator provides a simple and cohesive view of the real-time state of the entire transmission system, including a look into the health of neighboring networks," says Tom Garrity, the vice-president of sales and business development for Siemens Power Transmission & Distribution.

"The State Estimator also identifies and compensates for failures in the SCADA software subsystem, data telemetry and local metering so that issues obscuring a proper view of the transmission system may be corrected proactively, not discovered during system emergencies or post-mortem analyses. New innovations in State

Estimation include phase-angle measurements provided by GPS devices," adds Garrity.

Rockwell Automation (http://www.rockwellautomation.com) is developing a technology called CIP Sync that will bring time synchronization to DeviceNet, EtherNet/IP, and other networks built on the Common Industrial Protocol (CIP). Based on the recent IEEE-1588 standard--Precision Clock Synchronization Protocol for Networked Measurement and Control Systems--CIP Sync provides a mechanism to synchronize the clocks across a distributed network.

"ODVA (http://www.odva.org) is developing the technology, and the CIP Sync specification is expected to be complete within the next 12 months. Initially, it will provide synchronization enhancements for EtherNet/IP, followed by other CIP networks," says Steve Zuponcic, a program manager with Rockwell. Another unique requirement for power grid control is the need

for very fast-acting, solid-state switches. Today's electro-mechanical switches take tenths of seconds or longer to divert power-usually far too long to avoid a problem. But several firms have devised solid-state systems that can switch massive amounts of power in milliseconds.

2. Comments of Robert Blohm, 9/1/04, 9:37am

-----Message-----
From: Robert Blohm [mailto:rb112@columbia.edu]
Sent: October 01, 2004, Revised
To: Bottleneck Comments
Subject: Comments from Robert Blohm

To:
Notice of Inquiry and Opportunity to Comment on National Interest Electric Transmission Bottlenecks, Office of Electric Transmission and Distribution, US Department of Energy

From:
Robert Blohm
Ballot Body member of the North American Electric Reliability Council
Member, Frequency Taskforce, Resources Subcommittee, North American Electric Reliability Council
Member, Inadvertent Interchange Payback Taskforce, North American Energy Standards Board

Comments:

UNTRUE LEADING STATEMENT. The following statement in the Notice of Inquiry and Opportunity to Comment is not true: "Bottlenecks that are a significant barrier to the efficient operation of regional electricity markets, threaten the safe and reliable operation of the electric system."

BUILDING TRANSMISSION TO INCREASE WIDE-AREA SCHEDULED POWER FLOW MAY HARM RELIABILITY UNTIL COLLATERAL REAL-TIME RELIABILITY TELEMETERED-RELAYING IS INSTALLED ON GENERATORS SYSTEM-WIDE. Congestion (bottlenecks) can actually make the electric grid more reliable, while building more transmission to relieve that congestion can make the electric grid less reliable, as the August 14, 2003, blackout demonstrated. The more transmission lines are loaded by scheduled long-distance flows, the more scheduled source generation there is with nowhere to go, when a transmission line carrying it trips, other than over other similarly loaded lines which in turn trip, with the problem getting worse before getting better. Such wide-area cascading was a unique feature of the August 14, 2003, blackout by over 7000 MW of "power surge" of scheduled long-distance power that translated into the 250 mHz of over-frequency on the remainder of the Eastern Interconnection at the time, making "overfrequency" on the remainder of the interconnection a unique feature of this blackout compared to the underfrequency in the previous large-scale blackouts that was eliminated by simply tripping transmission lines largely unloaded by scheduled long-distance power flows. Today, just tripping transmission lines doesn't help: it hurts. Specific generation needs to be shed or real-time dispatched, not just loads shed. But Industry operations remains over-focused on load shedding and under-frequency, a mind-set that is both a vestige of the past when deregulation has made over-frequency an issue, and commercially convenient to avoid litigation by generators who don't want to be shed and who

may be more disposed to litigate than loads who are shed. Until NERC's Interchange Distribution Calculator is made close to real-time, based not just on day-ahead schedules (1-minute data on unscheduled flows is already available), and telemetered to generators to enable a real-time Transmission Loading Relief whereby the generation sourcing the power surge can be instantaneously neutralized at the same time the surge trips a transmission line, building more transmission to accomodate more wide-area scheduled power flow from remote generation will increase the proneness of the interconnected system to ever-wider-area cascading, and therefore the likelihood of massive wide-area blackout. Meanwhile, the insistance of FERC and RTOs on centralizing the "balancing authority" function of real-time balancing of generation and load will reduce the ability, through multiple local balancing authorities, to deploy small localized resources to address reliability issues early enough so that the cascading point is not reached. Word-search my name for my comments to the "Technical Conference to Seek Recommendations Concerning the August 14, 2003, Blackout and Preventing Further Blackouts" hosted on January 9, 2004, by Natural Resources Canada and the Department of Energy in
http://www.nrcan-rncan.gc.ca/inter/powout/tech_transcript1_Jan9_e.html
http://www.nrcan-rncan.gc.ca/inter/powout/tech_transcript2_Jan9_e.html
and for my comments on the blackout to "The New York Times" in
http://www.geocities.com/blohm_r/NYTimes100804.htm
http://www.geocities.com/blohm_r/NYTimes130504.htm
http://www.geocities.com/blohm_r/NYTimes060404SinglePage.htm
http://www.geocities.com/blohm_r/NYTimesLetterBlackout.htm
http://www.geocities.com/blohm_r/NYTimes251103.htm
http://www.geocities.com/blohm_r/NYT310803.htm
http://www.geocities.com/blohm_r/NYT200803.htm
http://www.geocities.com/blohm_r/MyGraphInNYTimes.gif
http://www.geocities.com/blohm_r/NYT190803.htm
http://www.geocities.com/blohm_r/NYT160803.htm
For my early comment on the blackout published on "The Wall Street Journal" editorial page go to
http://geocities.com/blohm_r/WSJ5.jpg

FALSE PREMISE: CONFUSING CONGESTION WITH UNRELIABILITY. The untrue leading statement derives from a false premise in the Federal Energy Regulatory Commission's (FERC's) "Standard Market Design" (SMD) policy, namely that congestion not properly managed economically is a reliability problem: not so.

CONGESTION MANAGEMENT IS ECONOMIC RATIONING OF ATC. RELIABILITY IS MAINTAINING TRM BY LIMITING ATC. SMD commits the fallacy of construing congestion management as "reliability", and postulating that a system is unreliable just because it is congested. Congestion management is an economic rationing device, not a reliability device. What do you economically ration? You economically ration Available Transmission Capacity (ATC). You do reliability when you determine and maintain Transmission Reliability Margin (TRM), and then you allocate to ATC whatever is left of Total Transmission Capacity (TTC) after you subtract TRM from TTC. [I'm being gross here: I'm including

Capacity Benefit Margin (CBM) in TRM, interpreting CBM as the right to transmission capacity for true reliability purposes only, not for scheduled energy.]

SOME JURISDICTIONS UNDER SMD CONFLATE TRM WITH ATC. Not everybody calculates TRM however. ISO New England and the New York Independent System Operator (ISO) do not. They use instead what some call "tie-line benefits methodology". This means is that TRM is not calculated in advance and, instead, the operator calculates it on the hoof in his head as he's dispatching in the spot market. In other words, according to them, everything is "dispatchable", including immediate response.

VARIABLE COST IS NOT THE MOST EFFICIENT BASIS FOR DISPATCH. The core problem is that the developers of SMD never talked with operators to understand operators' instinct and practice, never formalized or analyzed mathematically, to separately account for forward emergency needs in making their dispatch decisions. It's captured in Howard F. Illian's famous moniker that dispatching isn't a matter of "energy only" and variable operating cost, but also of economically maintaining a margin of rapid responsiveness, this responsiveness having a value of its own independent of raw scheduled energy value or price. (See http://www.blohm.cnc.net/UnscheduledPower.pdf, page 53, Table 1.) The failure to recognize that value has doomed attempts at ancillary services markets. SMD endorses the vain hope that variable-cost bidding can capture/price rapid responsiveness by microscoping the dispatch interval down to some infinitesimal time span. The best that's been done is 5 minutes in PJM. But the decision/processing capability of the human brain makes impossible deliberate "scheduled"-energy purchase decisions in near instantaneous intervals. Even 5 minutes is ridiculously short given the high degree of short-term variability.

RELIABILITY IS SUDDEN RESPONSIVENESS. So, reliability boils down to capability of dealing with "suddenness", not with schedulable situations handleable by decisions driven by energy pricing, maintenance-scheduling flexibility, etc.

NERC MAINTAINS THE CORRECT DEFINITION OF RELIABILITY. If NERC has an institutional trademark, it is this maintenance of the narrow, strict concept of "reliability" as distinct from "deliberate" economic decisionmaking. Markets have made "adequacy" (typically a generation issue) no longer a reliability issue. Reliability is a “transmission" management issue, meaning control/system operations to manage scheduling error and determine/maintain TRM.

NEITHER NEW TRANSMISSION NOR A UNIFORM INDUSTRY-WIDE PRICE IS NECESSARILY ECONOMICALLY EFFICIENT. SMD would solve what it wrongly identifies as a reliability problem, first with SMD's brand of spot-price-only congestion management. SMD would also regard new transmission as a solution to what it misidentifies as a reliability problem. As for "economic efficiency", new transmission is not necessarily economically efficient, not if the cost both of construction and of higher prices to those on the cheap side of the constraint, exceeds the benefit of lower prices to those on the expensive side of a constraint. Otherwise the Department of Energy's (DOE's) Office of Electric Transmission and Distribution (OETD) misconstrues "economic efficiency" with "single energy price" across the country, which means

higher prices in some places (advantageous to producers, disadvantageous to consumers) and lower prices in others (advantageous to consumers and disadvantageous to producers). "Economically efficient" doesn't mean maximum consumer surplus (minimum producer surplus) any more than it means the opposite. It means JOINTLY maximum consumer AND producer surplus, which is the same as JOINTLY minimum consumer AND producer surplus.

NIETB "JUMPS" AHEAD OF MARKET PROCESSES AND THEREFORE PREEMPTS THEM. The National Interest Electric Transmission Bottlenecks (NIETB) project amounts to the DOE's answer to lack of progress in economic congestion management, solvable by robust markets for physical transmission rights(or much more narrowly in FERC's mind by SMD which is a market for energy only and derives transmission prices from energy prices with no tradable ownership of transmission). The project proposes to "jump" the development of markets and go for the end-game of price equalization by building transmission. Yes, maybe markets would end up with that result, but it would be a gradual "discovery" process over time. Academic economists typically never recognize the importance of the mechanics of the "process": mathematically they confuse the "function" or "mapping" with the "value" of the function or mapping. They confuse (end) "product" with the "process" (resulting in it). Economists are typically very poor at understanding dynamics or actual "processes" of change. They're very static, focus on end states. Thus the joke where the economist never picks up the ten dollars because it shouldn't have been there in the first place in a world where everyone has perfect knowledge etc.. The best we actually do is move toward there; we never get there and, besides, it's a moving target in a "changing" world where knowledge isn't acquired instantaneously.

LONG-TERM CONGESTION-ALLOWANCE PRICE SIGNALING AND REWARD IS ALL THAT IS NEEDED TO INCENT APPROPRIATE INVESTMENT IN TRANSMISSION. One thing needs to be explicit. Reliability is still mediateable by economics, even in the case of transmission congestion by the economics of SMD which isn't the only way to do it [in fact a bad way for downplaying long-term/physical transmission rights whose (congested) value is the only thing that can drive transmission investment]. In other words, congestion pricing does establish a market-based cost (differing by location) of maintaining TRM (by redispatch, for example). It's basically a price penalty for scheduled or unscheduled use of transmission that reflects the cost of keeping use within a safe limit. That makes it less necessary for the transmission operator to actually have to intervene by cutting schedules or levying penalties (equal to the transmission operator's cost of intervention reserves) to protect TRM. A central reliability authority is needed just to put a limit on the supply of transmission capacity or of energy through a constraint. In order to complete energy transactions a market emerges to determine the value of the constraint. This is much simpler than for the other area of reliability, namely controlling frequency by controlling scheduling error.

RELIABILITY IS ALSO ACHIEVED BY PRICE SIGNALLING AND REWARD IN A UNIQUE MARKET FOR SCHEDULING-ERROR ALLOWANCES. Similarly, in the case of scheduling error http://www.blohm.cnc.net/UnscheduledPower.pdf, reliability is still mediateable by economics, although the appropriate economics for the impact of scheduling error on frequency is completely different than for the impact of energy schedules on transmission usage/congestion and therefore from SMD and spot

markets, because now we're looking at a noisy world of "involuntary" "after-effects" of completed scheduled transactions. The economics are as different as the pricing of options for something is from pricing the thing itself. Options prices are driven by volatility [think size and direction (over or under) of control errors, relative to everyone else's] of the thing itself (the energy), including in this case impact on the system's frequency volatility which should drive the need/value of control errors and offsetting rapid-response reserve. (At the very long term, capacity itself is an option on energy.) We're talking a public good (frequency control) affected by "involuntary" by-products (unscheduled flows are never voluntary at both ends) of a deliberate process of energy scheduling: someone is stuck with it before having the chance to decide whether to have it and at what price. Furthermore, unlike transmission usage (another but voluntary byproduct of energy scheduling--in principle loop flow is schedulable in flow-based transactions), "no limit" placed on those by-products stands in the way of completing energy scheduling/trading within which a market would otherwise emerge to determine the value of those errors. Third, and finally, unlike sustained transmission usage, scheduling errors are too momentary, and moreover don't need, for their value to be determined immediately and discretely. I've just described something very much like pollution's impact on clean air; so, we're into cap-and-trade, too, with 1-minute sample North American Electric Reliability Council(NERC) Control Performance Measure (CPM1)-compliance as the ultimate driver of scheduling error price. Just like the impact of pollution, the bad effect of scheduling error is not immediate but through exposure over a long time. Enough bad scheduling behavior over a long enough time makes control lax enough to eventually experience/tolerate one too-many really serious control errors and experience a blackout sooner than expected.

ECONOMICS ADDRESSES JUST AND REASONABLENESS OF NERC COMPLIANCE PENALTIES AND COST-BENEFIT OF LEVELS OF RELIABILITY. Compliance penalties are economics for involving money. They're not arbitrary: they fit the "crime". And not all kinds of economics are equal. In general, the more we can get some kind of valuation/trading mechanism going, to decide economic value for us, the less we need old-style know-it-all economic planning/regulation, lawyers and rate cases, deciding every case. The Environmental Protection Agency learned to save lots of money regulating pollution by realizing that. Marija Ilic wrote a paper about cost-benefit of reliability levels
http://www.ece.cmu.edu/~milic/papers_pdf/possiblenotionofshort-term.pdf

NO BRIGHT LINE BETWEEN ECONOMICS AND RELIABILITY. THERE IS A BRIGHT LINE BETWEEN COMMERCIAL PRODUCTS WHICH ARE DISCRETIONARY AND NORTH-AMERICAN-ENERGY-STANDARDS-BOARD-JURISDICTIONAL, AND RELIABILITY PRODUCTS WHICH SHOULD BE NERC-JURISDICTIONAL AND ARE INVOLUNTARY.
So, there's no bright line between economics and reliability. Between commercial (discretionary) products and reliability (involuntary) products, yes. Congestion allowances wind up not being a reliability product but their value enforces scheduling within reliable transmission limits and determines the cost of keeping transmission scheduling errors from violating system safety. CPM-1 error allowances and scheduling error are reliability products and trading of CPM-1 error allowances determines the value applied to the frequency-impact of all scheduling errors and to the value of responsive reserve to offset scheduling

errors. That in turn establishes a cost basis for valuing and penalizing even momentary "Abnormal Operations" (scheduling errors that throw the system near safety relay limits).

3. Comments of the National Electrical Manufacturers Association (NEMA), 9/8/04, 12:45pm

Setting Standards for Excellence

September 8, 2005

Office of Electric Transmission & Distribution, TD-1
Attention: Transmission Bottleneck Comments
U.S. Department of Energy
Forrestal Building, Room 6H050
1000 Independence Ave, SW
Washington, DC 20585

Re: NEMA COMMENTS ON DESIGNATION OF NATIONAL INTEREST ELECTRIC TRANSMISSION BOTTLENECKS

Dear Sir,

NEMA appreciates the opportunity to comment on the matters addressed in the Federal Register Notice of July 22, 2004. NEMA is the leading trade association in the United States representing the interests of electroindustry manufacturers. Founded in 1926 and headquartered near Washington, D.C., its 400 member companies manufacture products used in the generation, transmission and distribution, control, and end-use of electricity.

NEMA is glad to see that some progress is being made on this issue, but is concerned that a lengthy process is under consideration. The lengthy processes we have in the states have contributed to the inadequate investment we have today and adding another long and drawn out federal process would not improve reliability or reduce congestion costs. Bottlenecks that would satisfy the national criteria are, by definition, serious matters that require expedited attention. NEMA believes that the criteria for the designation of federal jurisdiction bottlenecks could be strengthened by an interstate commerce consideration, as Congress did in the energy bill.

NEMA believes that the Secretary should exercise leadership in the resolution of transmission bottlenecks, as was done for Path 15 upgrading in California and in the case of underwater cable energization under Long Island Sound. NEMA does not view DOE acting as a regulatory agency that can only rule on matters brought before it.

Although some needed reliability improvements and/or congestion reductions would require new transmission corridors, NEMA believes that many bottlenecks can be relieved by corridor upgrades. Such upgrades would minimize impacts to the environment and to the public. NEMA has advocated this approach with Congress and FERC and we have seen this reasoning embodied in the energy bill and in "FERC Innovative Technologies". This approach could be a method for mitigation of designated NIETBs. The specific technologies NEMA has used as examples are:

- Increasing the transmission and distribution line capacity through the use of higher voltages and/or larger conductor size.

- High temperature/low sag conductors for increased power flow in existing corridors.

- Utilizing high voltage direct current (HVDC) transmission to nearly double capacity, better control of power transfer, and improve overall system stability. Such technology is already in use in the northwest, southwest and northeast.

- Adding peaking power units at substations, where power goes from sub-transmission to primary distribution, can enhance system efficiency and reliability.

- Improving power factor through the use of, for example, capacitors or synchronous condensers. This has been successfully done throughout many areas of the nation.

- Under grounding of transmission and distribution cables is an alternative in places where the right of way is not available.

- Building intelligence into the grid through the installation of Flexible AC Transmission System (FACTS) technologies and wide area controls capable of increasing the power on stability-limited lines by as much as 40%, as well as enhancing system reliability, ensuring higher levels of security, and dynamically improving system controllability.

- Using real-time dynamic rating systems of transmission lines based on actual weather conditions and line currents, which can increase the power of thermally limited lines by up to 15%.

- Applying new analytical software models to better calculate stability and thermal limits in real-time, which can provide increased power transfers by up to 10%.

The National Regulatory Research Institute (NRRI) has work underway to quantify the value of reliability. Adding reliability values to reduced congestion costs will significantly increase the benefits of bottleneck mitigation. Besides the quantification of reliability value, NRRI is

studying how to include reliability upgrades in rates. Rate recovery is essential for making upgrades happen.

Another possible means to evaluate reliability benefits would be to use insurance company methods. This approach would enable the monetary quantification of the risk of reduced reliability.

Many bottlenecks to long distance electricity transport occur at interfaces between transmission systems. In the past, these interfaces were designed for modest interchanges that benefited both systems, but today these interfaces are called upon to transfer large amounts of energy that may benefit only one or neither of the systems. A mechanism to consider these interfaces, because of their national implications needs to be included.

Sincerely yours,

Edward Gray
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National Electrical Manufacturers Association
1300 North 17th Street, Suite 1847
Rosslyn, VA 22209
Phone: 703-841-3265
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4. Comments of i-MOD, Inc., 9/10/04, 2:58pm

From: lionel barthold [mailto:imod@adelphia.net]
Sent: Friday, September 10, 2004 2:58 PM
To: Bottleneck Comments
Subject: Change in approach to HVDC

Conversion of AC lines to HVDC has long been thought about as a way to make major up-grades to the capacity of existing lines. The attached report describes a way to use all three conductors on an AC line in a DC scheme. It increased trasmitted power, makes conversion cheaper, reduces losses, and introduces a higher level of redundancy than either AC or bi-pole.

The concept was presented at the just-completed CIGRE conference in Paris and was well recieved by utilities and by manufacturers. The latter foresee no problem in configuring existing equipment components to build tri-pole terminals.

I would be pleased to discuss this further with DOE if it is of interest.

Lionel Barthold, P.E.
Pres. i-MOD, inc.

Comments to the Designation of National Interest Transmission Bottlenecks (NIETB) Notice of Inquiry

Modulated (Tri-Pole) HVDC

Lionel O. Barthold
President, i-MOD Inc.

Presented to CIGRE Group B4 HVDC Links and Power Electronics, Paris, September 2, 2004

I. Introduction

Growth in aggregate generator capacity (and inertia) in many industrialized countries has far outpaced the growth in capacity of the high voltage lines which interconnect them. Engineers have sought ways to get more capacity from existing transmission circuits but risk sacrificing system robustness in doing so [1]. In these efforts to boost circuit capacity HVDC has long been attractive because HVDC:

1. Achieves a large enough capability increases to simultaneously boost normal transfers and provide additional transmission reserve for contingencies.
2. Increases the inherent thermal limit of existing circuits and makes fuller use of those limits.
3. Extends the distance which a given voltage can usefully transmit power
4. Provides a means of enhancing stability when major parallel circuits are lost, thereby often extending allowable loading on parallel AC circuits.
5. Reduces the short-circuit duty of AC stations on either end of the circuit
6. Provides a better means of voltage control, thereby lowering total system losses
7. Provides a degree of internal redundancy not possible with AC circuits.

The idea of converting AC lines to HVDC is usually defeated economically by (1) the fact that for single circuit lines, one third of the transmission investment is idled by conversion and (2) converter stations, which must be sized for the new capacity, must be written off over just the incremental capacity.

II. Current-Modulated "Tri-Pole" HVDC

Both of the above economic barriers are partly overcome by adding a third pole to what would otherwise be a bi-pole station. [2] If one pole is positive the other two may share the negative pole's role and vice versa.

The positive pole in this case would carry more current than the negative poles. Its current could actually be

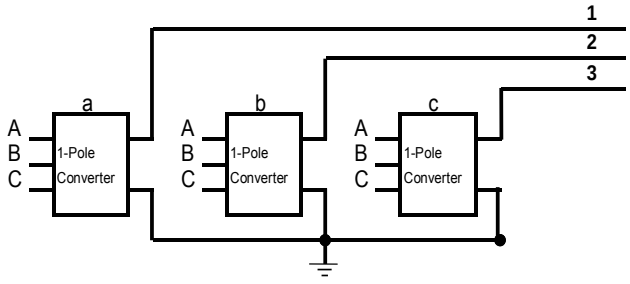


Fig. 1 Tri-Pole HVDC Configuration

above the line's thermal rating if that overload rating were rotated among poles.

If each pole carried the overload one third of the time the current on any one of the poles would appear as shown in fig. 2. There are a number of solutions which will allow all poles to carry their thermal (rms) limit but which also distribute the power among all poles.

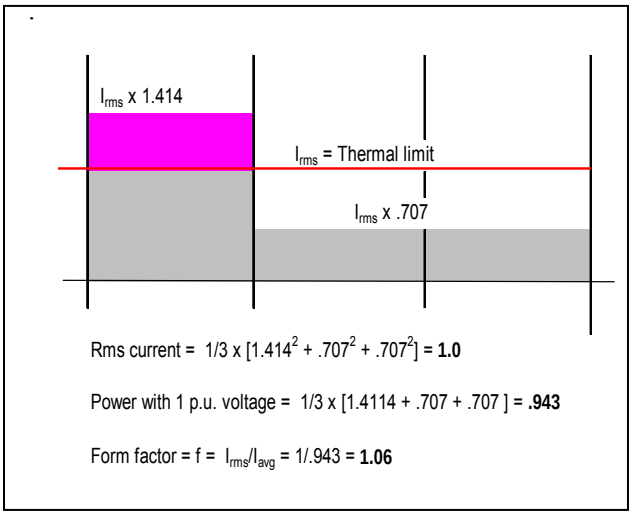


Fig. 2 Thermal Averaging of Conductor Current modulation

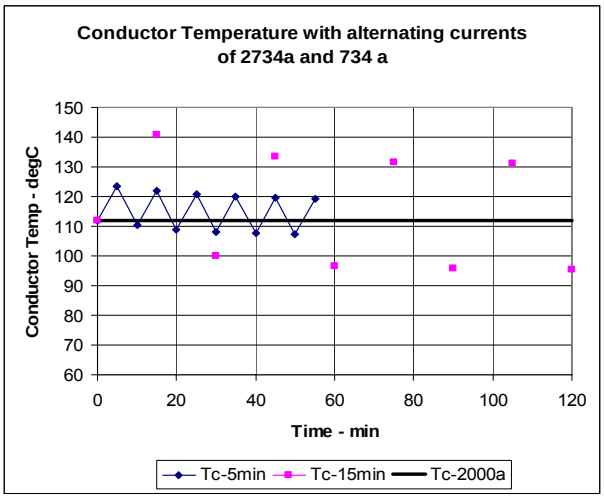


Fig. 3. Example Current Excursions during

The current cycle of fig. 2 will cause momentary excursions in conductor temperature as shown in fig. 3. In that figure, representing a "Bluebird" conductor, the temperature is 100 ^{0}C prior to modulation and the modulation period is 10 minutes. Temperature excursions in this case are +/- 6^0 C. Since heat rise due to a change in current is initially linear, a reduction in period to about 4 minutes would reduce the excursions to the order of 2^o C … within the band of fluctuation seen in normal service, e.g. with a change in cloud cover.

III. Modulation Options

Any scheme to rotate the over-current in fig. 2 among poles will require at least one pole to be capable of reversing polarity. That can be achieved either with bi-directional valves or with double valves in anti-parallel. With that reversing capability one can generate a variety of current wave-forms, some of which are shown in fig. 4.

These figures show the form factor, f, for various current shapes where

$$f = I_{rms}/I_{ave} \qquad (1)$$

A steady DC current has a form factor of 1.0 as illustrated in fig. 4a. As the current is modulated the rms (heating) value increases with respect to the average (power) value. Thus for any form factor other than 1.0, the thermal limit is reached before the full power transfer capability of a conductor is realized.

The modulation shown in fig. 4b simply interrupts each current for a third of the time, thereby loading all poles equally. The form factor for this modulation is poor however and the tri-pole circuit is able to carry only 27% more than a bi-pole.

Fig. 4c shows a symmetrical two-step modulation which actually achieves the theoretical limit in power transfer on three poles, i.e. $\sqrt{2}$. In this case the losses are 25% lower than would be the case if a

bi-pole line was carrying the same power on two conductors. Figures 4d shows that adding steps decreases the tri-pole to bi-pole ratio and 4e that a saw-tooth wave is the least efficient.

Fig. 4f represents a true hybrid of AC and HVDC systems, the current being a sine-wave and the voltage being constant, albeit reversing DC. Unfortunately a DC voltage and a sinusoidal current produce pulsations in power – in this case sixth harmonic pulses. Presuming the period of the sine wave to be four minutes, the period of the power pulses is 40 seconds – too long to be comfortable in AC system operation. Fig. 4g modifies the sinusoidal wave to a trapezoid which increases the form factor slightly but which achieves a constant power solution.

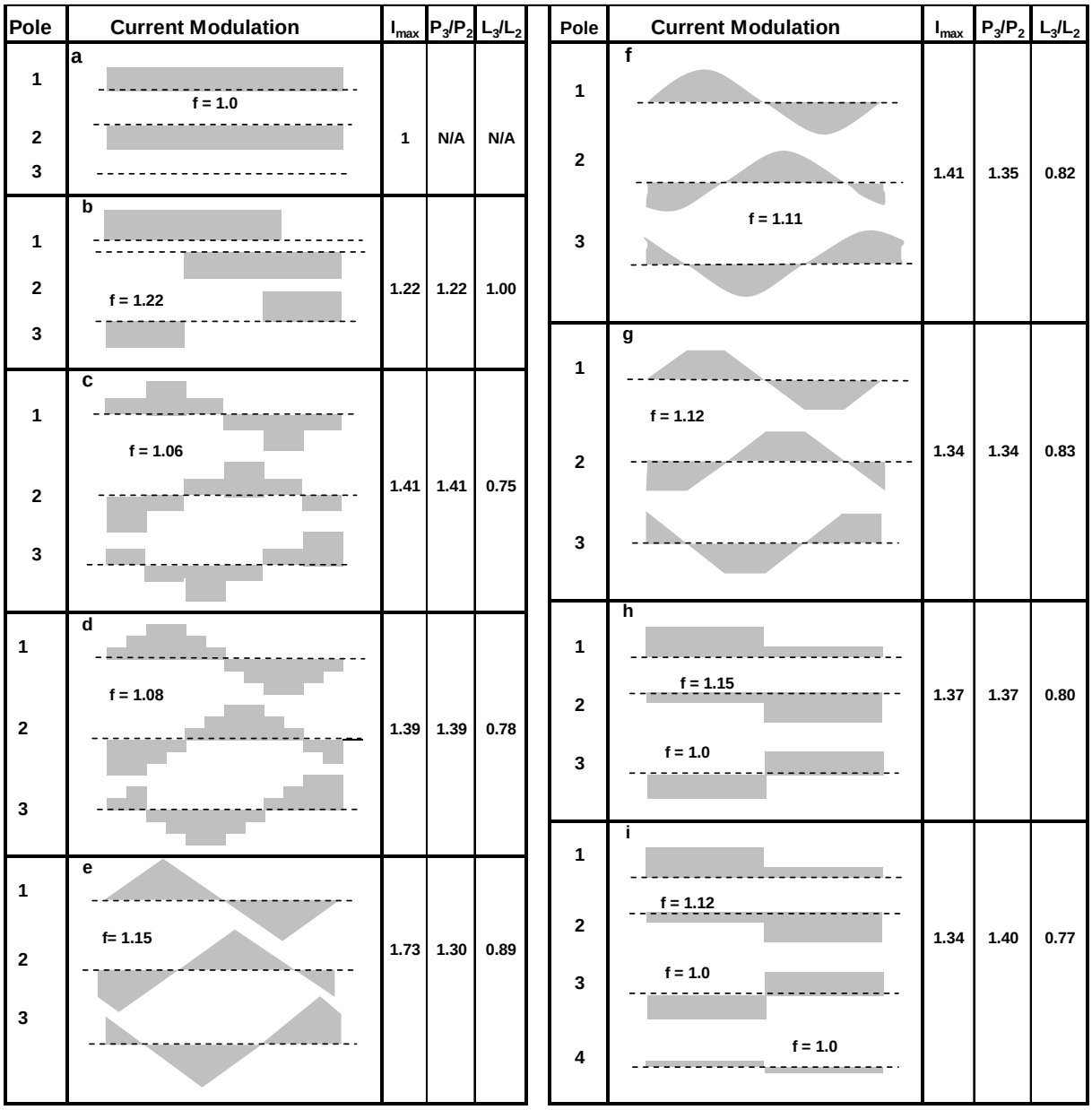


Fig. 4. Example Symmetrical and Asymmetrical Modulation Patterns

All symmetrical modulation patterns require three bi-directional poles. fig. 4h shows an asymmetrical modulation which requires that only pole three, the modulating pole, be reversible. Fig. 5 shows a schematic of such a scheme.

Using the modulation shown in fig. 4h, one can define a modulation ratio, r, as:

$$r = I_{max}/I_{min} \quad (2)$$

A variety of ratios will satisfy the condition that rms current both in the modulating pole and both constant-polarity poles equal 1.0. Table 1 shows three possible ratios and their consequence on power distribution, total power, and losses compared to the same power being transmitted on a bi-pole scheme using two conductors of the same three-conductor system.

Under light load, it could be advantageous to operate with r = 2 to minimize losses. Though the modulating pole carries less power than the other two, the rms current and therefore the sag is equal for each. The power on each pole differs because of the form factor.

Equal power per pole is achieved when r = 3 and maximum power when r = 2 + √3 = 3.732. Thus optimal operation might be to adjust r according to transfer requirements.

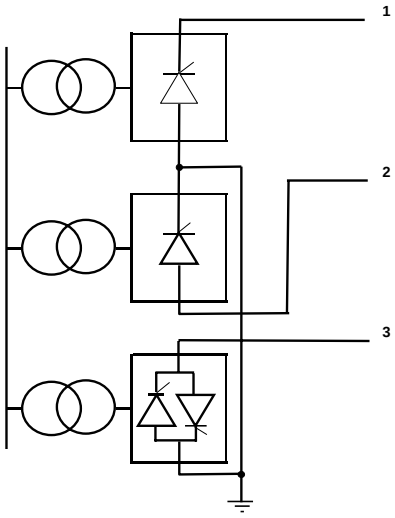


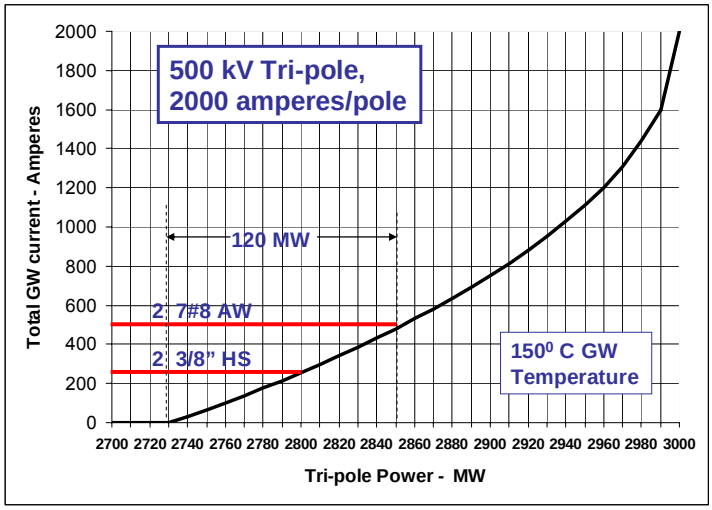
Fig. 5. Schematic of a tri-pole scheme using one reversible pole.

Criterion	r	Power				Loss
		1	2	3	Tot.	
Minimum Losses	**2.00**	0.47	0.47	0.32	**1.27**	0.75
Equal Power/Pole	**3.00**	0.45	0.45	0.45	**1.34**	0.78
Maximum Power	**3.73**	0.43	0.43	0.50	**1.37**	0.80

Table 1. Power distribution and losses for various modulation ratios

The power transfer can actually be boosted as high as 1.5 if a path for ground-return current is provided. Current in the modulating pole is simply left at +/- 1.0 while the modulation ratio, r, is reduced while keeping $I_{rms} = 1$ on the constant polarity poles. In the limit r = 1 and the line is operating as a bi-pole plus a monopole with ground return. Fig. 6 shows the current forced to flow in the ground return as a function of the tri-pole to bi-pole power rating for a 500 kV example line. .

The concept of "over-modulation" is not academic since, as fig. 6 shows, ground wires commonly applied to AC lines, if insulated, can boost the emergency transfer capacity somewhat. Even without a metallic return path, the same practice which allows bi-pole lines to carry ground current pending mechanical switching of the faulted pole's conductor to act as a ground return, could allow a tri-pole to operate at 1.5 times the bi-pole for as long as emergency



ground return is allowed, e.g. 30 minutes.

.

Fig. 6. Effect of over-modulation on ground return current

IV. Ramping

Figures 7 shows the transitional ramps associated with the asymmetrical modulation shown in fig. 4h. As might be expected, the transition can be ramped without causing any variation in power transfer. That ramping can be such that the system operates as a bi-pole for a few seconds – long enough to achieve reversal of voltage on the modulating pole.

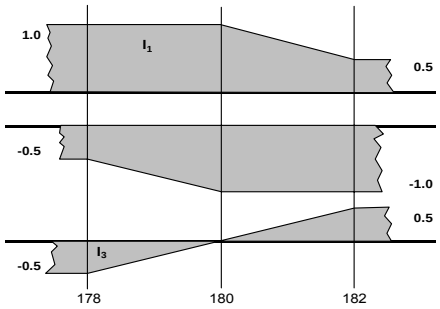
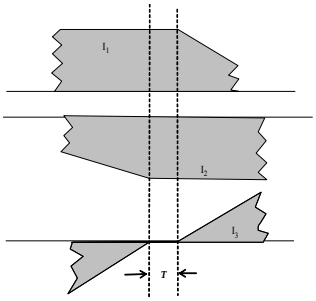


Fig. 7.

Ramped transitions providing time for voltage reversal on Pole 3.



V. Control Issues

Operation of the tri-pole scheme has been simulated in detail for a 345 kV cable circuit by Electranix, Inc. of Manitoba. The control logic assumed shows a straight-forward means of controlling in such a way that the transitions in state illustrated in fig. 7 is achieved without significant perturbation in DC power transfer. Control logic is simplified by controlling current from one terminal and voltage from the other.

Zero sequence current can be avoided by grounding one terminal directly and the other only through a surge arrester. Operation of that arrester, presuming a fault-related over-voltage, achieves adequate insulation protection. Both terminals can be grounded to the shield wire system if the shield wire is insulated at a moderately low voltage. The shield wire path allows a modest increase in transfer under emergency conditions by over-modulating the constant polarity poles as shown in fig. 6.

VI. Redundancy

Any fault or equipment failure on an AC circuit causes the entire circuit to be removed from service.

If a bi-pole line looses a pole its power will go to half, either using its metallic ground return or by temporarily using earth return pending substitution of the faulted pole's conductor as a long-term return path. For a permanent fault on the line itself, power must be reduced to what can be returned by earth on a long term basis unless a metallic return if available. If no long-term return path is provided, a permanent line-to-ground fault forces the line out of service.

If a pole is lost on a tri-pole line, either by virtue of pole or a line fault, power drops to the bi-pole level since two good poles remain. This represents a drop of 27% if the line is operating at full power but no loss at all if it is operating at or below the bi-pole rating of the remaining bridges. This degree of redundancy is achieved without the need for ground return provisions.

If conversion from HVDC allows a doubling of power *per conductor position*[1], the total HVDC bi-pole power would be:

$$P_{bi\text{-}pole} = 2 \times 2/3 \times P_{ac} = 1.33\ P_{ac} \quad (3)$$

If the same conductors were used on a tri-pole line, the power, using a 1.37 multiple, would be:

$$P_{tri\text{-}pole} = 1.33 \times 1.37 \times P_{ac} = 1.83\ P_{ac} \quad (4)$$

Redundancy comparisons (% of AC power level remaining with one pole or line out) is shown in table 2.

Any advantage in total transfer between systems deriving from improved redundancy will depend on system operating rules. On the US Pacific Intertie now operating on the US West Coast, the bi-pole line is treated as a double circuit in current deterministic loading criteria, so long as it operates for at least three years without a simultaneous outage on both poles. Other areas have other policies but there can be no doubt that the added redundancy associated with the tri-pole would show strong advantage in any probabilistic assessment of reliability.

Mode	Condition	
	Normal	1 Pole Out
AC	100%	0%
Bi-Pole	133%	67%*
Tri-Pole	182%	133%

** Assumes spare conductor is used as a ground return*

Table 2. Redundancy comparison of AC and HVDC alternatives

VII. Economics of AC to HVDC Conversion

There are reasons to argue that a three-pole terminal, capable of delivering 1.37 times the power of a two-bridge terminal would not cost much more on a per/kW basis. The aggregate MVA rating of all power equipment would increase by 50% and the thyrite content of each valve, having little or no thermal time-averaging capacity, would increase as well. The bi-directional character of the modulating pole would add cost. On the other hand many cost elements of the station would be less than proportionate to the increase in equipment MVA rating, e.g. civil works, engineering, administration, and controls. Furthermore the redundancy in the circuit itself could eliminate the need for a grounding system. Table 3 shows an initial estimate of the cost ratio both for double (anti parallel) valves on the modulating pole and for a bi-directional valve in that function. The multipliers K_1 and K_2 represent the estimated increase in cost for the addition of the third pole assuming that the addition increased the aggregate rating of the station by 1.37.

[1] *e.g. with an effective line-to-ground voltage increase of √2 and a like increase in current.*

However it should be borne in mind that the tri-pole/bi-pole cost ratios estimated in table 3 would apply to a *new* circuit. There is another factor, applicable in the case of conversion, which weighs strongly in favor of the tri-pole option.

If the bi-pole option is able to boost total power by 1.33 as assumed in the prior example, then the total cost of the terminals, assuming a base cost of $100 per kW is:

$$\$_{\text{bi-pole}} = \$100 \times 1.33 \times P_{ac} \quad (4)$$

but the cost per incremental kW is:

$$\$_{\text{bi-pole}} = \$100 \times 1.33 / (1.33 - 1.00) = \$403/\text{kW} \quad (5)$$

which is four times the cost of conversion for a new line.

If the tri-pole scheme were applied, taking advantage of the increased power capability, the incremental cost per kW would be:

$$\$_{\text{tri-pole}} = \$100 \times 1.83 / (1.83 - 1.00) = \$220/\text{kW} \quad (6)$$

It is apparent that the effective converter cost for a tri-pole converter project is the product of two factors: (1) The ratio of tri-pole to bi-pole terminals on a per kW basis and (2) A conversion ratio factor based on the tri-poles advantage in boosting power rating.

The latter is shown in fig. 8. In the range of probable Bi-pole/AC ratios power ratios, this factor will be significant.

For the example cited above, where the HVDC advantage over AC is 2:1 on a per-conductor basis, the ratio of bi-pole to AC capacity is 1.33 and the conversion ratio factor from fig. 8 is 0.55, clearly capable of making the difference between an economic and non-economic case.

To approximate the economic incentive of HVDC conversion on a parametric basis, losses were ignored on the basis that the loss reduction due to voltage increase will partly offset losses due to terminals

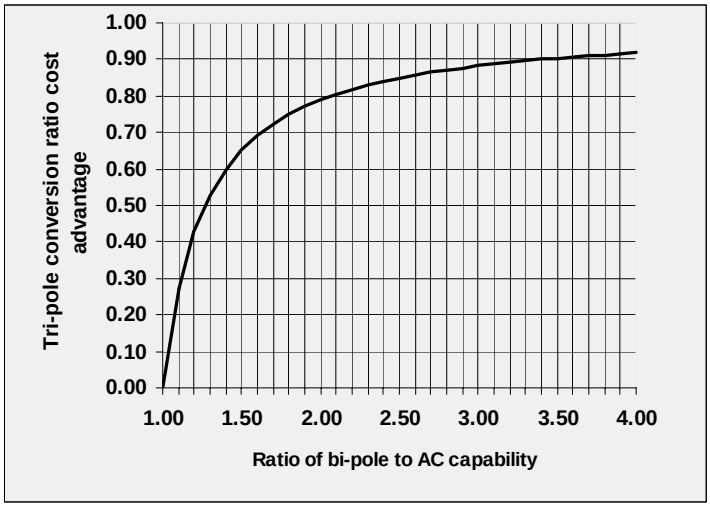


Fig. 8 Conversion ratio factor for terminal costs

themselves and on the basis that loss comparisons with AC tend to support the conversion option anyway. On that basis consider the following parameters:

L = the replacement cost of the existing circuit
$\mathbf{P_{ac}}$ = the useful load-carrying capability of the AC line
$\mathbf{P_{ac}/L}$ = the implicit value per kW of transmission
D = the total cost of conversion per kW
$\mathbf{P_{dc}/P_{ac}}$ = the minimum ratio of DC capability to prior AC capability to justify conversion

It can be shown that the minimum ratio for economic justification of is:

$$\mathbf{P_{dc}/P_{ac}} = \mathbf{L/(L-DP_{ac})} \quad (7)$$

This relationship is shown graphically in fig. 9. for the case where the total cost of conversion is $200 per kW. As might be expected, the ratio approaches infinity as the cost of converting the original AC transfer approaches the implicit value in $/kW of the line itself. Because the above directly prices the terminal costs and MW transfers, both of the terminal cost factors cited above are implicitly taken into account. Note that fig. 9 applies to HVDC in general and that tri-pole's advantage is by virtue of higher HVDC to AC ratio.

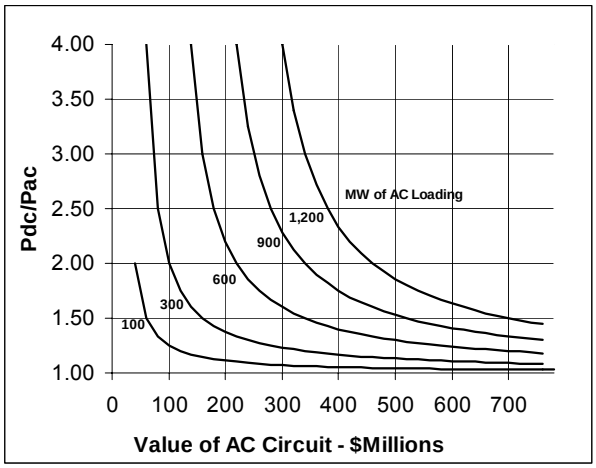


Figure 9. Minimum alternative line investment to justify tri-pole HVDC

As an example interpretation of fig. 9, consider a case where the pre-conversion AC loading is 900 MW and where the HVDC/AC ratio is 2.0. In this case the implicit AC circuit value is $340 Million which, for a 300 Mile line would reflect a cost of $1.13 Million per mile – not unreasonable in today's context.

The economic principles of conversion can better be visualized by an actual example. Consider a single-circuit 500 kV converted to an HVDC line, either bi-pole or tri-pole with the electrical and economic parameters shown in table 3. The voltage of 436 kV was simply selected as the crest of 500 kV line-to-ground voltage with a 7% increase due to lower switching surge levels

AC Parameters

Circuit	500 kV Single Circuit
Length	320 Miles
Conductors	2 x 2,057 mcm/phase
Resistance	.05 ohms/conductor/mile
Current Rating	3,500 ampers
Circuit Rating	3,031 MW

DC Parameters

DC Voltage	436 kV
Resistance	.048 ohms/conductor/mile
Terminal Losses	1.5% total

Economic Parameters

Capitalized value of losses	$1,500 per kW
Converter Cost	$100/kW/terminal (Bi-pole or Tri-pole)
Cost of re-insulation	$30 Million

Table 3. Parameters for example conversion economics case.

A series of options are explored using these parameters, each of which is sited in table 3 the first of which represents the initial AC case, limited by network impedance and voltage considerations to 1,200 MW.

Case	Poles	DC kV	System Xfer Limit	Actual MW	Incremental Cost ($Mil)	Incremental Cost $/kW	Peak Loss
1	AC	N/A	1,200	1,200	$0	N/A	5.8%
2	2	436	2,400	2,400	$590	$491	6.3%
3	3	436	2,400	2,400	$570	$475	5.3%
4	3	385	2,400	2,400	$590	$491	6.3%
5	3	325	2,400	2,400	$594	$495	8.3%
6	2	436	Line	3,059	$784	**$421**	7.7%
7	3	436	Line	4,100	$956	**$330**	7.9%

Table 3 – Economic comparison of HVDC up-rating options

Case 2 shows conversion to HVDC bi-pole transmission and assumes that with HVDC the rating could be increased to 2,400 MW, that limit (still below thermal rating) being set by n-1 criteria. The incremental capital cost per kW is high – equivalent in cost to another 1,200 MW 500 kV AC circuit at about $1.8 Million per mile.

Case 3 represents the equivalent option using a tri-pole scheme. The cost is somewhat less, based on the lower tri-pole losses. However this economic comparison takes no credit for the internal redundancy of the tri-pole circuit nor for any increase in loading allowed by virtue of redundancy.

Case 4, still transferring of 2,400 MW, supposes that the tri-pole voltage rating is reduced 12%; enough to bring its losses up to the bi-pole level. As might be expected for the cost assumptions made, the cost per incremental kW is now equal to the bi-pole case 2, absent any credit for lower terminal costs resulting from the voltage reduction. This case presumes that the re-insulation cost of $30 Million is still necessary.

Case 5, again rated 2,400 MW drops the operating voltage to 325 kV; forcing the current just up to conductor thermal rating. The loss penalty increases but the 25% drop in voltage (a 25% increase in creep distance per kV) is assumed to obviate the need for re-insulation.

In Cases 6 and 7 the transfer level is limited only by the capability of the line. The bi-pole option, case 6, achieves a transfer of 3,059 MW on two conductors at a cost of $421 per incremental kW. Case 7, the tri-pole option, transfers 4,100 MW with a cost per incremental kW of $330.

An alternative means of achieving the 4,100 loading assumed for the tri-pole option in case 7 might be construction of two new 500 kV circuits. The $956 Million price tag for the tri-pole option would allow $478 Million per circuit which represents a break-even cost of $1.5 Million per mile.

Very high HVDC to AC power ratios cause one to ask whether the system can usefully accommodate the transfer multiple achievable by HVDC conversion. That multiple, possibly enhanced by re-conductoring with composite conductors, can often reach a ratio of 3:1 or more. If that advantage is bestowed on AC lines already among the most heavily loaded interconnections, the system will often be unable to use use the multiple from a reliability standpoint.

However the same multiple can be applied to one or more lines of an underlying voltage level, e.g. 230 kV under-lying a 500 kV system, "promoting " them functionally to the 500 kV system by connecting the AC switchyard of the tri-pole circuit directly on the 500 kV bus. Thus the value of the up-rated line is compounded by its effect on loading of parallel circuits. The potential of exploiting that promotion strategy for a 230 kV line is shown in fig. 10 where a portion of the classical "St Clair's" loading curve [3] shows both 500 kV and 230 kV characteristics. The 230 kV line is rated at 2,000 a. per phase position, either with the original or a replacement conductor and the operating voltage is presumed to be 190 kV. If the line is converted to a tri-pole, the power transfer capability, 1,100

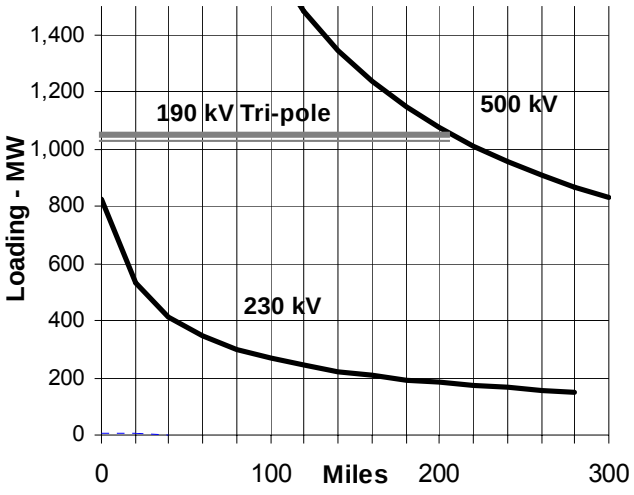


Fig. 10. "Promotion" of a 230 kV line to the 500 kV system function by conversion to Tri-pole HVDC

MW, is equivalent to the level which characterizes a 200 mile 500 kV line.

VIII. The Case for Tri-Poles on new Circuits

There are two major reasons to argue that a tri-pole configuration may also be more economic for new HVDC circuits,

A. Redundancy

Table 4 shows the redundancy of a bi-pole, a tri-pole and a double bi-pole, all rated for the same MW transfer level, in terms of the percentage of power remaining after a single pole outage. In both bi-pole cases it is assumed that ground current is allowed only temporarily until the conductor associated with the faulted pole is mechanically switched to become a permanent ground path.

Poles	Redundancy	
	Pole Out	Line Out
2	50%	0%
3	73%	73%
4	75%	50%

Table 4. Permanent loss of power with 1 pole or line conductor out of service.

Table 4 shows that while the tri-pole has only slightly poorer redundancy than the double bi-pole for a pole outage it has a markedly better redundancy with a permanent fault on a line conductor. The double bi-pole will match tri-pole redundancy if long-term earth return is permitted or if it is provided with a metallic ground return – amounting to a fifth conductor as far as the tower's mechanical loading is concerned.

B. Tower Cost

Since tower cost is determined primarily by the aggregate wind and weight load, various tower options can be compared on a first approximation basis by comparing them on that basis noting that a full metallic ground return contributes almost as much to tower cost as would a third (insulated) conductor.

Table 5 compares a number of HVDC transmission line alternatives, including their redundancy on that basis. The weight loadings represent the aggregate current-carrying requirement of conductors plus shield wires equal in cross-section to one pole conductor. The wind loading reflects the sum of conductor diameters associated with each option. All represent the same MW capability.

Poles	No Metallic Return				
	Redundancy		Line Cost Index		
	Pole Out	Line Out	Wgt.	Wind	Avg.
2	50%	0%	1	1	1
3	73%	73%	1.1	0.9	1
4	75%	50%	1	1.4	1.2

Poles	Full Metallic Return				
	Redundancy		Line Cost Index		
	Pole Out	Line Out	Wgt.	Wind	Avg.
2	50%	50%	1	1	1
3	73%	73%	1.5	1.2	1.3
4	75%	75%	1.3	1.8	1.5

Table 5. Comparison of various HVDC options from the standpoint of redundancy and tower cost

It would appear that for the same transmitted power, a single tri-pole circuit, without ground return, has virtually the same redundancy quality as a single-tower double bi-pole yet is less costly. If two bi-poles are placed on separate towers the overall reliability obviously increases but the comparison of each of the bi-poles in that case could again be made to the equivalent tri-pole circuit. .

As with the conversion case, a parametric evaluation for new circuits may be instructive. For that purpose it will be useful to define the following:

L_2 is the cost per kW of a bi-pole transmission line or cable

L_3 is the cost per kW of a tri-pole transmission alternative

T_2 is the cost per kW of bi-pole converter stations.

T_3 is the cost per kW of tri-pole converter stations.

k is L_2/T_2, the ratio of bi-pole line to terminal costs

Then the ratio of tri-pole to bi-pole project costs, $\overline{R}$ on a per kW basis is:

$$\overline{R} = \frac{T_3 + L_3}{T_2 + L_2} \tag{8}$$

and if $\overline{L} = L_3/L_2$ and $\overline{T} = T_3/T_2$, then

$$\overline{R} = \frac{\overline{T} + k\,\overline{L}}{1 + k} \tag{8}$$

thus presenting the tri-pole to bi-pole project cost ratio, $\overline{R}$ as a function of three key parameters. Fig 11 represents (8), showing various values of k as a function of both line and terminal cost ratios for

k=2.

The tri-pole savings shown in fig. 11 derive from the fact that line cost increase is less than proportionate to the increase in transfer achieved considering credit for eliminating metallic ground return, sharing of all the fixed cost involved in a transmission project, and the fact that the transmission investment is presumed here to be twice the terminal investment (k=2). Fig. 12 shows the tri-pole/bi-pole per kW cost ratio as a function of k for various ratios of tri-pole to bi-pole costs and for a per kW tri-pole/bi-pole line cost ratio of 0.9

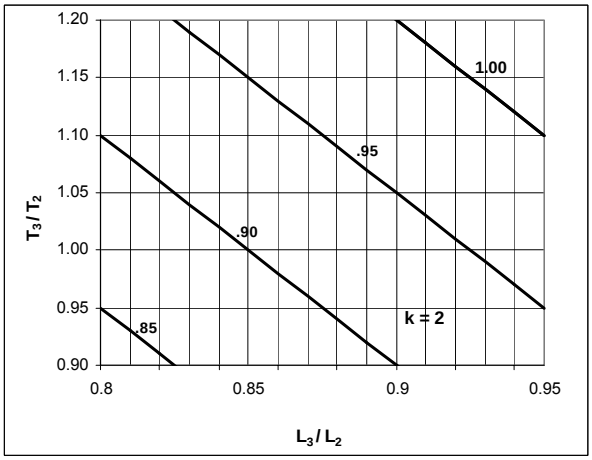


Fig. 11. Tri-pole vs. Bi-pole cost ratios for k=2

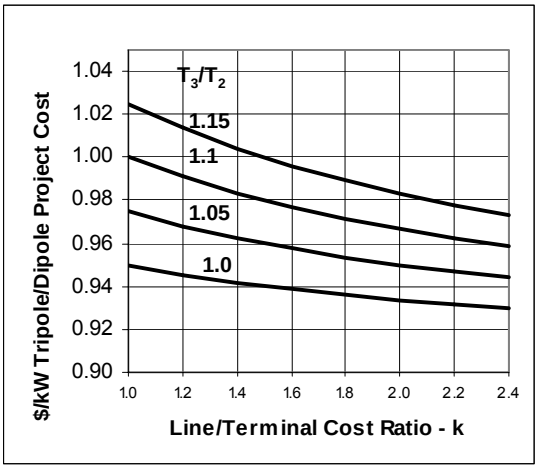


Fig. 12. Sensitivity of savings to the ratio of line to terminal costs

A rather low L_3/L_2 ratio may be realistic in light of the considerations put forth above.

The above arguments would apply to new underground cable circuits only the sum of (1) the incremental cost of insulating a metallic ground for full rather than partial voltage and (2) the incremental cost of laying a pole conductor compared to a pole conductor were low enough to warrant the extra power gained by a tri-pole configuration. . Where two parallel bi-poles (four cables) is being considered, the alternative of three conductors without ground return should be carefully considered both from economies and redundancy standpoints.

IX. Conclusions

a. It is possible to configure an HVDC system to use thermal averaging and three rather than two conductors to achieve about 40% greater rating.

b. The period of rotation between high low currents can be the order of four minutes without causing conductor temperature excursions greater than those normally seen as a result of variations in wind and solar exposure.

c. Using three rather than two conductors reduces losses in the range of 20% to 25% compared to a bi-pole system transmitting the same power.

d. Some of the power transfer advantage of a tri-pole system can be sacrificed in favor of a drop in HVDC voltage and increase in HVDC losses. That drop can, in some cases, be sufficient to avoid the need to replace AC insulators.

e. At maximum rating the tri-pole drops only 27% of its capacity with either a pole or conductor outage. Its internal redundancy is greater than a double bi-pole with no permanent ground return.

   If tri-pole power is at or below the two-conductor bi-pole limit, no power is lost with either a line or pole outage.

f. The above redundancy will allow routine pole maintenance and replacements during periods of moderate load, with no loss in transfer capability.

g. Control simulation shows that a tri-pole system consisting of two conventional poles and one reversible pole can be controlled to achieve transitions between states with negligible discontinuity in power and no zero sequence current. At least two options for grounding the terminals appear feasible.

h. The ratio of tri-pole to bi-pole cost per kW for the same kW rating has not been firmly established. Some factors argue for a more than proportional cost increase, others for a less. It is likely that dividing the same aggregate MW rating into three rather than two parts will increase the cost slightly. But that increase will, in most AC to DC conversion cases, be more than offset by the tri-pole's advantage in achieving greater incremental transfer.

i. Because of the tri-pole system's ability to achieve a very high uprating ratio, it may have more application on systems underlying the highest voltage system since the former can more easily be implemented without violating n-1 criteria and may, in fact, allow greater transfers on the highest voltage system.

j. The tri-pole system uses no hardware components or configurations not already used in either bi-pole systems or SVS systems. At any instant in time it functions exactly the same as a bi-pole with a split return path.

k. Several technical issues relating to transmission line and cable applications remain, though all relate to extensions of the applications cited above rather than their realization. Those issues include::

   i. The behavior of AC insulators under pollution conditions with symmetrical modulation in the milliHerz range

   ii. The ability of pipe-type cable, converted for tri-pole operation, to operate as a bi-pole using the sound poles, after one pole has suffered a permanent pole-to-ground fault...

   iii. The ability of XLP and other existing in-service solid insulation cables to be operated as HVDC cables with a symmetrical modulation system with a period in the millisecond range.

X. Acknowledgement

Acknowledgement is due Dennis Woodford of Electranix Corp. of Winnipeg, Manitoba, for his cooperation both the HVDC operating principles and for his painstaking investigation of control issues.

XI. References

[1] N. Dag Reppen " Increasing Utilization of the Transmission Grid Requires New Reliability Criteria and Comprehensive Reliability Assessment" Prepared for presentation at the 8th International Conference on Probability Methods Applied to Power Systems, Iowa State University, Ames, Iowa, September 12-16, 2004.

[2] Lionel O. Barthold "Current Modulation of Direct Current Transmission Lines" U.S. Patent 6,714,427 B1, Mar. 30, 2004

[3] H.P. St. Clair, "Practical Concepts in Capability and Performance of Transmission Lines," AIEE Transactions on Power Apparatus and Systems, Vol. 72, Part III, December 1953 pp 1152-1157

5. Comments of the Committee on Regional Electric Power Cooperation (CREPC), 9/13/04, 12:44pm

September 13, 2004
Office of Electric Transmission and Distribution, TD–1
U.S. Department of Energy
Forrestal Building, Room 6H050
1000 Independence Avenue, SW.
Washington, DC 20585

Attention: Transmission Bottleneck Comments

The following comments are submitted on behalf of the Committee on Regional Electric Power Cooperation (CREPC). CREPC, a committee of the Western Interstate Energy Board, includes representatives for all the states in the Western Interconnection and three Western Canadian provinces.

Sincerely
Marsha H. Smith, Chair
Committee on Regional Electric Power Cooperation

Comments of the Committee on Regional Electric Power Cooperation on the Department of Energy Solicitation on the Designation of National Interest Electric Transmission Bottlenecks

The Committee on Regional Electric Power Cooperation appreciates this opportunity to respond to the Department of Energy's request for comments on the designation of national interest electric transmission bottlenecks (NIETB). While we recognize that pending legislation, if enacted, would provide the Department authority to designate NIETBs, at present DOE has no such statutory authority. Western states do not support granting DOE the authority to designate NIETBs and the Federal Energy Regulatory Commission the authority to pre-empt state permitting processes on transmission projects to relieve such bottlenecks.

We do agree with the Department that identifying existing and anticipating future transmission congestion and alleviating such congestion can provide economic and reliability benefits. That is why, at the urging of Western Governors, a pro-active interconnection-wide transmission planning effort and four sub-regional transmission planning efforts are underway in the Western Interconnection. These efforts are largely focused on evaluating the economic benefits from expanding transmission in the West, not localized reliability problems.

We offer the following responses to questions posed in the Federal Register notice.

1. Are the Electricity Advisory Board's recommended criteria for designation of National Interest Electric Transmission Bottlenecks appropriate and sufficient? If not, what should they be?

   The Electricity Advisory Board's proposed definition of national interest transmission lines is overly broad and, should the Department be granted authority to act on NIETBs, sets the stage for unproductive federal-state conflicts over judgments that are presently and appropriately under state jurisdiction. These judgments include:

   - Decisions on the desired level of reliability of the grid which are presently being made in collaboration with the Western Electricity Coordinating Council;
   - Tradeoffs between generation and transmission adequacy and cost; and
   - The economic costs and benefits of transmission investments.

   We believe that the identification of transmission bottlenecks that jeopardize national security is an appropriate task for DOE. We would note, however, that any such designation should be preceded by an evaluation of the alternatives to ensure national security. Such an evaluation should consider on-site generation or back-up generation and energy efficiency improvements that could provide greater national security benefits than transmission additions

2. What should be the role of transmission grid operators, utilities, other market participants, regional entities, States, Federal agencies, Native American tribes and others in the process of identifying, designating, and addressing NIETBs?

The only lines eligible for designation in regions with open, pro-active transmission planning processes should be those identified as needed by such processes. Open, pro-active transmission planning processes means that the planning effort must:

- Rely on a publicly-available database for transmission analysis;
- Be based on a transparent, stakeholder driven process;
- Allow all affected stakeholders, including those outside the immediate study region, to participate in the planning effort; and
- Incorporate the resource plans of load serving entities in transmission analysis.

In regions with such transmission planning processes in place, DOE should not accept applications for designation of NIETBs that have not been evaluated in the regional transmission planning process.

3. How might DOE identify bottlenecks in regions where much pertinent data are not available, in contrast to regions where transmission expansion plans have been developed and made public?

This is not the case in the Western Interconnection.

4. What actions should DOE undertake to facilitate and monitor progress towards mitigation of designated NIETBs?

Assuming a NIETB has been designated, DOE should amend that designation whenever a more recent analysis of transmission needs has been conducted through an open, pro-active regional transmission planning process that recommends a change in such designation.

5. Other suggestions

There are several important and constructive roles that DOE can play in identifying and helping to alleviate transmission bottlenecks. Specifically, DOE should:

- Work with regional transmission planning efforts to improve the tools used to evaluate transmission needs. Specifically, in the Western Interconnection, DOE should help to improve the modeling of hydro and wind generation and assist in ongoing innovative efforts in the West to incorporate bidding behavior into transmission models.
- Support the active participation of the Western Area Power Administration and the Bonneville Power Administration in interconnection-wide and sub-regional transmission planning.
- Support the documentation and analysis of existing rights-of-way across federal lands to determine the capability of those rights-of-way to accommodate additional transmission capacity.

- Build the capacity for the Department to directly assist interconnection-wide and sub-regional transmission planning efforts in considering the application of new transmission technologies.
- Have the capacity to respond to requests for assistance from regional transmission planning processes.
- Share information among regions on best practices in transmission expansion analysis.

Thank you for this opportunity to provide comments.

6. Comments of the Connecticut Center for Advanced Technology, 9/15/04, 12:34pm

Connecticut Center for Advanced Technology
111 Founders Plaza Suite 1002
East Hartford, CT 06108
Phone (860) 291-8832
Fax (860) 291-8874

September 15, 2004

Office of Electric Transmission and Distribution, TD-1
U.S. Department of Energy
Forrestal Building, Room 6H-050
1000 Independence Avenue, S.W.
Washington, D.C. 20585

Attention: Transmission Bottleneck Comments

The Connecticut Center for Advanced Technology (CCAT) seeks to respond and provide comments to the Department of Energy (DOE), Office of Electric Transmission and Distribution request for comments regarding Transmission Bottlenecks. Specifically, CCAT seeks to briefly comment on "what actions should DOE undertake to facilitate and monitor progress towards mitigation of designated National Interest Electric Transmission Bottlenecks (NIETBs)." To this request, CCAT suggests that DOE consider the development of a local guidance structure that encourages integrated planning for energy facilities at the local level. Indeed, many ISOs and states have engaged in the development of regional transmission planning processes. However, few municipalities, which have the greatest control over local land use decisions, have been involved in these processes. Further, while many, if not most, municipalities have "Community Master Plans" and "Comprehensive Plans of Development", few have integrated energy facilities into their plans, which has led to a lack of information and loss of local support for the siting of energy infrastructure including electric transmission.

The lack of local integrated planning with identification of energy facility components can cause inefficiency in the implementation of state and regional energy plans by causing delay and adversarial relations for:

- electric and gas transmission siting;
- management of energy rights-of-way;
- replacement of old and obsolete generation;
- development of sustainable/renewable generation; and
- deployment of advanced technologies in targeted geographic areas.

Local integrated planning, facilitated by state and regional assistance, will help encourage identification and appropriate development of community-based opportunities to protect environmental and community resources while recognizing the value of various energy and infrastructure alternatives. Local "bottoms up" initiatives guided by state/regional "tops down" assistance will help to reduce conflict, improve state/regional and municipal relations, and provide energy solutions to problems that have been long overdue for municipal involvement and community-based planning.

To assist in this task, CCAT has developed an outline and process to include local concerns in regional energy plans. This process, named "Municipal Energy Ecology", will help to address community values and concerns in the development of local energy plans for more efficient selection of energy and infrastructure alternatives. The Municipal Energy Ecology process identifies and helps to apply value for cost, environmental resources, efficiency and sustainability, and community relationships. The process relies on community information to identify and select the best mix of resource options for transmission, generation, conservation, and demand response consistent with local concerns, state policy, and regional requirements.

Mechanisms for implementation would be varied and could be tailored by state and community cooperation, and may include strategies such as:

- pre-approval or designation of sites and ROWs to facilitate transmission and/or generation;
- establishment of appropriate ROW buffers to facilitate line expansion;
- development of environmental preference standards and option manuals to improve the regulatory process for consideration of appropriate facilities;
- development of electric and magnetic fields (EMF) best management practices to facilitate consistent operation of electric transmission lines;
- guidance for long-term management of ROWs as multi-use "greenways" and/or other community resources;
- use of government bonding to encourage the development of certain physical facilities that offer long-term energy or environmental attributes to the community; and
- use of government resources to objectively document long-term regional value and benefits for the development of certain identified facilities.

Comments to the Designation of National Interest Transmission Bottlenecks (NIETB) Notice of Inquiry

Municipal Energy Ecology can be developed to integrate and coordinate energy decisions with community based planning and can be consistent with state and regional system plans for resource development in either a restructured market environment or with vertically integrated utilities.

Consistent with other questions asked by DOE to identify a process to identify and address NIETBs, CCAT stands able and willing to discuss the development and application of the above described process as a pilot and/or task force initiative on a selected NIETB.

A slide prepared by CCAT has been attached as an example of energy information management to apply Municipal Energy Ecology and begin the evaluation process for a community based energy plan.

Please contact me for questions or additional information.

Respectfully submitted,

Joel M. Rinebold

cah

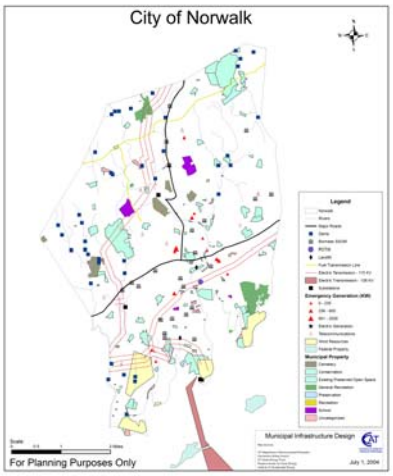
Attachment

Municipal Infrastructure Design

"Municipal Energy Ecology"

MUNICIPAL INFRASTRUCTURE DESIGN
MUNICIPAL ENERGY ECOLOGY (MEE) FOR SYSTEM PLANNING
OPTIMIZATION OUTLINE FOR PREFERENCE STANDARDS

Organizational Checklist of Attributes:	**YES**	**NO**
Cost		
Reduction of capital cost	___	___
Reduction of operating cost	___	___
Reduction of life cycle cost	___	___
Reduction of time for execution	___	___
Improved time of use	___	___
Reduction of risk for execution	___	___
Improved competitiveness and profitability	___	___
Environment		
Prevention of environmental pollution	___	___
Reduction of consumption	___	___
Reduction of waste	___	___
Improved environmental productivity	___	___
Industrial Ecology		
Improved efficiency	___	___
Enhanced symbiosis of resource cycles	___	___
Increased optimization	___	___
Improved sustainability	___	___
Community Relationships		
Regulatory compliance	___	___
Improved societal/community benefits	___	___
Improved balance of services and resources	___	___
Improved support for investment and technological advancement	___	___
Enhanced economic development potential	___	___



7. Comments of The Nevada Hydro Company, Inc., 9/15/04 3:06pm

From: David Kates [mailto:dkates@sonic.net]
Sent: Wednesday, September 15, 2004 3:06 PM
To: Bottleneck Comments
Cc: Jim Fargo; Peter Lewandowski; Rex Wait; JohnsonSr, Paul; Armi Perez
Subject: Lake Elsinore Advanced Pumped Storage Projects

This letter is submitted in accordance with the request for comments in the Federal Register of July 22, 2004 in relation to the Designation of National Interest Electric Transmission Bottlenecks (NIETB) (69 FR 43833).

The Elsinore Valley Municipal Water District (EVMWD) (located in southern California) and The Nevada Hydro Company, Inc. are currently developing separate but related energy generation and transmission projects in conjunction with meeting the critical needs identified by, among others, both San Diego Gas and Electric Company (SDG&E) and the California Independent System Operator (CAISO). The projects are:

- The 500 MW Lake Elsinore Advanced Pumped Storage (LEAPS) Project
- The 500 kV Talega-Escondido/Valley-Serrano (TE/VS) Interconnection Project (TE/VS Interconnect)

These projects are being licensed and permitted through a joint process managed by the Federal Energy Regulatory Commission (FERC) under FERC Project Number 11858-002. Because much of the route for the TE/VS Interconnect traverses Federal Lands, the US Forest Service (USFS) is a Cooperating Agency with FERC under a Letter of Understanding (LOU) executed between the two agencies. Both the USFS and the Bureau of Land Management (BLM) have accepted separate applications for special use permits for the right-of-way associated with the TE/VS Interconnect.

These projects are being developed to meet the following identified regional public needs:

- To create a 500 kV backbone system serving Southern California and San Diego
- To specifically provide for a high priority electrical link between the Southern California Edison and SDG&E grid systems
- To help the State of California manage its renewable energy resources
- To help assure system reliability in the Southern California Grid
- To enable the EVMWD to effectively manage Lake Elsinore

The need for a regional backbone system has been identified as a critical need by the CAISO and through the efforts of the Southwest Transmission Expansion Plan (STEP). In addition, the TE/VS interconnection has also been identified by SDG&E and part of their long-term resource plans. Furthermore, both projects have been identified as critical national energy infrastructure by the White House Task Force on Energy Project Streamlining.

The process for designating the right-of-way for these projects has been addressed as part of H.R. 6 (and follow-up bills) in Title III, Section 353.

Finally, much of this route has been identified by the Western Regional Corridor Planning Partnership (WRCPP) as a "Priority Corridor". The WRCPP includes the BLM, USFS. the Western Utility Group, the Western Governors' Association and the Department of Energy (DOE). The route can be seen in a July 10, 2003 map published by the Partnership.

We ask that the Office of Electric Transmission and Distribution within the DOE take note of these projects and

1. Include both the LEAPS and TE/VS Interconnect on the published list of projects intended to meet the needs identified in the NIETB program
2. Work with other Federal agencies to assure the plans and polices of those agencies are not inconsistent with DOE objectives and the NIETB Program
3. Actively participate in the decision-making process associated with the LEAPS and TE/VS interconnect projects to help assure that these projects can be constructed so as to meet these critical public needs.

Very truly yours,

David Kates
The Nevada Hydro Company, Inc.
3510 Unocal Place, Suite 200
Santa Rosa, CA 95403
(707) 570-1866

8. Comments of the Public Utilities Commission of Ohio, 9/15/04, 3:10pm

Before the DEPARTMENT OF ENERGY OFFICE OF ELECTRIC TRANSMISSION AND DISTRIBUTION

Comment Request

on

National Interest Electric Transmission Bottlenecks

Comments submitted by the
PUBLIC UTILITIES COMMISSION OF OHIO

SEPTEMBER 16, 2004

COMMENTS ON

National Interest Electric Transmission Bottlenecks
BY
THE PUBLIC UTILITIES COMMISSION OF OHIO

The following comments are submitted by the Public Utilities Commission of Ohio (PUCO) in response to the Department of Energy's (DOE) July 22, 2004 Notice of Inquiry (NOI). The NOI seeks comments on designation of National Interest Electric Transmission Bottlenecks (NIETB).

The PUCO mission is to assure all residential and business consumers access to adequate, safe, and reliable utility services at fair prices, while facilitating an environment that provides competitive choices. The primary way PUCO works to accomplish this mission is to protect the public by monitoring and enforcing PUCO rules and state laws against unfair, inadequate, and unsafe public utility services.

The U.S. Department of Energy has asked for public input in its efforts toward identification, designation and possible mitigation of NIETB that are a significant barrier to the efficient operation of regional electric markets, threaten the safe and reliable operation of the electric system, or impair national security.

The following comments are intended to provide responses to DOE's questions on:

- What should be the criteria for designation of NIETB?
- What should be the role of States in the process of identifying and addressing NIETB?
- How might DOE identify bottlenecks in regions where much pertinent data are not available, in contrast to regions where transmission expansion plans have been developed and made public?
- What actions should DOE undertake to facilitate and monitor progress towards mitigation of designated NIETBs?

The PUCO agrees with DOE's finding that today the high voltage electric transmission system acts like an interstate highway system for wholesale electric commerce. However, this system was designed, built and operated by locally owned, vertically integrated energy companies to serve their customers. It was not designed or built to serve the demands of the broad regional power supply market under development today. As a result, transmission lines are being used differently today than in the

past, some lines see greater use while others see less. The result is that some lines limit the ability of the wholesale market to deliver power from point A to point B in the interconnected system. In the past, generation and transmission were planned and built in unison, normally by the same owner. Today, under the Federal Energy Regulatory Commission's (FERC) mandated, non-discriminatory open access to the transmission system and open access same-time information system, traditional vertically integrated electric power supply companies are required to file separate transmission tariffs with FERC that allow independent power producers to use the transmission system. As a result, all power suppliers now have equal access to the transmission system that was not designed to carry power over a broad regional area in a universal manner. The planning for generation and transmission has effectively been separated into distinct functions, often times performed by different entities.

The PUCO believes the developing wholesale market has created a demand for new transmission lines designed to meet the needs of the wholesale market. As is the case with all past transmission lines, the PUCO believes new market oriented transmission lines should have to go through regulated cost justification and be paid for by the entities that benefit.

The PUCO recommends that criteria used by DOE to designation of NIETB be all of the following:

- Transmission lines that are rated 138 kV or greater;
- Transmission lines that begin in one North American Electric Reliability Council (NERC) reliability coordinator area and end in another NERC reliability coordinator area;
- Transmission lines must be from a specific source location to a specific sink location that has been designated by the Office of Homeland Security as a national security site; and
- Transmission lines that fail the N-2 reliability criteria and/or have a history of TLR's where firm load was shed.

States are the front line of customer protection for service reliability and cost justification and allocation. Because of this, as well as existing siting authority, it is imperative that States have significant input over any final recommendation to qualify a facility as a NIETB. The states have locational as well as institutional knowledge of, and proficiency with, specific transmission issues in their state. The PUCO recommends that DOE and other states consider Ohio's Siting process. Ohio's process is streamlined, transparent, facilitates public input, and is very effective in achieving the necessary siting of transmission lines. Entities such as state regulatory commissions and siting agencies should be an integral part of any declaration of bottlenecks. State commissions have a keen participatory interest in transmission expansion planning and approval processes undertaken by local and regional entities.

The PUCO recommends that the term "bottleneck" be clearly defined by DOE, and should include all parameters. The PUCO recommends that "bottlenecks" due to commercial congestion or economic development should not be designated as national interest or NIETB. These types of bottlenecks are important but they are not a national security or reliability concern.

The Federal Energy Regulatory Commission's (FERC) Order 2000 requires a Regional Transmission Organization (RTO) to "independently calculate Total Transmission Capability and Available Transmission Capability" and that requirement (also see FERC's Whitepaper on Wholesale Power Market Platform of April 2003, RTO Function 5, Appendix A). An RTO must also "be responsible for planning and for directing or arranging necessary transmission expansions, additions, and upgrades that will enable it to provide efficient, reliable, and non-discriminatory transmission service and coordinate such efforts with appropriate state authorities." (See Whitepaper, RTO Function 7, Appendix A). Finally, an RTO "must ensure the integration or reliability practices among regions" and "RTOs ... within an electrical interconnection (are required to) coordinate to resolve seams issues." (See Whitepaper, RTO Function 8, Appendix A).

DOE should develop filing requirements for facilities designated a NIETB. These filings should be made with the Office of Electric Transmission and Distribution. The PUCO asks that any information collected by the Office of Electric Transmission and Distribution be shared with the Office of Homeland Security, State Utility Regulatory Commissions, and state agencies responsible for siting and local security.

The comments and recommendations offered in this paper present Ohio's desire to continue to protect the interest of customers under our jurisdiction and assist DOE in its efforts to respond to the Honorable DOE Secretary Spencer Abraham's Electric Advisory Board issue on national interest bottlenecks. The PUCO also recommends that the Office of Electric Transmission and Distribution work with existing organizations such as Regional Transmission RTOs, but also including Independent System Operators (ISO's) and Independent Transmission Companies (ITC's). It is also imperative that DOE acknowledge the work of NERC and the regional reliability councils. These organizations encounter and work with constraints on their systems on a daily basis. They already have the required tools and knowledge of their systems, and most have already collected much of the information needed to determine NIETB facilities. These organizations are in the best position to determine if a bottleneck is a reliability concern of national interest.

In order to achieve some mitigation efforts, if a transmission line meets all the criteria of becoming a bottleneck, or is of major security concern, there should be some consideration given to imposing a potential N-3 test on that facility.

The transmission system, although not designed as a national network, is quickly becoming one. The interconnection of the individual systems has matured to a point where no one system is truly independent from another. Developments of the industry and market have created the need for coordinated planning and operation. All mechanical systems have limits on their use. Although we cannot, nor should we, design a system to meet all conditions, it is reasonable that we understand the limits of the existing system and strive to make it meet acceptable limits, particularly in the interest of national security and reliability.

In closing, the PUCO wishes to thank the Department for the opportunity to file comments in this proceeding.

Respectfully submitted,

Thomas W. McNamee
Assistant Attorney General
Public Utilities Section
180 E. Broad St., 99h Floor
Columbus, OH 43215
(614) 466-4396
Fax: (614) 644-8764

9. Comments of Western Area Power Administration (WAPA), 9/16/04, 12:05pm

Sent: Thursday, September 16, 2004 12:05 PM
To: Bottleneck Comments
Subject: Response to Notice of Inquiry

On July 22, 2004, a Notice of Inquiry on National Interest Electric Transmission Bottlenecks (NIETB) was published in the Federal Register.
These comments are offered in response to that notice.

The Western Area Power Administration (Western) is a Federal power marketing administration which markets hydroelectric power in fifteen central and western states. Western owns and operates over 17,000 miles of high voltage transmission; this extensive grid was constructed to facilitate Western's statutory power marketing mission.

Western is willing to assist the Office of Electric Transmission and Distribution in the identification of NIETBs. Western has significant operational and transmission study expertise that could expedite the process of identifying constraints which either threaten regional reliability or impede the delivery of economically priced electricity.

Once constrained transmission paths are identified, Western can help alleviate congestion through the construction of new facilities. An example of such a role is the Western-private sector partnership which is constructing new transmission with non-Federal funding to mitigate constraints on Path 15 in central California. Western's construction management experience, eminent domain authority and overall transmission expertise could prove valuable in addressing other DOE-identified NIETBs. New legislation could be useful if construction to relieve a particular NIETB is beyond Western's current legal authority.

If further information is needed, please contact Bob Fullerton, Western's Power Marketing Advisor, at 720/962-7079 or at fullerto@wapa.gov.

10. Comments of the Bay Area Cities, 9/17/04, 1:13pm

Dated: September 17, 2004

Comments of the Bay Area Cities
on
Department of Energy's (DOE)
Notice of Inquiry and Opportunity to Comment
on
Designation of National Interest Electric Transmission Bottlenecks (NIETB)

The Cities of Alameda (Alameda Power and Telecom), Palo Alto, and Santa Clara (Silicon Valley Power), hereafter called Cities, have joined together with the objective of promoting reliable electric supply to and within the Greater San Francisco Bay Area at reasonable cost. The Cities offer the following comments for DOE in response to its inquiry as published in the Federal Register Notice (FRN) of July 22, 2004 on Designation of National Interest Electric Transmission Bottlenecks (NIETB)[2]. The Cities commend DOE in seeking public comments in shaping its NIETB program and on issues relating to the identification, designation and possible mitigation of NIETB. DOE has stated in its FRN that this is an initial step to identifying transmission bottlenecks and that such designation will help mitigate such bottlenecks that are a barrier to efficient operation of regional markets, threaten the safe and reliable operation of the electric system, and/or impair national security.

Comments on NIETB Criteria

The FRN requested comments on the three criteria recommended by the DOE's Electricity Advisory Board (EAB). The Cities generally concurs with the EAB's recommended three criteria for designation of NIETB. Specifically, the Cities concur with the two criteria that the "bottleneck creates a risk of widespread grid reliability problems or the likelihood that major customer load centers will be without adequate electricity supplies," and "the bottleneck creates the risk of significant consumer cost increases in electricity markets that could have serious consequences on the national or a broad regional economy or risks significant consumer cost increases over an area or region." On the latter criteria, the Cities recommend removing the words "the risk of" and "risks." Thus, the second criteria would read, "the bottleneck creates significant consumer cost increases in electricity markets that could have serious consequences on the national or a broad regional economy or significant consumer cost increases over an area or region." The bottlenecks don't just pose a risk of cost increases, but cost increases are indeed a fact. The Cities believe both of these criteria describe the transmission constrained area known as the Greater Bay Area Load Pocket in northern California.

[2] Federal Register, Volume 69, No. 140, Thursday, July 22, 2004, page 43833.

The Greater Bay Area Meets the Criteria of Widespread Grid Reliability Problems
DOE's Transmission Bottleneck Project Report of March 19, 2003 has already identified the San Francisco Peninsula as a bottleneck with a potential for "widespread grid reliability problems." While that report was conducted by surveying the ISOs across the country, the Cities believe that the Greater Bay Area Load Pocket should be listed as having widespread grid reliability problems. Although the grid is planned and operated to meet minimum reliability criteria, the California Energy Commission has demonstrated in its 2002-2012 Electricity Outlook Final Report that the risks of power supply shortages are greater in load pockets. In the San Francisco Bay Area load pocket the risk of insufficient supply is much greater than most other areas. See illustrative table below.

	Risks (Percent)		Maximum Deficits (MW)	
Transmission Zones	**Baseline Scenario**	**High Load Scenario**	**Baseline Scenario**	**High Load Scenario**
South CA	**1.3**	**4.3**	**1,730**	**5,210**
North CA	**0**	**0**	**0**	**0**
San Diego	**7**	**17**	**3,030**	**3,540**
San Francisco	**13.7**	**11**	**230**	**210**
IID	**7.3**	**18.3**	**280**	**310**
LADWP	**0**	**0**	**0**	**0**
SMUD	**0**	**0**	**0**	**0**
CCENT	**0**	**0**	**0**	**0**

Source: CEC 2002-2012 Electricity Outlook Report, page 45, Table 11-3-1,
Shortage Risks and Maximum Deficits by Transmission Zone

Additionally, actual events have demonstrated this higher risk of outages. On June 15, 2000 a number of power plants were off-line in the Bay Area and the transmission system was not adequate to maintain acceptable voltage levels. The California ISO implemented rolling blackouts affecting over 97,000 customers in the Bay Area and including customers in our Cities.

Although some improvements to grid planning standards specific to the Greater Bay Area have been implemented and other are being studied further, the Greater Bay Area is still recognized as a load pocket with transmission bottleneck that faces high "risks of widespread grid reliability problems." The Cities endorse the concept of developing a Loss of Load Probability (LOLP) index to measure the relative reliability of load pockets. The DOE could use these indices to show relative reliability of load pockets or regions within a single utility or ISO. LOLP indices for deliverability and local resource adequacy requirements are used in several ISOs in the

Northeast markets. The California ISO has advocated that such LOLP deliverability tests be utilized in California in analyzing local area risks verses grid-wide risks, and for demonstrating the deliverability of adequate generating supply.

The Greater Bay Area Meets the Criteria of Significant Consumer Cost Increases

In addition to meeting the higher risks for reliability problems criteria, the Greater Bay Area also has the highest level of Reliability Must Run (RMR) generating units that are required to be designated in order to reliably operate the grid. Historically, this came about due to the former vertically integrated transmission owner's decisions substituting local generation for transmission. Additionally, the current owners of these RMR designated plants could exert market power if not contracted for under RMR agreements. As such, the Cities believe inordinate high levels of RMR units are required in the Greater Bay Area load pocket to mitigate the unacceptable potential for high price differentials and market power. Ever since the initial operation of the California ISO, the RMR requirements for the Greater Bay Area have exceeded 4,000 MW for a load of about 9,000 MW in the Greater Bay Area. For 2004 the Greater Bay Area required 4300 MW of RMR from a total grid-wide requirement of 9,155 MW of RMR for the entire ISO service area. Annual RMR costs for just the Greater Bay Area portion of the PG&E system for 2004 are estimated to exceed $187 million.[3]

The following quote from the Bay Area Economic Forum[4] expresses the economic costs of reliability problems to the region.

> "California's experience shows the importance of reliability: In 2001, rotating outages in January through March may have cost the State as much as $150 million of lost gross state product and imposed as much as $300 million in economic costs on customers, based on the estimated value of service to customers. This does not include the high wholesale power-procurement costs incurred by utilities. In addition, prior analysis by the Bay Area Economic Forum and its partners indicates that sustained power shortages for the duration of a tight summer could reduce gross state product by $2 billion and impose $3 billion in lost value of service costs."

Source: Bay Area Is Still Coming Up Short in Electricity, BAEF, May 2003 Report

Nomination of the Greater Bay Area for NIETB Status

DOE's NIETB program should allow for consumer nominations of areas for NIETB status. The DOE July 14, 2004 bottleneck workshop invited such nominations. (Closing remarks of David

[3] Estimated RMR costs for the Greater Bay Area are based on figures from total estimated costs for RMR services for 2004 as filed by PG&E in the FERC Docket No. ER04-337-000 (commonly referred to as the TO7 case), Exhibit PGE-10.

[4] With an economy of almost $300 billion, the Bay Area ranks 24th in the world when compared to national economies. On a per capita basis, it ranks ahead of all national economies, including the U.S. The region is at the cutting edge of global technology, and is a leader in many key indicators of regional, global and national competitiveness. With a market of more than six million residents, the Bay Area is California's second largest and the nation's fourth largest metropolitan region. Source: Bay Area Economic Forum: The Region

Meyer in the July 14, 2004 NIETB workshop proceedings, page 24.) If consumers feel that transmission constraints prevent access to lower priced markets, then incentives and assistance for mitigating such constraints should be available. Although DOE has stated it will help mitigate such bottlenecks, the FRN did not specify what benefits would be available from such designation and how DOE would help. We have witnessed the benefits gained from national visibility in assisting the relief of the Path 15 bottleneck in California. As such, the Cities wish to nominate the Greater Bay Area as a bottleneck for NIETB designation status.

The Cities thank DOE for allowing the public to provide input to help shape the NIETB program. We trust you will be considering our comments and our nomination of the Greater Bay Area Load Pocket to be designated as a National Interest Electric Bottleneck to be mitigated.

11. Comments of Beacon Energy, 9/17/04, 2:33pm

From: Steve Williams [mailto:swilliams@beaconenergy.com]
Sent: Friday, September 17, 2004 2:33 PM
To: Bottleneck Comments
Subject: NIETB Comments

To: Transmission Bottleneck Comments

In the July 22nd Federal Register, DOE posed four critical question areas relevant to transmission issues in the United States. Beacon Energy LLC has served as a consultant in this area for the past 7 years and we are happy to use our expertise to assist DOE in finding answers to these questions. We have played a major role in advancing competitive transmission issues (including to help found the Council for Competitive Transmission to advance the concept of merchant transmission) and we have recently (first announced in Sept 2004) developed with PB Power (a well know power transmission analysis and engineering firm involved in 19,000 miles of transmission line studies and projects) a new method for predicting transmission bottlenecks and congestion areas. We would like to bring this new method of predicting transmission bottlenecks to DOE's attention.

As background, Beacon Energy, in a team with PB Power and NewEnergy Associates, is currently a U.S. DOE EIA support contractor. Collectively, our firms have done an extensive amount of work in the transmission area, ranging from load flow assessments and transmission impact studies for interconnection requests to market access studies and T&D system design and construction.

One element discussed in regard to NIETBs dealt with identifying bottlenecks in regions where much pertinent data are not available. Beacon Energy and PB Power would like to submit the attached paper as a comment in response to this question. This paper deals with a unique method PB Power, in concert with Beacon Energy, has designed for identifying and predicting critical transmission congestion points or bottlenecks. This T-insight method focuses on identifying current, or projecting potential future, transmission congestion points or > "> hot spots.> "> Highlighting these congestion points is an important component of helping to avoid future reliability problems and develop effective management strategies to address them.

The new technique is simple and effective, transparent and cost effective. The new T-insight method is a versatile technique since it can use current year, projected year or daily information, to identify and predict congestion > "> hot spots> "> at different points in time. Potential uses of the T-insight forecasting approach would be to benchmark the NERC summer and reliability information and/or to forecast future congestion zones and identify > "> hot spots> "> before they happen.

If you have any questions or require additional information. Please contact James Schretter or myself at 703-905-8110.
Respectfully,
Steve Williams
Beacon Energy
Tel 703-905-8110
email swilliams@beaconenergy.com
<<PB BE Reliability Paper.pdf>>

"Predicting Transmission Congestion Points (The T-insight Method): A New Beginning for Reliability Planning"

PB Power, in concert with Beacon Energy, has designed a unique method of identifying and predicting critical transmission congestion points. This T-insight method focuses on identifying current, or projecting potential future, transmission congestion points or "hot spots." Highlighting these congestion points is an important component of helping to avoid future reliability problems and develop effective management strategies to address them.

The new transmission analysis method was designed as a potential tool to assist three main groups of market participants:

1) Regulators – To aid in monitoring the work of transmission utilities and watch seam areas between regions that can literally fall between the cracks and represent serious interregional issues.

2) Power developers, utilities and regional transmission organizations – To design and propose the most effective transmission or generation improvements to reduce congestion.

3) Investors or financers of new transmission, infrastructure investments to better support risk analysis in lending decisions for such investments.

Efforts by all three groups to reduce congestion and improve reliability can help keep the power flowing to end users – the central issue to reliability planning.

The new T-insight method is a versatile technique since it can use current year, projected year or daily information, all provided by major transmission utilities, to identify and predict congestion "hot spots" at different points in time. The T-insight approach models transmission line loadings and can reasonably predict severe congestion points and areas where critical improvements are necessary. This prediction can be done within regions as well as between regions or in the seams

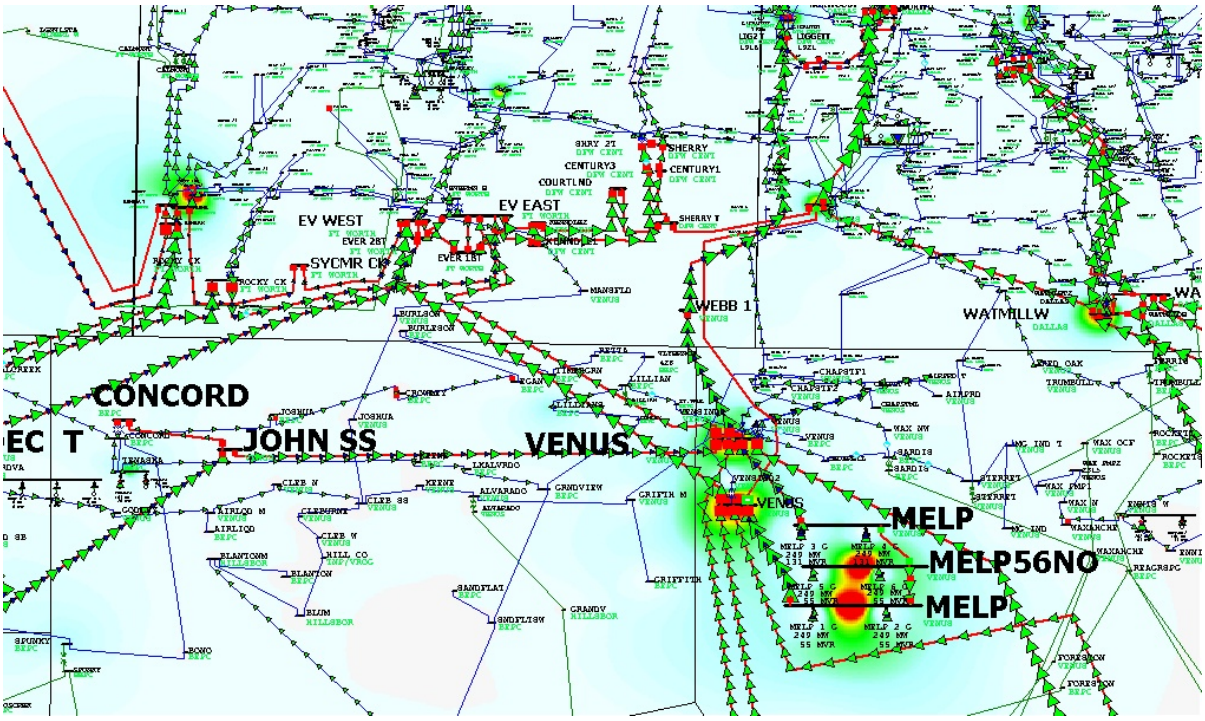
between regions. In addition, PB Power and Beacon Energy can make recommendations and develop strategies on what can be done to overcome this congestion.

Other predictive techniques usually rely on the summer and winter NERC forecasts for only the current year, do not use multiple time frames, and require mammoth in-house utility transmission computer programs to analyze the situation and produce recommendations that are reduced through thousands of pages to a comprehensible form. PB Power's and Beacon Energy's technique is simple and effective, transparent and cost effective.

ERCOT

To test its approach, PB Power first applied the new forecasting technique to ERCOT. The analysis achieved excellent predictive results. PB Power was able to independently confirm that the list of transmission improvement areas predicted by its model were also cited by ERCOT as the recommended list of proposed transmission improvements. The figure below visually shows, in the red circles and yellow areas, examples of identified "hot spots" of transmission congestion.

Figure 1 – Example Hot Spots in the South Dallas / Fort Worth Area



Comments to the Designation of National Interest Transmission Bottlenecks (NIETB) Notice of Inquiry

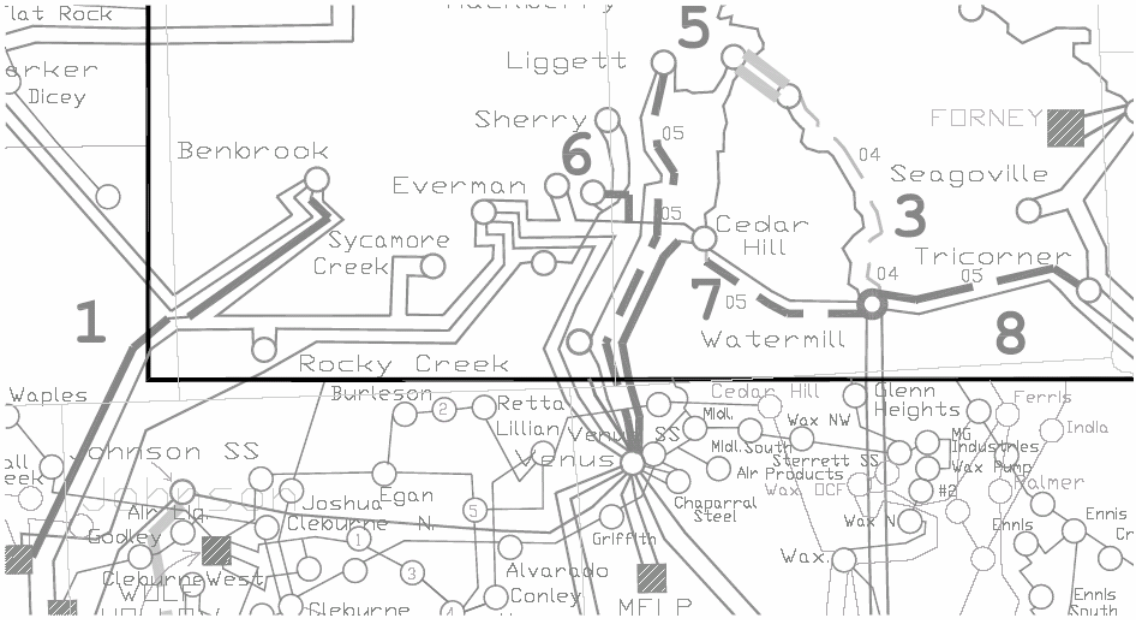
One of the features of the new predictive technique is that selected variables can be changed to limit or expand the granularity with which “hot spots” are defined.

Table 1 below lists the approved / proposed transmission improvement projects currently under study by ERCOT. The item numbers in the first column correspond to the numbers shown in Figure 2 below. This close-up shows improvements being considered at Venus, Benbrook, Watermill and Liggett substations, all locations indicated by the T-insight technique. There are similar correlations throughout the ERCOT system, including the North Dallas area, Austin and the Temple / Sandow area.

Table 1 – Transmission Upgrades

Item	Title	Purpose	Owner	In - Service
1	DeCordova -Benbrook 345 kV line upgrade	Relieves overload of line.	Oncor	May-05
2	Anna 345/138 kV autotransformer	Relieves overload of existing autotransformer	Oncor	May-05
3	DeSoto 345/138 kV autotransformer	Relieves overloads on the Venus 345/138 kV autotransformer and several 138 kV lines.	Oncor	May-05
4	Trinidad - Richland 345 kV line	Relieves overloads on Trinidad - Richland 345 kV Line.	Oncor	May-05
5	Venus - Liggett 345 kV line	Relieves overloads on 345 kV and 138 kV lines.	Oncor	May-05
6	Venus - Sherry 345 kV line	Relieves overloads on 345 kV lines.	Oncor	May-05
7	Watermill - Cedar Hill (2nd) 345 kV circuit	Relieves overloads on existing Watermill - Cedar Hill 345 kV Line.	Oncor	May-05
8	Watermill - Tricorner 345 kV line	Relieves overloads on the Watermill - Tricorner 345 kV line.	Oncor	May-05

Figure 2 – Location of Proposed Transmission Improvements



The close correlation demonstrates that the predictive model in a simple and convincing way produces virtually the same results as the alternative ISO and NERC models.

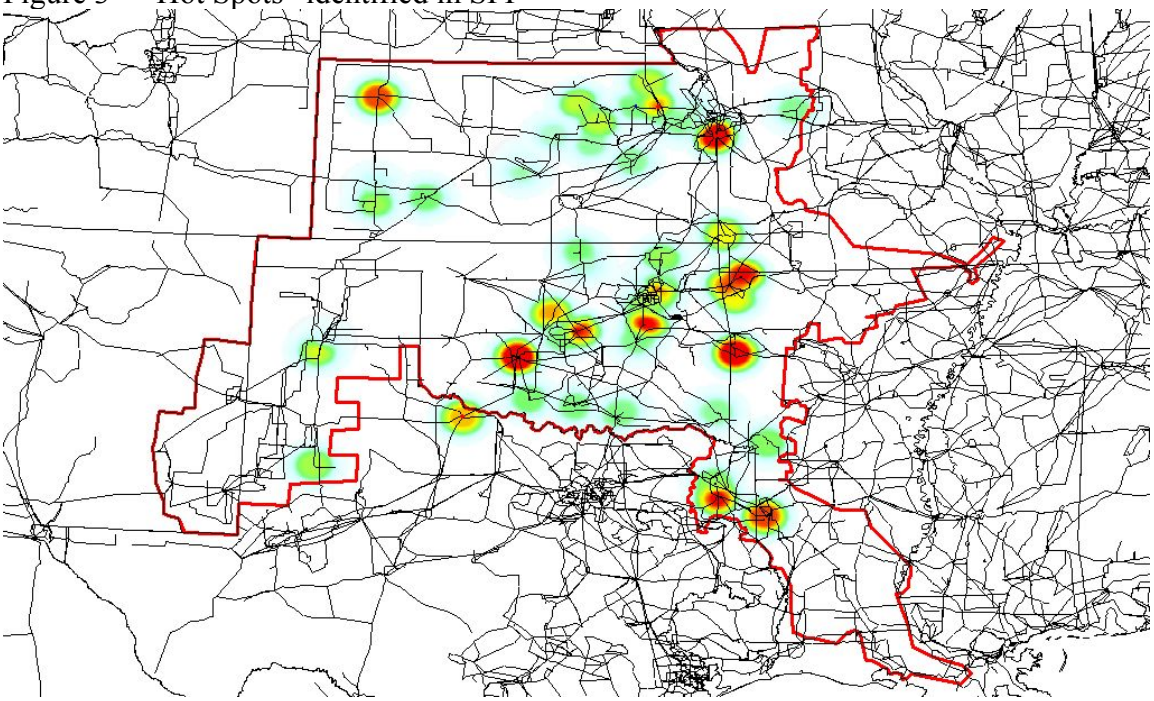
SPP

PB Power has also examined the SPP control area, and predicted hot spots with equal success. The analytical process identified areas with a high probability of thermal overloads throughout SPP. When these areas were compared to SPP documents and studies presented at the SPP Regional Planning Summit (Phase II), the correlation of the identified problems was essentially equivalent to those demonstrated for ERCOT above. Specifically, the process identified:

- Six regional hot spots in Kansas,
- Two regional hot spots in Missouri,
- Three regional hot spots in Arkansas,
- Seven regional hot spots in Oklahoma, and
- Three regional hot spots in Texas.

In each case, these areas corresponded to problem areas independently identified by SPP. Of particular interest is the fact that these areas were identified without performing the extensive contingency and transaction analysis performed by SPP. A contour map of the locations identified in SPP is shown in Figure 3 below.

Figure 3 – "Hot Spots" identified in SPP



One of the hardest issues to manage effectively as a regulator is to identify future transmission congestion zones and make sure solutions are put in place to maintain system reliability. The T-

insight forecasting approach can use 2004 information and benchmark the NERC summer and reliability information. It can also use future demand projections to forecast future congestion zones and identify "hot spots" before they happen. Further, this technique is simple enough that with some degree of automation it could be applied to daily transmission and unit information and serve as a security check over seams between regions, and inside regions, as a way to highlight same day or week ahead problems. This information within a control can be useful at predicting current and potential problems. In this manner, regulators can secure an outside check of daily/weekly reliability issues without solely relying on utility or NERC information, which may not be available on a daily/weekly basis or in a readily useable format. This quality of response could help alleviate future problems and catch potential "hot spots" before they become critical, and forge solutions before problems become emergencies.

The T-insight forecasting technique is proprietary to PB Power. Additional information is available with suitable confidentiality protection and undertakings by interested parties.

Company Background Information

PB Power has engineered more than 19,000 miles of transmission lines and related substations at voltages up to 500 kV. They have provided detailed engineering for permanent and temporary substations for quick connection to rapidly growing power networks. PB Power has detailed knowledge of international practices in power transmission and distribution and brings the benefits of modern techniques and technologies to new construction projects and to the more efficient, reliable, and safe use of existing plants.

Parsons Brinckerhoff (PB), founded in 1885, is one of the oldest continually operating engineering consulting firms in the United States and is an internationally experienced, multidisciplinary planning, design and construction management firm, with a reputation of successfully completing complex projects in planning, engineering, architecture and construction services. The firm has consistently been in the top 5% of the **Engineering News-Record's** listing of the 500 leading architect/ engineering firms in the U.S. In its 2003 Top 500 Design Firms Sourcebook, Engineering News Record ranked PB number 14.

Reflecting their growth, they have more than 250 project and corporate offices around the world with 67 primary offices in North America alone. PB is proud to be 100% employee-owned, and presently has staff resources of 9,200 professional, technical, management and administrative personnel. Staff specialists have state-of-the-art knowledge of equipment and practices and are supported by professionals skilled in disciplines needed for all spheres of project development - planning, financial feasibility, civil, electrical, mechanical, structural, architectural and environmental engineering, and construction services.

Beacon Energy LLC (Beacon) is a leading independent energy consulting firm specializing in the domestic and international electric power and fuel industries. The company is staffed by

experts in market assessment, project implementation, fuel supply analysis, price forecasting, project finance, technical assessment, wholesale energy trading, energy economics, international politics, and strategic planning.

Beacon has provided strategic planning, market assessment, project finance, technical assessment, energy economics and legislative/regulatory services to clients across the energy industry, played an industry leadership role and offered best of class electricity and energy forecasting,. Beacon's principals have worked on more than 15,000 MW of power asset development and 5 Tcf of natural gas supply and its principals have served as lender's expert or developer's counsel on more than $5 billion in project financings.

12. Comments of the Upper Great Plains Transmission Coalition, 9/17/04, 2:51pm

Robert W. Harms
Chairman

Upper Great Plains Transmission Coalition

Comments of the
Upper Great Plains Transmission Coalition
On The Designation of National Interest Electric Transmission Bottlenecks
September 17, 2004

The following comments are submitted by the Upper Great Plains Transmission Coalition (UGPTC) in response to the Department of Energy's Notice of Inquiry (NOI) published in the July 22, 2004 *Federal Register* seeking comments on issues relating to the identification, designation and possible mitigation of National Interest Electric Transmission Bottlenecks (NIETB). The UGPTC represents the interests of electric power stakeholders within the Upper Great Plains region encompassing North Dakota, South Dakota, and Minnesota. Its membership is comprised of FERC-jurisdictional and non-jurisdictional entities including transmission providers, utilities, electricity generators, coal and wind project developers, and fuel suppliers, supplemented by governmental[5] and public policy advisors, including the region's Congressional delegation. The charter for the UGPTC is to identify, publicize, and advocate solutions to resolve the transmission constraints that limit the export of electrical energy from the Upper Great Plains Region. As such, the UGPTC has important perspectives to offer to the Department as it moves forward with the establishment of a process to designate NIETB. The UGPTC welcomes the opportunity to offer comments intended to assure that the NIETB process will complement regional efforts to resolve the transmission constraints and limitations that pose a significant barrier to the economically efficient operation of regional energy markets in the Upper Great Plains.

SUMMARY

The transmission system is the fundamental bedrock of competitive, reliable electricity markets. The identification and resolution of National Interest Electric Transmission Bottlenecks should play an important role in assuring that the grid is robust and capable of meeting the growing demands placed on the transmission network. The UGPTC supports a stakeholder-

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driven NIETB designation process that recognizes differences in each region's transmission constraints and the need for NIETB designation criteria to be sufficiently flexible to accommodate these regional differences. The UGPTC further believes that DOE should also allow for the NIETB process to be initiated by the submission of applications from interested stakeholders seeking an NIETB designation. The Federal government's role, through DOE, would be two fold: first, to review submitted applications to assess their suitability for NIETB designation, and second, to facilitate the resolution of designated NIETB through appropriate public policy initiatives. DOE should work with the States and FERC to address issues including financing, appropriate participation of the Federal Power Marketing Administrations (PMAs), and providing leadership to obtain any additional statutory authority found to be necessary.

COMMENTS

In the *Federal Register* Notice, the Department asked for comments on four primary issues. UGPTC's responses to the issues posed by the Department are as follows:

(1) The Criteria for the Designation of National Interest Electric Transmission Bottlenecks Must Be Flexible To Accommodate Regional Needs

> The recommendations made in 2002 by the Secretary of Energy's Electricity Advisory Board for the criteria to be used in designating NIETB address three important areas: national security, reliability/adequacy of electrical supplies, and cost of electricity.[6] Within these general areas, however, the specific criteria to be used in assessing NIETB must be flexible enough to accommodate regional needs. The nature of the constraint and the effects of the constraint will vary from region to region, and as a result, a "one size fits all" approach will not work. NIETB criteria should not be limited to congestion/TLR measurement, and should also encompass the development of cost-effective resources "stranded" by transmission constraints. An emphasis on looking to statistics regarding transmission congestion based on historical experience might not adequately capture constraints on the grid that would limit the introduction of new generation from diverse resources, or hamper the economically efficient operation of markets by denying consumers in one area access to lower cost power supplies plentiful in another. Constraints on the transmission system that limit customer access to low cost power supplies or new electric generation should be taken into account under the NIETB criteria.

The effects of a constraint on fuel diversity in the electricity generation sector also should be considered in the NIETB designation process. A robust and secure national energy policy must be founded on fuel diversity. There has been inadequate recognition of the extent to which transmission constraints may block the development of a variety of abundantly available domestic resources for electricity generation other than natural gas.

The Upper Great Plains region offers an excellent example of a constraint that has significant implications for the cost and adequacy of electricity supplies, as well as fuel diversity. Exports of low-cost coal and wind resources from the region cannot be distributed to customers at load centers (such as the Minneapolis area) due to a well-documented transmission constraint, which limits exports to 1,950 MW. At present, all of the region's firm export capacity is fully subscribed administratively, leaving limited ability to move power that could be produced at remotely located projects utilizing coal and wind resources – even though there is a need in Midwest markets for reliable, environmentally acceptable and low cost power.

The NOI suggests several specific issues – disaster recovery, economic development, and the enhancement of the ability to deal with market and system contingencies – that might appropriately be considered in the NIETB designation process. The NIETB criteria should be flexible enough to accommodate these and other considerations that may have special significance in a given region.

(2) Stakeholders Should Have a Central Role in the NIETB Designation Process

The NIETB designation process should be driven by stakeholder input. UGPTC recommends that the NIETB process could be initiated by the submission of an application to DOE by stakeholder groups, including Regional Transmission Organizations and other groups that have been formed expressly to address transmission issues in a given market or region, seeking an NIETB designation. These applications would contain appropriate documentation, including at a minimum: 1) technical data to support the existence of a transmission constraint that constitutes an NIETB within the appropriate region; 2) economic data that corroborate the need for resolution of the NIETB; 3) identification of proposed or potential resolution mechanisms; and 4) a projection of technical and economic benefits resulting from the resolution of the NIETB.

The Federal government's role, through DOE, would be one of validation and verification of stakeholder applications for NIETB designation. In this way, DOE would complement, but not supplant, the efforts of RTOs and other stakeholder groups to assess when a shortage of transmission capacity rises to the level of an NIETB.

Stakeholders, rather than DOE, are in the best position to identify constraints in the transmission system that threaten reliability and adequacy of electrical service, threaten the efficiency of markets, and/or impose higher costs or deny consumers the benefits of lower cost power. The nature of stakeholder groups likely will vary from region to region. For example, stakeholder groups within the Upper Great Plains region include the Midwest Independent System Operator (MISO), the Mid-Continent Area Power Pool (MAPP) and the UGPTC, which

includes many non-jurisdictional entities that are not members of MISO. These entities have utilized considerable stakeholder input, supplemented with analysis by leading independent consultants, to study regional transmission constrains and potential solutions.

> The NOI asks specifically whether DOE should be able to designate a NIETB even if no entity asks the Department for such a designation. UGPTC recommends a collaborative approach for the initiation of the bottleneck designation.

> As discussed more fully below, DOE can play a valuable role in calling attention to NIETB that are identified by regional stakeholder processes. DOE has already produced the National Transmission Grid Study, which gives a broad national overview of the state of the transmission grid and areas in which upgrades, expansions or other transmission solutions are needed. What is needed now is very specific concentration on resolving the highest priority regional constraints, which those in the field can readily identify.

The NOI asks further whether DOE should accept applications for NIETB designation only from entities from regions that have an existing regional transmission (or resource) plan. UGPTC does not favor such a limitation, which could delay needed NIETB designations if planning processes or institutions are not in place. Designation as an NIETB would provide independent corroboration of the need for relief of a transmission constraint, whether or not such a constraint has been included in a regional transmission plan. If existing transmission planning and approval processes are to be relied upon, they must adequately consider "economic" bottlenecks arising from a lack of transmission capacity that frustrates the addition of new resources. If they do not, then reliance on these processes to identify bottlenecks will have to be augmented.

(3) Availability of Data and Data Evaluation Tools:

Data and data evaluation tools to assess and document transmission constraints <u>are readily available</u> from a multitude of public and private sources, particularly the regional stakeholder groups, RTOs and independent industry consultants. The North American Electric Reliability Council (NERC) annually performs an assessment of the reliability of the transmission grid, and the ten NERC regional councils also provide self-assessments that provide significant insight into transmission limitations. These and other sources of data should be relied upon primarily, which would avoid the need for the expenditure of Federal resources in the creation of new models or data sets.

(4) The Federal Government's Role Post-NIETB Designation

DOE's charge from the Electricity Advisory Board and the Grid Study is to facilitate and monitor progress toward the mitigation of NIETB. The UGPTC recognizes that under DOE's

existing authority and funding, there are limits to what the Department may be able to do with respect to resolving NIETB.

Receipt of the NIETB designation should serve to focus attention on the specific transmission constraint. While stakeholders ultimately will have to resolve specific NIETB, DOE may provide critical public policy leadership in several key areas such as: financing mechanisms/incentives; appropriate participation of the Federal PMAs; and providing leadership to obtain any additional statutory authority found to be necessary to resolve NIETBs.

CONCLUSION

DOE can play a leading role in galvanizing national attention to the need for transmission system enhancements. DOE is uniquely qualified to bring together stakeholders, policymakers, regulators, the financial community and others to consider and respond to the specific challenges associated with NIETB. Efforts in this arena would complement other policies and programs of the Department intended to promote the development of new energy resources and the deployment of advanced technologies.

With regard to the Upper Great Plains region, the interests of both FERC-jurisdictional and non-jurisdictional entities, including WAPA, will have to be aligned to support the resolution of NIETB. The UGPTC believes that DOE may be able to play a significant role in this process.

The NIETB process must be designed to assure that decisions on designations are made in the most timely manner possible. To do so, DOE should adopt a process that also allows for stakeholder interests to apply or nominate transmission constraints for consideration as NIETB. The Department then should rely on available data in analyzing the NIETB applications, and should approve NIETB designations based on criteria that consider the unique needs of the region in which the constraint is located. Finally, the Department should provide policy guidance and leadership to stakeholders, regulators, public power entities and all who will be involved in alleviating critical NIETB.

Respectfully submitted,

Robert W. Harms
Chairman
Upper Great Plains Transmission Coalition

13. Comments of the Organization of MISO States (OMS), 9/17/04, 6:38pm

UNITED STATES OF AMERICA
BEFORE THE

DEPARTMENT OF ENERGY

Office of Electric Transmission and Distribution

Designation of National Interest
Electric Transmission Bottlenecks

COMMENTS OF THE ORGANIZATION OF MISO STATES

I. SUMMARY

In response to the U.S. Department of Energy's (DOE) Notice of Inquiry (NOI) published in the Federal Register on July 22, 2004, 69 Fed. Reg. 43833, the Organization of MISO States (OMS) hereby submits the following comments. The NOI seeks comments on issues relating to the identification, designation and possible mitigation of National Interest Electric Transmission Bottlenecks (NIETBs). It states that by publicly identifying and designating NIETBs, DOE will help mitigate transmission bottlenecks that are a significant barrier to the efficient operation of regional electricity markets, threaten the safe and reliable operation of the electric system, and/or impair national security. OMS shares these goals, but it believes that DOE's approach may impede current mechanisms already in place to achieve these goals.[7] In any NIETB designation process, DOE must work closely and in conjunction with the applicable regional, state and local entities, and it must not hamper current mechanisms addressing bottlenecks.

The OMS is a regional state committee comprised of fourteen state regulatory commissions[8] and the regulatory authority of Manitoba encompassing the footprint of the Midwest Independent Transmission System Operator (MISO). The OMS appreciates the DOE's request for information regarding NIETBs and as such the OMS wishes to submit comments to the DOE as it initiates its inquiry concerning NIETBs. However, as an initial matter, the OMS has two concerns. First, what will be done with the information gathered in the inquiry?

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[7] The North Dakota Public Service Commission (NDPSC) believes DOE's designation of NIETBs can complement current mechanisms already in place to achieve these goals. NDPSC views NIETB designation as assisting to mitigate the most critical transmission constraints identified through state and regional transmission planning processes.
[8] Members of the OMS are listed in the conclusion of this comment.

Second, what action does the DOE intend to take in response to the information being gathered? Appropriate answers to these questions are crucial in order to understand how the DOE's proposed national designation process achieves its stated goals.

II. APPROPRIATENESS OF CRITERIA

In the NOI, DOE points to the DOE Secretary's Electricity Advisory Board (EAB) Transmission Grid Solutions Report issued in 2002 in which the Board recommends that to be designated a National Interest Electric Transmission Bottlenecks (NIETB), the bottleneck must meet one of three criteria:

> 1. The bottleneck jeopardizes national security; 2. The bottleneck creates a risk of widespread grid reliability problems or the likelihood that major customer load centers will be without adequate electricity supplies; or 3. The bottleneck creates the risk of significant consumer cost increases in electricity markets that could have serious consequences on the national or a broad regional economy or risks significant consumer cost increases over an area or region.[9]

The NOI requests comments on these criteria as well as on a number of related questions. Are the EAB's recommended criteria for designation of NIETBs appropriate and sufficient? If not, what should they be? For example, should DOE also consider disaster recovery, economic development, and the enhancement of the ability to deal with market and system contingencies in designating NIETBs?

The OMS believes that an independent effort by DOE to identify NIETBs that meet the three recommended criteria would be duplicative of the efforts of FERC, the Regional Transmission Organizations (RTOs) and Regional State Committees (RSCs). In particular, the Midwest ISO either has in place, or is in the process of developing, policies that will identify bottlenecks that exhibit the reliability or economic concerns outlined in criteria two and three. Furthermore, there are potential infrastructure security concerns associated with designating a bottleneck as a threat to national security, as suggested by criterion number one.[10]

The EAB's report also suggests "additional criteria" regarding congestion and the exercise of market power. Again, the Midwest ISO either already has, or will shortly have, policies or procedures in place to address these concerns. As explained in more detail below, there are RTO and ISO policies that are designed to both identify and resolve the problems associated with transmission system congestion. Furthermore, there are market monitors in place that have authority to address the potential exercise of market power that may result from transmission bottlenecks.

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[9] NOI at 43834.

[10] NDPSC believes that transmission bottlenecks restricting the development of significant and economic domestic energy resources should be considered under criterion number one because these bottlenecks cause increased dependence on foreign energy.

If the DOE chooses to move forward to implement NIETB procedures, one criterion that may warrant consideration for designation is bottlenecks that are the result of seams between RTOs and other transmission operators. Bottlenecks at seams are potentially critical, as they occur where two or more different entities are involved and where transmission connections bridge systems, states and even countries. Accordingly, it is vital that such bottlenecks not be allowed to either persist or develop. While FERC has made some progress on this issue in the Midwest, it has been slow. Should progress falter, the OMS believes that it would be helpful for the DOE to address these particular types of bottlenecks.

Economic development may also serve as a useful criterion for designation of a NIETB in order to alleviate such transmission bottlenecks. Supporting load growth, new resources, and business and market structures should be considered in the identification of NIETB. Significant economic development opportunities may only be captured if sufficient transmission is available in certain areas. For example, low cost resources may be available in remote areas that can only be utilized if transmission limitations are relieved. In addition to the lower cost of these resources, there could also be benefits from encouraging a more diverse portfolio of resources. Economic development also can be served by developing processes to alleviate bottlenecks that might interfere with the proper functioning of electricity markets.

III. ROLE OF REGIONAL ENTITIES

DOE also asks what should be the role of transmission grid operators, utilities, other market participants, regional entities, states, federal agencies, Native American tribes and others in the process of identifying, designating, and addressing NIETBs?

OMS recognizes that transmission constraints are becoming more prevalent nationwide, and regional entities such as RTOs are working to identify regional needs and bottlenecks. In the Midwest, MISO and Mid-Continent Area Power Pool (MAPP) are developing regional transmission plans to identify and mitigate the negative impacts transmission constraints have on both reliability and the cost of electricity in the Midwest. These plans also incorporate elements intended to resolve local and regional needs. However, it is unlikely that the resolution of local and regional transmission issues will resolve the needs of other regions.

Nevertheless, the OMS believes that the identification and mitigation of bottlenecks is best performed at the state and regional level, using those practices that are currently in place. The OMS also supports a stakeholder process that recognizes differences in regional transmission constraints and provides regional solutions for the alleviation of these constraints. The OMS believes flexibility is needed to accommodate regional differences. The DOE should not independently designate NIETBs since it does not have institutional, detailed knowledge of local transmission issues and other system intricacies. In contrast, regional transmission plans from an RTO should be the primary source for identifying bottlenecks. RTOs have the requisite knowledge and operational understanding of the transmission system and would be best able to identify transmission constraints that endanger reliability and adequacy of the electric system and reduce the efficiency of electricity markets.

The DOE designation of NIETBs needs to serve a useful purpose. Criteria numbers (2) and (3) are set up to identify problem areas that FERC's Order 2000 already addresses. Specifically, Order 2000 requires RTOs, such as MISO and PJM to:

1. Independently calculate Total Transmission Capability and Available Transmission Capability (confirmed in the FERC's April 28, 2003 White Paper on Wholesale Power Market Platform)[11]
2. Be responsible for planning and for directing or arranging necessary transmission expansions, additions, and upgrades that will enable it to provide efficient, reliable, and non-discriminatory transmission service and coordinate such efforts with appropriate state authorities.[12]; and
3. Ensure the integration of reliability practices within an interconnection and market interface practices among regions and RTOs ... within an electrical interconnection (are required to) coordinate to resolve seams issues.[13]

FERC has also issued orders to MISO, PJM, and SPP that have consistently pushed those regional organizations toward a coordinated fulfillment of these required functions.[14] MISO also

[11] RTO function 5, in Appendix A to FERC White Paper on Wholesale Market Platform, April 28, 2003. The White Paper was issued to clarify the requirements of Order No. 2000, Regional Transmission Organizations, 65 Fed. Reg. 809 (January 6, 2000), FERC Stats. & Regs., Regulations Preambles July 1996-December 2000 ¶ 31,089 at 31,226-27 (1999), order on reh'g, Order No. 2000-A, 65 Fed. Reg. 12,088 (March 8, 2000), FERC Stats. & Regs., Regulations Preambles July 1996- December 2000 & 31,092 (2000), affirmed sub nom. Public Utility District No. 1 of Snohomish County, Washington, et al. v. FERC, 272 F.3d 607 (D.C. Cir. 2001).

[12] RTO function 7, ibid.

[13] RTO function 8, ibid.

[14] See, e.g., Midwest Independent Transmission System Operator, Inc. and PJM Interconnection, L.L.C., 106 FERC ¶ 61,251 (2004) and Southwest Power Pool, Inc., 106 FERC ¶ 61,110 (2004).

has regional seams negotiations and joint-operating agreements already completed, or well underway, with PJM, MAPP, and SPP. The OMS states are working with all these entities to assist in that process. Up to now, the state-federal cooperative relationship has enjoyed both: (1) A sharing of overall jurisdiction on transmission issues, with FERC having the lead on certain issues, states having the lead on others, and OMS helping to build consensus among its member states; and (2) DOE support of OMS through funding and information building activities. The relationship between FERC, MISO, and the OMS is starting to produce measurable success in resolving difficult issues. Furthermore, with other RTOs working to develop RSCs, the potential exists for similar success in other regions. Accordingly, the OMS appreciates DOE's recognition that it "must work with State, regional and local government officials to encourage proposals from industry participants and to monitor progress toward elimination of designated bottlenecks"[15] rather than take a unilateral approach.

In addition, if the DOE does move forward to implement NIETB procedures, it should do so only in consultation with affected states so that state regulatory commission findings are an integral part of any declaration of bottlenecks. If need be, most state regulatory commissions have the ability to order utilities to build transmission infrastructure to alleviate a specific bottleneck. Further, state commissions have a keen participatory interest in both the MISO expansion planning and approval processes, based partly on the fact that transmission projects will be subject to individual state permit processes.

[15] NOI at 43833.

The OMS believes that DOE should work toward coordinating federal agency facilitation of state siting efforts. In the past, federal land and waterway agencies have significantly delayed transmission expansion proposals, both during and after state permitting reviews.[16] As the OMS continues to work on effective regional strategies that address the challenges of coordinating the state siting of interstate projects, DOE could make a critical contribution by leading a similarly tasked initiative among federal agencies.

IV. IDENTIFYING BOTTLENECKS

The NOI also seeks comment on how might DOE identify bottlenecks in regions where much pertinent data are not available, in contrast to regions where transmission expansion plans have been developed and made public?

The OMS finds that this question does not apply to areas with operational RTOs or independent system operators or to areas such as the western interconnection states that have a

[16] AEP's Wyoming-Jacksons Ferry project in Virginia and West Virginia is often cited as an example where federal agencies have had a major timing impact on transmission development. Details on that project's permitting history (spanning the years 1990 to 2001), and a discussion of Western states' problems with federal permits for transmission projects can be reviewed at http://www.westgov.org/wga/initiatives/energy/preemptfacts.pdf. DOE may also have a lead role of coordinating federal agency permit review when a Presidential Permit is required for international border crossings (four OMS states have land boundaries with Canada). A recent example, including a discussion of the complex timing and coordination required, is described in detail for an Arizona-Mexico project at http://www.ttclients.com/tep/eis.htm. The Minnesota Department of Commerce cites a series of state siting procedures for interstate transmission projects that were complicated by federal agency jurisdiction, and where there was significant uncertainty whether federal agency permits could be obtained after the state issued permits. All of the projects (Chisago-Apple River 230kV, Prairie Island-Eau Claire 345kV, Arrowhead-Weston 345kV) were proposed to cross the Minnesota-Wisconsin boundary, which is in large part coincident with the St. Croix River (National Scenic Riverway) and the Mississippi River (National Scenic Byway, National Wildlife Refuge). The Department also cites difficulties in how federal land crossings and/or right-of-way sharing are addressed during or following state siting procedures when national forests (DOA-FS), tribal reservations (DOI-BIA), airports (FAA), navigable rivers (Corps of Engineers-Civil), military installations (DOD), and interstate highways (DOT) are involved.

long history of joint transmission planning. For areas such as the Southeast or those where electric transmission is provided by federal power administrations or authorities, OMS believes that the DOE should work closely with FERC and its jurisdictional transmission providers and owners in the area to obtain the necessary information.

DOE ACTIONS TO MONITOR PROGRESS

The NOI requests comments on what actions should DOE undertake to facilitate and monitor progress towards mitigation of designated NIETBs?

As explained above, FERC, RSCs and the RTOs have implemented numerous policies and programs intended to facilitate and monitor progress towards mitigation of transmission bottlenecks. These policies are in effect for a large portion of the United States. In these regions, the DOE's efforts to mitigate transmission bottlenecks would be most effective through close coordination with FERC, RTOs, RSCs and other stakeholders.

For about 40 years, various administrations have touted the compelling economic and reliability advantages of consolidating the existing three grids in the continental United States into a single national grid. However, there are too few interconnections between the three grids for unrestricted flow of power. The previous system designs result in limits on transfer capacity that do not automatically permit a single non-constrained market for economic purposes. Accordingly, within the three interconnections, the DOE might play a useful role in resolving differences among regions that have RTOs and those that do not. The OMS supports the DOE's

continued commitment to the integration, participation, and coordination of the Tennessee Valley Authority and other federal power marketing agencies with RTOs.

DOE could also facilitate and monitor progress towards mitigation of designated NIETBs and stand ready to provide funding mechanisms for transmission expansion projects intended to alleviate NIETBs.[17]

VI. CONCLUSION

The Organization of MISO States submits these comments because a majority of the members have agreed to support them. The following members generally support these comments. Individual OMS members reserve the right to file clarifying comments or minority reports on their own regarding the issues discussed in these comments.

Montana Public Service Commission
North Dakota Public Service Commission
Minnesota Public Utilities Commission
Nebraska Power Review Board
Missouri Public Service Commission
Iowa Utilities Board
Wisconsin Public Service Commission
Illinois Commerce Commission
Indiana Utility Regulatory Commission
Kentucky Public Service Commission
Pennsylvania Public Utility Commission
Michigan Public Service Commission

The Public Utilities Commission of Ohio will submit its views in a separate statement.

Members not participating in these comments are:

Manitoba Public Utilities Board

[17] Montana believes that any public funding mechanisms should not distort private investment decisions related to transmission projects.

South Dakota Public Service Commission

The Minnesota Department of Commerce and the Iowa Consumer Advocate, as associate members of the OMS, participated in the preparation of these comments and support these comments.

Respectfully Submitted,

William H. Smith, Jr.
William H. Smith, Jr., Executive Director
Organization of MISO States
100 Court Avenue, Suite 218
Des Moines, Iowa 50309
Tel: 515-243-0742

Dated: September 17, 2004

14. Comments of the Power Engineers Supporting Truth, 9/18/04, 6:42pm

From: Ameredinst@aol.com [mailto:Ameredinst@aol.com]
Sent: Saturday, September 18, 2004 6:42 PM
To: Bottleneck Comments
Cc: FDELEA@aol.com; gloehr@elucem.com
Subject: Designation of National Interest Electric transmission Bottlenecks

Office of Electric Transmission and Distribution Sept. 18, 2004
Department of Energy

Re: *Designation of National Interest Electric Transmission Bottlenecks (NIETB)*

As requested in the Federal Register, Volume 69, Number 140 of July 22, 2004, we are hereby submitting our comments on the Notice of Inquiry and Opportunity to Comment.

- The Notice of Inquiry contains a number of incorrect statements, particularly:

1. The electric system was not built over a number of years primarily to serve local customers, as incorrectly stated in the Inquiry. It was built from the 1960s on to integrate the regions of the country and make possible significant power exchanges between them. There is a large amount of technical literature available which has indicated these interregional purposes. They are described and additional references given in "The Development of Electric Power Transmission", one of the IEEE Case Histories of Achievement in Science and Technology[18][1]. This can be obtained electronically from http://www.lulu.com.
2. The statement that, until recent years, trade among electric utilities was modest is not true. The trade was quite extensive in a great many areas: e.g., Southern-TVA, Niagara/St. Lawrence to NY City, PJM minemouth to East Coast, Pacific Northwest to California, Four

[18][1] Authored by J.A. Casazza.

Corners, the Intermountain project, Quebec to New York, Quebec to New England, etc. Nor were these done without extensive planning and ongoing coordination: witness the intra- and interregional efforts of the "tight" power pools (PJM, NYPP, and NEPOOL), the Regional Reliability Councils, interregional groups such as MEN, VEM, and VAST, and project-oriented efforts like the Hydro Quebec-New England Phase 2 studies. All of these were the product of a culture of cooperation and coordination – a culture now replaced by competition and confrontation.

3. The statement that the increase in regional electricity trade saves consumers billions of dollars is not correct. The studies to determine these savings have been based on zero interregional trade as the alternate, not on the actual interregional trade as it existed before restructuring.

4. The statement that over the past 25 years, investment into new transmission facilities has significantly declined is misleading. Major transmission investments were made in the 1960s, 1970s, and 1980s to provide for the long-range needs of our power systems and nation. This included the addition of 345 kV, 500 kV, and 765 kV systems. These systems provided far more capacity than needed at the time of their installation, but were selected in order to minimize total long-range costs. Customers and Market Participants have to a large extent been reaping the benefits of these wise, long-term investments, eliminating the need for additional transmission right up to the present.

• There are two kinds of transmission problems in our power systems. One is economic, whereby energy transfers that would produce savings cannot be made. The other is reliability, where risks are taken such that normal contingencies would have severe adverse consequences. The risks identified in your proposed procedure are predominantly economic. Those with profits at stake will most certainly stress the need to eliminate such "bottlenecks." However, the most important risks are those which threaten reliability of service. Particularly important at this time is the new requirement to consider national security as a dominant factor in analyzing reliability risks.

• Any analysis of "bottlenecks" must be done against a backdrop defining our national objectives with regard to development of the electric power grid. These objectives must consider both economic and reliability goals as well as national security. Fixing a specific transmission bottleneck with a "local fix" could prove to be extremely short sighted without a standard to measure success. To define these objectives, to review and reduce these risks and to minimize the probability, extent and duration of major power outages we propose that a National Power Survey be made. It should be modeled after the National Power Survey of 1964 which, by the late 1980s, resulted in annual economic benefits of $28 billion from interregional power exchanges and coordination. This survey should address tradeoffs between an increasing scale of interregional transfers of electricity, the transmission costs involved, and the resulting increased exposure to widespread blackouts caused by acts of sabotage. The DOE has purported to have made studies to achieve some of the objectives of such a national power survey, particularly its

work on the National Energy Policy (May 2001), the Department's National Transmission Grid Study (May 2002), and the Transmission Grid Solutions Report (September 2002) issued by the Electricity Advisory Board. However, these studies do not address many of the key questions that need to be resolved concerning the future of our transmission systems:

1. What possible changes in grid design would reduce the probability, extent, and duration of major power interruptions such as blackouts?
2. What are the potential effects of dividing our three existing large synchronous networks into eight or ten smaller networks, interconnected by DC?
3. What are the potential effects of new generation developments, such as major additions to nuclear and coal-fired units, or major additions to distributed generation?
4. New technologies have been proposed for measuring and analyzing system security. What are their costs, and how would they affect the design and operation of the power system?
5. Wide area measurement procedures to facilitate better control of the grid are being pursued, and claims are being made for such developments as a "self-healing grid." What are the possibilities, risks and costs of these procedures?
6. What changes in our national electric market policy are feasible to achieve low cost and reliable service for the American consumer, considering the importance of national security?
7. Should design and operating standards, or criteria, for the transmission system be strengthened; i.e. to consider conditions beyond the present "n-1" criteria?

• All of these questions could be investigated in a National Power Survey. The survey should not be conducted by the Government, but by experienced engineers from industry – preferably those currently involved in regional planning for the various existing organizations such as ISOs, RTOs, power pools and industry coordination groups. The study should be under the direction of an outside independent board of industry experts. It should not be organized based on stakeholder interests, for unfortunately stakeholder interests are predominantly commercial. The objective of the study should be to develop a sound long-term basis for future expansion of our transmission systems – recognizing reliability, economics, new technology, revised commercial policies and national security.

The Notice of Inquiry also solicits answers to three important questions, which we would like to provide:

1. **Question**: Are the Electricity Advisory Board's recommended criteria for designation of NIETBs sufficient? **Answer**: No. They do not address the key issues discussed above.
2. **Question:** What should be the role of transmission grid operators, utilities, and other market participants in addressing NIETBs? **Answer**: The basic alternatives for developing our future transmission systems should be determined in the National Power Survey discussed above. The role of the various participants in the regions should be to provide engineering support for the Survey and then to develop the solutions under the guidelines that have been developed in the National Power Survey.

3. **Question:** How might DOE identify bottlenecks in regions where pertinent data are not available? **Answer:** This should be done in the National Power Survey and by the existing regional organizations. The DOE's role should be solely to keep abreast of the information developed in these other studies.
4. **Questions:** What actions should DOE undertake to monitor progress towards mitigation of designated NIETBs? **Answer:** The DOE should have an observer at the steering group level of the National Power Survey. Upon completion of the study, each RTO/ISO should be required to report to DOE/FERC by date certain on how it will address the findings of the National Power Survey. DOE/FERC should then monitor progress on the RTO/ISO follow up activities.

We appreciate the opportunity to comment on the issues that have been raised. Our concerns are:

1) that the role of government not be extended into areas for which the government lacks the necessary competence;

2) that commercial and profit interests not dominate decisions which will affect the welfare of all the American public; and

3) that a mechanism be established allowing true experts with extensive experience in the electric power industry to develop a basic scenario for future transmission development in the United States.

Sincerely,

Power Engineers Supporting Truth

Comments to the Designation of National Interest Transmission Bottlenecks (NIETB) Notice of Inquiry

J.A. Casazza
G.C. Loehr
Frank Delea

15. Comments of Citizen Advocates for Landowner Rights in Transmission Proceedings, 9/19/04, 5:07pm

Citizen Comment

TO: United States Department of Energy
Office of Electric Transmission and Distribution
Attention: Transmission Bottleneck Comments

FROM: Laura & John Reinhardt
Citizen Advocates for Landowner Rights in Transmission Proceedings

DATE: September 19, 2004

RE: Issues Relating to National Interest Electric Transmission Bottlenecks

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It is not possible to identify or designate "National Interest" Electric Transmission Bottlenecks (NIETBs) or infrastructure, because any effort to serve one state or region by expanding transmission service would only harm another state or region. The DOE is already well versed in the arguments set forth in this Comment through its own National Transmission Grid Study (May 2002) and its knowledge of the Federal Energy Regulatory Commission's Standard Market Design rulemaking.

I. LARGE REGIONAL TRANSMISSION INTERCONNECTIONS THREATEN THE SAFETY, SECURITY AND RELIABILITY OF OUR NATION'S TRANSMISSION SYSTEM

The DOE issued its National Transmission Grid Study more than a year before the August 14, 2003 Blackout—the largest blackout in American history—which shut down electric service in 8 U.S. States and 2 Canadian Provinces. The DOE reports that this Blackout affected 9,266 square miles and 50 million people, resulting in over $6 billion of lost economic activity.[19] The Blackout unmistakably exposed the dangers created by large regional transmission interconnections that tie large energy systems together, whereby interruptions in one area can quickly collapse the entire grid. Since the Blackout, many observers have acknowledged that large transmission system interconnections do, in fact, seriously threaten the reliability of our electric delivery

[19] Presentation by Jimmy Glotfelty, Office of Electric Transmission & Distribution, U.S. Department of Energy, 1.27.04.

system, and expose our nation's grid to potentially devastating terrorist attacks or system meltdowns.

> But what last summer's blackout illustrates is that until changes are made, an error at one point in the grid will still have the potential to bring it all down.

"Blackouts: The Power Grid Is Too Sensitive For Its Own Good," The New York Times, 8.10.04.

In fact, the written materials from DOE's 7.14.04 Workshop on Designation of National Interest Electric Transmission Bottlenecks recognize that electric facilities are "used for national security, and public health and safety" and further that the "geographic extent and economic impacts of potential outages, and whether multi-state regions could be affected" are important criteria in this discussion. This issue is of utmost importance. Our nation's water supplies, medical services, financial services, security and defense systems, transportation systems, climate control systems, and communication systems are helplessly tied to the electric delivery system and must be carefully protected from disruption.

> The energy infrastructure is vulnerable to physical and cyber disruption that could threaten its integrity and safety. Disruptions could come from natural events, like geo-magnetic storms and earthquakes, or could come from accidents, equipment failures, or deliberate sabotage. In addition, the nation's power infrastructures have grown increasingly complex and inter-dependent. Consequently, any disruption can have extensive consequences.

National Energy Policy, United States Department of Energy, May 2001, Ch. 7. p. 16.

The simple fact is that there are no transmission bottlenecks that rise to the significance of "**national interest**." Transmission bottlenecks merely impact *economic and competitive wholesale power marketing* interests, which must always take a back seat to national security.

It is offensive that the United States Department of Energy is working to resolve regional transmission bottlenecks to serve economic players rather than focusing all of its resources on securing our nation's electricity delivery system from the potential for collapse. The DOE's top priority **must** be the security of our country's electric distribution system, which will not be served by further expanding and interconnecting the grid merely for economic bulk power transfers between regions of the country. The DOE's failure to address this critical issue unreasonably jeopardizes our nation's energy security.

II. RELIABILITY

The DOE's request for comment states that transmission bottlenecks "are a significant barrier to the efficient operation of regional electricity markets," which it claims "threatens the safe and reliable operation of the electric system." This statement is untrue. It is not the transmission bottlenecks themselves that threaten the safety and reliability of our nation's electric system, but energy producers' utter disregard for safe and reliable operating protocols. In their limitless quest to sell excess generation into lucrative wholesale power markets, power producers routinely force unsafe amounts of electricity through the grid.

That is why the number one recommendation in the U.S.-Canada Power System Outage Task Force Final Report on the August 14, 2003 Blackout (April 2004, p. 139) is this: **"1. Make reliability standards mandatory and enforceable, with penalties for noncompliance."** This problem has been articulated previously by the DOE in numerous reports.

> One factor limiting reliability is the lack of enforceable reliability standards. Since 1968, the reliability of the U.S. transmission grid has depended entirely on voluntary compliance with reliability standards. There is a broad recognition that voluntary adherence with reliability standards is no longer a viable approach in an increasingly competitive electricity market. There is a need to provide for enforcement of mandatory reliability standards.

National Energy Policy, U.S. Department of Energy, May 2001, Ch. 7, p. 6.

> Fifth, ensuring mandatory compliance with reliability rules must include enforceable penalties for non-compliance that are commensurate with the risks that the violations create.

National Transmission Grid Study, U.S. Department of Energy, May 2002, p. xiii.

Clearly, the DOE wishes to wed the need for a reliable grid to transmission expansion for economic transfers ("In addition, as the aggregate economic value of the trade enabled by the grids increases, the trade function becomes increasingly important, and the two functions of maintaining reliability and enabling trade tend to converge."[20]), but, again, the DOE's rationale is flawed.

> 1.1 System Bottlenecks. Transmission system constraints to the flow of scheduled transmission service reservations, or that limit the availability of such service reservations generally represent limitations to the

[20] National Transmission Grid Study, U.S. Department of Energy, May 2002, p. E-13.

> commercial use of the system, rather than limitations to the reliability of the system.

Midwest Independent System Operator 2003 Transmission Expansion Plan, page 45 of 338.

Transmission expansion to serve competitive wholesale power transactions is far less important than ensuring the safety and reliability of our nation's power delivery system, and the DOE's focus on the former is misplaced. All of the DOE's efforts must be applied toward the latter goal, and its failure to do so continues to jeopardize our nation's security.

III. THE DOE'S FOCUS ON MITIGATING TRANSMISSION BOTTLENECKS SERVES NARROW INTERESTS—NOT NATIONAL INTERESTS.

The DOE's request for comments states that "With the advent of wholesale electricity markets, trade has increased exponentially, and utilities now shop for the lowest cost power from suppliers reachable through the transmission network." It claims that transmission bottlenecks "impede economically efficient electricity transactions." The DOE states that transmission bottlenecks "hold up economic flow of electricity" and that it seeks to "help mitigate transmission bottlenecks that are a significant barrier to the efficient operation of regional electricity markets." The DOE provides access to voluminous workshop presentations and information regarding NIETBs, all of which address the need to expand the transmission system to serve energy producers, but none of which address who would enjoy the benefits and who would suffer the burdens associated with increased regional power marketing activity.

A prime example of the DOE's narrow view is found in its "Panel Topic #3: Adapting the NIETB Process to Serve Regional Needs," which includes presentations from North Dakota PSC and Peabody Coal Company, who both covet new transmission infrastructure to "Deliver Coal-Fired Generation from the Midwest to Eastern Markets." Peabody Coal admits that eliminating transmission bottlenecks "will create greater incentives to build new coal plants in Middle US where lower mining cost areas are (or mine mouth) and ship coal by wire to the South and East." North Dakota's "Lignite Vision 21" was formed to find ways to build new mine mouth coal plants and export low-class (highly polluting) lignite coal to Eastern markets. In addition, North Dakota, South Dakota, Iowa and Minnesota want gigantic new transmission infrastructure to export large quantities of highly subsidized wind-generated electricity to Eastern and Southern markets.

Peabody Coal Company's presentation vividly illustrates why Eastern power markets are eager to open up new transmission corridors:

Average price per kilowatt hour, 2003:

NY	11.7¢
NH	10.8¢
VT	11.0¢
MA	10.6¢
RI	10.5¢

Eastern market electricity prices are more than double North Dakota's 5.5¢ and Wyoming's 4.7¢, so it is not surprising that Midwestern producers want new pathways into lucrative Eastern markets.

> Transmission constraints limit the amount of the relatively low-marginal-cost coal-fired generation in the Midwest from reaching load centers in the East, South and Southeast, where more expensive oil- and gas-fired generation sets the price for power.

"Delivering Coal-Fired Generation from Midwest to Eastern Markets," Peabody Coal Co. presentation to DOE Workshop on Designation of NIETBs, 7.14.04.

In fact, **none** of the information provided by the DOE in its NIETB materials illustrates any type of "national interest" transmission improvements, but merely the parochial interests of high-cost energy markets and industrial energy producers. Similarly, the DOE's NIETB materials fail to provide any information concerning the negative impacts and burdens associated with mitigating transmission constraints that would be borne in states like Minnesota. However, these issues cannot be ignored.

> Building and operating a transmission line can have economic and reliability consequences that go beyond any single State. Therefore, questions about who should pay for those consequences must, of necessity, be considered in ways that fully protect customers and citizens of the affected States.

Testimony of Pat Wood, III, Chairman, Federal Energy Regulatory Commission, Before the Subcommittee on Energy and Air Quality of the Committee on Energy and Commerce, United States House of Representatives, May 19, 2004.

The DOE must broaden its view in this inquiry to encompass the *burdens* as well as the *benefits* that would be associated with mitigating regional transmission bottlenecks.

IV. STATES' RIGHTS

It is no secret that Eastern States are choking on the pollution created by their own electricity consumption, and are searching for alternatives that will reduce their pollution levels without commensurate reductions in energy consumption. What could be better

for the Eastern Region than tapping into low-cost coal burned far to the west in states like North Dakota and Wyoming? The East would enjoy lower costs and reduced pollution! All that's needed are some big new wires strung over thousands of miles of private and public lands! The East would enjoy huge benefits—and so would coal-based power producers.

But what about pass-through states like Minnesota? We'd be stuck with much higher pollution levels and gigantic transmission facilities imposed on our citizens' private and public lands, with no benefit whatsoever! Such a scenario could never qualify as a "national interest," and the DOE cannot designate it as such. Minnesota cannot be forced to serve the interests of energy producers and high-cost electricity markets to its own detriment, and, besides, Minnesota citizens will not allow it.

> Minnesota Pollution Control Agency Commissioner Sheryl Corrigan in early June asked the EPA to require larger cutbacks [in mercury emissions] because 90 percent of mercury entering Minnesota comes from power plants outside of the state. Without a national solution, she said, Minnesota will continue to find mercury almost wherever it tests fish, as it has for more than 20 years.

"Advisories on Contaminated Fish Increasing," Minneapolis (Minnesota) Star Tribune, 8.25.04.

> That's what the Izaak Walton League of America and other Midwest conservation groups said Tuesday in releasing a report that shows mercury contamination in fish could cost the Northland's tourism industry millions of dollars in lost revenue. * * * The groups called on the federal government to enact swift and comprehensive regulations on major sources of mercury pollution, especially coal-burning power plants.

"Mercury In Fish May Hurt Tourism Industry," Duluth (Minnesota) News Tribune, 8.17.04.

The Environmental Protection Agency reports that "tons of mercury spewing from electric power plants pose **significant hazards to public health** and that the pollution must be reduced."[21] The EPA has focused on mercury "because mercury has been identified as the toxic of greatest concern among all the air toxics emitted from power plants," and it confirms that "coal-fired power plants are the nation's largest source of mercury air emissions."[22]

[21] "EPA Acts to Cut Power Plants' Mercury Emissions," Minneapolis (Minnesota) Star Tribune, 12.15.00.
[22] EPA Fact Sheet 12.14.00.

Minnesota has substantial tourism and sport-fishing industries—we're the "Land of 10,000 Lakes" after all—yet our Health Department must issue an annual fish consumption advisory warning anglers of the serious dangers posed by eating mercury-contaminated fish, and cautioning anglers to limit the number of fish they eat. Clearly, increased coal production in the Upper Midwest as envisioned by Peabody Coal Company and North Dakota's Lignite Vision 21 initiative would create serious problems for our state's health and economy.

It's easy to see why heavily-populated energy markets to the east would want to import cheap power from remote and sparsely-populated North Dakota and Wyoming. However, the fact that these states' emissions would rain down on neighboring Minnesota presents an unimpeachable states'-rights argument against construction of a federally-imposed electric grid to facilitate pollution relocation. It is an inescapable fact that energy consumption results in serious pollution impacts. A "transmission solution" to the Eastern Region's own pollution problems would be a disincentive for Eastern residents to embrace conservation and clean energy technologies. A nationally-imposed electric grid would strip states of the absolute right to protect their own natural environments. This is unacceptable, of course, and will not be tolerated by states that would be forced to bear the negative burdens and impacts imposed by long-distance transmission lines strung out across the country.

The Federal Energy Information Administration has acknowledged this problem in a document entitled "The Electric Transmission Network: A Multi-Region Analysis":

> With increased electricity trade, emissions such as sulfur dioxide and nitrogen oxides could be affected both in the aggregate level released and in their spatial distribution. This possibility has raised concerns in states that could experience higher concentrations of pollutants as a result of power transfers across broad geographic areas.

It is obvious that the DOE cannot justify mitigating transmission bottlenecks that would allow certain regions of the country to escape the consequences of their own energy consumption by relocating pollution to other states and regions. Certainly, it is not in the "national interest" to destroy one area of the country to serve another, and the DOE must carefully consider allocation of the benefits *and burdens* in this discriminatory exercise.

V. OPEN ACCESS = REGULATORY UNCERTAINTY = LACK OF TRANSMISSION INVESTMENT

In March 2003, the Minnesota Public Utilities Commission authorized construction of four new high voltage transmission lines—including a 345 kV interstate line—to serve wind generators in Southwest Minnesota. However, the record of this regulatory

proceeding clearly demonstrates that under FERC's open-access transmission rules, our state cannot determine whether expensive new transmission infrastructure—to be constructed in **our state at our ratepayers' expense**—would even be available for the purpose intended!

> This application is also unique because it carries the risk that the proposed transmission lines will not be used for the purpose for which they are intended and for which any certificates of need would be granted. Transmission is an interstate activity regulated by the Federal Energy Regulatory Commission. Under federal law, Xcel cannot reserve the proposed lines for wind generation; in fact, it cannot even reserve them for its own use, except under carefully defined circumstances.

Minnesota Public Utilities Commission Order Granting Certificates of Need Subject to Conditions, MPUC Docket No. E002/CN-01-1958, 3.11.03, p. 3. The Commission included certain conditions in this Order that it hoped would "maximize the likelihood that transmission lines built under these certificates would be used for their stated purpose." **(!)**

Open access requirements have created an absurd *regulatory* bottleneck. Without assurance that particular transmission facility investments can and will be used to serve the identified need for which they are built has and will continue to impede investment in new transmission infrastructure. Why would anybody invest in energy facilities that they might not even be able to use?

Federal open access requirements trample an individual state's ability to plan for its own energy needs. State regulators cannot and will not allow federal regulators to confiscate ratepayer-funded transmission infrastructure to serve other states or regions. Ultimately, open access amounts to uncompensated takings of State energy assets, which clearly will not survive inevitable legal challenges.

The DOE's request for comments observes that "investment in new transmission facilities has not kept pace" with wholesale power transactions. This is an obvious result of the severe regulatory uncertainty that open access (mandatory deregulation) has foisted on state regulators and regulated utilities. Nobody will build expensive new transmission infrastructure if they have no idea whether they can use it.

David Rusley, P.E., of Cedar Falls (Iowa) Utilities, is Chair of the Midwest Municipal Transmission Group. Mr. Rusley underscored the problems associated with open access requirements in his presentation to the 11.17.03 Iowa Renewable Energy Conference, where he pointed out that CFU had adequately managed its transmission needs—

- Until 2002, with new FERC directives coming online and the resulting development of MISO.
- Transmission reservations are now a nightmare and many transactions are virtually IMPOSSIBLE!
- Human contact is virtually forbidden.
- "REFUSED" reservations are a common result.

Even the Mid-Continent Area Power Pool (MAPP), the Upper Midwest reliability organization, which initially embraced the RTO model, is now complaining to FERC about resulting problems. On January 7, 2004 MAPP made a presentation to FERC Commissioner Nora Brownell and her staff in which MAPP expressed grave concerns about participation in MISO:

- Concerns with MISO oversight of grid reliability[23]
- MISO not properly focused
- Costs outweigh benefits
- MISO footprint is too large and too dispersed
- MISO performance on contracted services to MAPP has raised concerns
- MISO is abrogating grandfathered contracts
- Inequities in firm transmission allocation process
- Standardized Market Design perhaps not applicable for large regions of USA
- After two years, only 35% of MAPP's total load (in MW) has direct membership in MISO; the assumption had been for high MISO participation from MAPP members
- Since 2001, no new members have joined MISO
- For some non-MISO members, formally joining MISO is unacceptable
- Cost/benefit ratio of RTO membership is unknown; benefits unrealized; costs escalating significantly and higher than expected
- Originals assumptions and realities about RTOs do not coincide

"Regional Transmission Alternatives in the Upper Midwest: Presentation to Commissioner Nora Brownell and Staff, January 7, 2004." MAPP has leveled significant reliability, economic and equity concerns related to MISO control in our North Central Region. MAPP now insists that this region "must control crucial functions within

[23] When the August 2003 Blackout spread across the northeastern United States, MISO merely watched it happen and took no remedial action, despite the fact that the blackout originated in its own service territory.

its footprint" and is calling for "bottoms-up" planning for the North Central Region. These recommendations (MAPP calls them "must-haves") are instructive for the DOE's consideration in this inquiry, as the wholesale power market/RTO dream inevitably falls apart.

The DOE's request for comments states that "The electric system has been built by electric utilities over a period of 100 years, primarily to serve local customers." This is still the regulatory model in states such as Minnesota, and there is no justifiable "national interest" that can trump our state's right to plan for, and build facilities for, our own citizens' electricity needs.

> There is also uncertainty about how market participants will gain access to transmission facilities, and receive allocations of scarce transmission capacity. The outcomes of these federal legislative and regulatory debates will create winners and losers, and the debates are a consuming preoccupation for participants at all levels of the electric industry.

National Transmission Grid Study, U.S. Department of Energy, May 2002, p. E-12. The DOE is well versed in the negative issues associated with open access (and SMD). This debate will not go away, and regional hijacking of any state's transmission infrastructure and capacity—which Minnesota was forced to recognize in its Southwest Wind Transmission docket—will only heighten the tension.

VI. THE DOE SHOULD STOP TALKING IN CODE

The DOE's materials relating to this notice of inquiry and request for comments on NIETBs are couched in coded language and jargon that is incomprehensible to average citizens. The DOE euphemistically states that it wants to identify, designate and mitigate National Interest Electric Transmission Bottlenecks to enhance the "efficient operation of regional electricity markets." Why not come right out and admit that "mitigating transmission bottlenecks" *really* means **seizing thousands of miles of citizens' private lands by eminent domain** to build massive power line corridors?!

The DOE is well aware that NOBODY wants huge power lines in their communities (and, literally, their back yards) to serve the power corporations' fervent desire to sell electricity into profitable markets along new transmission rights-of-way. The DOE's Transmission Grid Study euphemistically calls this "larger sales volumes for lower-cost electricity producers" (p. E-14), but this corporate goal certainly does not constitute a "national interest."

> The difficulty is hardly surprising given that transmission facilities are highly visible structures that may span long distances and must somehow fit into physical surroundings that are already in use for other purposes.

> Incorporating these facilities into the landscape and taking fair account of the wide range of legitimate interests affected by them is challenging.

National Transmission Grid Study, U.S. Department of Energy, May 2002, p. E-1.

VII. ALTERNATIVES TO GRID EXPANSION

The DOE concedes that "major new transmission projects usually have significant impacts" and that "if federal decisions are required, full environmental impact statements must be prepared." (DOE Grid Study, E-22.) An EIS must examine not only environmental impacts, but also feasible alternatives to a proposed facility. "Presenting a broad range of relevant alternatives is important." (DOE Grid Study, E-11.) This is another area where so-called "national interest" transmission infrastructure will fail, because the monetary and environmental costs associated with building a generating facility far from load—as well as the long-distance transmission infrastructure needed to support it—will always be greater than siting new generation close to load.

> Generation and transmission siting are inextricably related. The placement of new generation in relation to load centers and transmission bottlenecks can increase or decrease the need for new transmission facilities. ...most analysts agree that new generation capacity should be built as close as practicable to the load centers it serves.

National Transmission Grid Study, U.S. Department of Energy, May 2002, p. E-17.

Further, if a competing energy producer were to site new generation downstream from a transmission constraint (or bottleneck), it could render the considerable investment in constraint-reducing transmission facilities moot: more uncertainty! That's why "merchant" transmission has not stepped in to address transmission constraints in the new, freewheeling wholesale power market.

> Further, if insufficient attention is given to adverse side effects of increased trade, the probability of misallocated or excessive investment goes up markedly.

National Transmission Grid Study, U.S. Department of Energy, May 2002, p. E-13.

CONCLUSION

There is no such thing as a "national interest" transmission bottleneck. Some states and regions (like the East) would benefit handsomely from new interstate bulk power corridors that would reduce the costs and pollution associated with their own electric consumption by moving these burdens onto other states and regions (like the Midwest). Such an uneven distribution of benefits and burdens cannot be designated a "national

interest," and pass-through states like Minnesota will never allow construction of gigantic new transmission lines across our private and public lands just to serve distant power markets—and power marketers!

Sincerely,

s/
Laura A. Reinhardt

s/
John C. Reinhardt

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612.724.0740
johnandlaurar@yahoo.com

cc: U.S. Senator Mark Dayton
U.S. Senator Norm Coleman
U.S. Representative Martin Sabo
John Fuller, Esq., Minnesota Legislative Electric Energy Task Force

Per DOE's instructions, we are submitting our comment electronically. Signed copy to follow by U.S. Mail.

16. Comments of the Public Service Commission of South Carolina, 9/20/04, 7:35am

September 20, 2004

Office of Electric Transmission and Distribution, TD-1
Attention: Transmission Bottleneck Comments
U.S. Department of Energy
Forrestal Building, Room 6H-050
1000 Independence Avenue, S.W.
Washington, D.C. 20585

Public Service Commission of South Carolina Comments re:
Designation of National Interest Electric Transmission Bottlenecks

Thank you for the opportunity to provide comments on the identification, designation and possible mitigation of National Interest Electric Transmission Bottlenecks (NIETB). The Public Service Commission of South Carolina (PSCSC) applauds the Department of Energy on its initiative to ensure the safe, reliable operation of the US electric grid.

The PSCSC places a high value on providing the state's native load customers with safe, reliable, economical electricity. Our track record is strong in those areas. The PSCSC does not believe that ensuring transmission adequacy to enable merchant generators in our state or region access to remote markets is sufficient for NIETB designation.

If you have any questions, please do not hesitate to contact me.

Again, thanks for the opportunity to provide input!

Sincerely,

Philip Riley

IDENTIFICATION AND MITIGATION OF NATIONAL INTEREST ELECTRIC TRANSMISSION BOTTLENECKS (NIETB)

- The PSCSC believes states must maintain a role in the identification and remediation of NIETB. Remediation of any identified NIETB should not bypass the impacted states' siting and certification processes. States best know their regulated utilities and the planning processes employed by those utilities. They also know the preferences of electricity consumers in the state.

- Identification of NIETB and mitigation plans should be an integral part of transmission planning at the utility/state/regional levels and results should be included in vertically integrated utilities' integrated resource plans (IRPs). South Carolina's retail electricity market has not been deregulated and the state's investor-owned utilities retain their vertically-integrated orientation. The state's investor-owned utilities (IOUs) conduct comprehensive transmission and resource planning for its own service area and then participate in joint planning activities at the state, sub-regional and regional levels. These planning exercises will identify any transmission congestion at the state, sub-regional or regional levels. The IOU's triennial IRPs (updated annually) should identify any transmission congestion and mitigation measures to be implemented.

- Commercial considerations alone should not justify designation as a NIETB. South Carolina's retail electricity market has not been deregulated, and the state's IOUs retain their vertically-integrated orientation. The PSCSC and its regulated IOUs place a priority on reliably serving native load customers first at the lowest possible cost. With that in mind, designation as a NIETB should not be based solely on commercial considerations to make low-cost power available in higher-cost regions.

- Those that benefit from reduction of congestion should pay for the necessary infrastructure upgrades. This is particularly true for upgrades based primarily on commercial considerations. Reliability margins above generally accepted minimum levels should not be justification for socializing upgrade costs when the primary motivation for upgrade is commercial considerations.

- When upgrading transmission facilities which have been designated as NIETB, it is preferable for the facilities to be slightly over built to provide a reasonable margin for load growth, and to minimize the number of required future upgrades.

17. Comments of the Edison Electric Institute (EEI), 9/20/04, 12:50pm

September 20, 2004 ELECTRONICALLY FILED

Mr. Bill Parks
Acting Director; Office of Electric Transmission and Distribution
U.S. Department of Energy
Forrestal Building, Room 6H050
1000 Independence Avenue, SW
Washington, D.C. 20585

Dear Mr. Parks:

On behalf of our member companies, the Edison Electric Institute (EEI) welcomes the opportunity to provide comments in response to the July 22, 2004 Department of Energy (DOE) inquiry on electric transmission bottlenecks.[24] We also appreciate continued DOE action that fulfills the broad range of recommendations made by the National Transmission Grid Study (NTGS) and the Electricity Advisory Board (EAB) in 2002. This inquiry for establishing a process to identify "national interest electric transmission bottlenecks" (NIETB), is both needed and timely. EEI supports this new initiative as a positive step in support of several critical industry goals.

EEI member companies produce and deliver approximately 75 percent of the electricity consumed in the United States. The electric industry maintains a strong commitment to and responsibility for electric safety and reliability as a first priority. Transmission infrastructure investments will continue to be needed to maintain reliability in support of growing customer demands and to facilitate continued development of stronger wholesale markets. Transmission planning is therefore a critical starting point for defining these needs and setting project priorities.

Pending federal energy legislation (H.R. 6, the "Energy Policy Act of 2003") provides two critical authorities to DOE: (i) "lead agency" status for coordinating federal agencies' electric transmission line permitting processes; and (ii) responsibility for identifying national interest transmission corridors that would serve as a condition for limited FERC "backstop" line siting authority. EEI continues to support these important provisions.

Proposed legislative language clearly calls for specific DOE actions, which are consistent with this inquiry. Section 1221 of the conference report for H.R. 6 would add a new section 216(a) to the Federal Power Act, giving DOE responsibility for identifying "national interest electric transmission corridors." In consultation with affected states, the Secretary of Energy would conduct a study of electric transmission congestion. After considering alternatives and recommendations from interested parties, again including affected states, the Secretary would issue a periodic report identifying as national

[24] 69 FR 43833 (July 22, 2004),..

interest corridors those geographic areas experiencing transmission capacity constraints or congestion that adversely affects consumers.

In anticipation of the enactment of such legislation, we agree that DOE should establish a process now for identifying such national interest corridors, which is a topic closely related to this NIETB rulemaking. Until legislation is enacted, existing DOE jurisdiction enables it to fulfill important roles for increasing awareness and transparency of resolving transmission bottlenecks. With the assistance of state and regional inputs, DOE can play an important role in focusing the public's attention on significant projects that face complex siting problems and unreasonable delays of needed construction, as well as significant transmission bottlenecks for which there are no planned projects. Our comments propose a process framework whereby DOE can act now under its existing authorities while also shaping a NIETB designation process that anticipates legislative enactment.

Today, transmission planning takes place in several formal contexts, and EEI strongly encourages DOE to make maximum use of these established processes. We believe that reliance on such processes will significantly reduce duplication of effort and potential confusion that may result from multiple processes that produce multiple outcomes on different timelines and planning horizons. As our detailed responses indicate, we believe that the DOE designation process should make extensive use of existing regional and state planning functions while also providing due process that accommodates stakeholder review and comment prior to such designation. This will help ensure that the DOE process will be valued as a neutral forum.

Transmission planning activities are currently conducted by transmission owners and regional entities, including regional transmission organizations (RTOs), independent system operators (ISOs), regional reliability councils (RRCs) of the North American Electric Reliability Council (NERC), and by various sub-regional entities in both the Eastern Interconnection and Western Interconnection of the North American bulk electric transmission network. Formal planning also takes place within the states, including formal integrated resource planning initiatives, and transmission line siting and permitting.

Given this background and in light of the fact that DOE involvement in transmission planning is a new initiative for the industry, EEI strongly recommends that DOE define its goals, priorities, and activities in such a way so as to ensure that industry participants clearly understand how future DOE activities will support and enhance existing practices. In addition, we strongly believe that the mission and scope of the DOE designation process should not include development of a large-scale transmission planning and modeling function, or similar functions by the national laboratories or DOE contractors. Rather, we recommend that DOE rely on existing planning tools, including software modeling and databases that are well suited to support planning decisionmaking and the NIETB process. These tools are continuously updated in response to changing needs and circumstances, and advancements in modeling software and computer technology.

We encourage DOE to develop the NIETB process so that it does not add another layer of planning or oversight to an already complex part of the electric industry. Rather, DOE and the industry should work together to ensure that existing planning processes continue to improve by ensuring that such processes

allow full due process, include open and transparent consideration of all project proposals, and enable prompt, timely decisions in response to the need for new or upgraded transmission facilities.

EEI also strongly recommends that any DOE process ensure that its activities do not compromise needs for protecting both critical infrastructure and competitively sensitive information. DOE should carefully coordinate this and other electric industry initiatives within the Department with the Department of Homeland Security (DHS) and other appropriate federal agencies, including criminal investigatory and defense-related groups.

The NIETB designation process must also include consideration of related activities that take place by the nations of Canada and Mexico, since the transmission network is physically interconnected with facilities in those countries. We understand that existing agreements between the United States, Canada, and Mexico could accommodate such consideration, and we offer our support in assisting in any coordination activities.

In light of this background, we are pleased to provide our responses to the four specific questions as stated in the inquiry.

QUESTION #1: Are the EAB recommended criteria for designation of NIETBs appropriate and sufficient? If not, what should they be? For example, should DOE also consider disaster recovery, economic development, and the enhancement of the ability to deal with market and system contingencies in designating NIETBs?

As a primary criterion for NIETB designation, EEI believes that DOE should focus on whether a needed project, already identified in a formal planning process, faces significantly complex siting and permitting issues that unreasonably delay such projects. Therefore, we recommend that the DOE designation process include an initial threshold criterion. This criterion would require any entity seeking NIETB designation to submit to DOE a detailed project report that describes each of the following elements:

- Project physical description
- Project need summary
- Planning process description and outcome
- Siting, permitting, construction process description, and status
- Characterization of issues causing unreasonable project delay
- Alternate solutions under consideration

While we provide no specific content details in these comments, the project report submitted to DOE should provide information sufficient to support NIETB designation without requiring additional detailed technical analyses, data and modeling studies, or supporting formal written testimony. The critical objective of this report would be to describe a project whose need has been identified by an entity with formal responsibilities for owning, operating, or planning transmission facilities within a

state or region, where such project faces unreasonable delay in moving forward. NIETB designation should not be granted to conceptual projects that have undergone no formal review or planning process. Moreover, we strongly encourage DOE to avoid establishing a NIETB process that provides a forum of convenience for entities that may seek to circumvent existing formal state or regional planning, using NIETB designation to gain advantages in regional and state processes. Rather, we are hopeful that the DOE process will be designed to work in support of these existing processes. Finally, while there may be some limited value to a broad overview report that identifies general areas where transmission bottlenecks may occur, we further recommend that NIETB designation should be granted only to specific projects or corridors, not to loosely defined areas. This approach would better support the FERC backstop siting authority. EEI offers its support and assistance in developing more detailed designation procedures that will create a focused, efficient process.

EEI believes that security-related needs of the network are already addressed as part of transmission owning and operating entities' responsibilities for ensuring reliability. Moreover, while DOE is an appropriate forum for some consideration of national security-related issues, EEI believes that it is inappropriate that these extremely sensitive matters undergo public review and consideration. EEI and its member companies already work closely with DOE and DHS to coordinate national security-related matters that involve the bulk electric transmission network. While critically important for the country's defense, EEI believes that national security should not be the sole criterion in assessing electric transmission needs that may be in the national interest.

We believe that the proposed reliability criterion stated in the inquiry is contained within the scope of our proposed threshold criterion and the project report. However, we recommend that DOE modify its proposed Criterion #2 that focuses on potential reliability issues. Specifically, we recommend that NIETB designation should be provided when a project will mitigate significant likelihood of an outage of extended duration over a broad geographic area that includes a major metropolitan area in the United States. In addition, the project should mitigate the likelihood that a violation of prevailing NERC or NERC regional reliability council planning criteria or standards would occur within five years from the date on which NIETB designation is proposed. An entity submitting a request for NIETB designation should describe in its project report how the project addresses each of these elements, in addition to those elements previously listed.

QUESTION #2: What should be the role of transmission grid operators, utilities, other market participants, regional entities, States, Federal agencies, Native American tribes and others, in the process of identifying, designating, and addressing NIETBs? For example, should a NIETB be designated only if some entity applies to DOE for designation? Should DOE accept applications only from entities from regions that have an extant regional transmission or resource plan? Should DOE be able to designate a NIETB even if no entity asks DOE to do more?

DOE should consider NIETB designation based on requests made by industry participants and other groups with significant responsibilities for conducting electric transmission planning. DOE should not

otherwise conduct independent assessments, including detailed technical modeling and planning, or provide NIETB designation in the absence of a specific request.

Upon request and consistent with the process proposal outlined in these comments, DOE should provide NIETB designation for any project so identified by processes with explicitly recognized authority to conduct organized transmission planning and make such requests, including an RTO or ISO, or a state or group of states, having such explicit authority. In addition, the DOE process should recognize proposals made by other established regional or sub-regional planning activities. For example, we understand that the Rocky Mountain Area Transmission Sub-region (RMATS) initiative has conducted an open consensus process to identify a series of conceptual projects in the Western Interconnection.

Other interested persons or groups should also be allowed to request NIETB designation through the DOE-NERC process, including as examples other Federal agencies, Native American tribes, and individual entities that own or operate bulk electric transmission facilities. As already stated, these entities should make use of information filed at EIA and FERC as the basis for their requests.

We further propose elements to help provide clear boundaries for the designation process. Proposed NIETB projects should not include any distribution facilities subject to state regulation. Other criteria, included in pending legislation, should also be included in the DOE designation process. DOE should not provide NIETB designation to any project in the absence of a specific request that includes the elements previously described in these comments.

QUESTION #3: How might DOE identify bottlenecks in regions where much pertinent data are not available, in contrast to regions where transmission expansion plans have been developed and made public?

As we have indicated, EEI believes that there already exists sufficient information to support the proposed designation process, and that DOE should not independently designate NIETB projects. In addition, we recommend that DOE should also not seek to act in an oversight or auditing role for existing planning processes. This would only serve to increase planning uncertainties, the exact opposite of the intended purpose of this initiative.

DOE should recognize that existing planning processes already reflect NERC planning standards, which are included in all models that support project decisionmaking. These standards are reflected in a broad range of processes, including state jurisdictional planning activities and state line siting processes. Moreover, beginning with the NERC "version 0" project, reliability and planning standards will be developed and modified in the future through the ANSI-approved NERC standards setting process, which is independent and open to all interested persons and groups.

> In all other circumstances, EEI believes that by making full use of information and data submitted under EIA Form 411 (Schedule 6) and FERC Form 715, DOE will have a strong basis for making NIETB designations. These EIA and FERC reports include a broad range of

transmission planning information. For NIETB designation activities based on such information, DOE should coordinate with NERC as well as regional reliability councils that conduct planning functions. DOE should make full use of the technical expertise that resides in the NERC forum to avoid overlaps and duplications of effort.

QUESTION #4: What actions should DOE undertake to facilitate and monitor progress towards mitigation of designated NIETBs?

DOE should publicly report all NIETB designated projects at least biennially. The report should describe the projects, including any changes in the status of a project when compared to previous reports. In order to highlight the critical importance of these national interest designations, EEI strongly recommends that the Secretary issue the report. Following publication, the Office of Electric Transmission and Distribution (OETD) should make its personnel available to meet informally to discuss NIETB projects with public interest decisionmakers, regional and state entities that conduct formal planning, and representatives of other federal agencies. Upon request, OETD staff could participate in state siting and permitting proceedings where a NIETB project is under consideration.

OTHER RELEVANT ISSUES

EEI recommends that DOE ensure that Native American tribes are invited to participate in the NIETB process. DOE personnel should closely coordinate with other federal agencies to convey this invitation.

On behalf of our member companies, EEI respectfully provides these comments and appreciates the opportunity to participate in this important initiative. To achieve the common goal of ensuring that bulk electricity transmission networks meet the nation's future needs, we look forward to working with DOE proactively on the development and implementation of this process. Please feel free to contact me at your convenience if you have additional questions or seek to discuss these comments in greater detail.

Sincerely,

/s/ James P. Fama

James P. Fama
Executive Director, Energy Delivery

JPF/dd

18. Comments of the Power Systems Engineering Research Center (PSerc), 9/20/04, 1:23pm

Office of Electric Transmission and Distribution, TD–1,
Attention: Transmission Bottleneck Comments
U.S. Department of Energy
Forrestal Building, Room 6H050, 1000
Independence Avenue, SW.,
Washington, DC 20585.

Comment Group: Bob Thomas, Timothy Mount, Richard Schuler, Bill Schulze, Duane Chapman, Bernie Lesieutre

Not yet heard from: Marija Ilic, Gerry Scheble, P.K. Sen

Summary
The present use of the legacy transmission system is different from the original design under regulation. The legacy system was built to reliably support the supply of native load whatever the level of demand. The ability to create transfers between areas (i.e., tie-lines) were put in place principally to support a neighbor's reliability during times of stress, not to support the sale of large quantities of bulk power. That is, with few exceptions, large scale wheeling was not a primary impetus for creating links to neighbors. The new role for transmission is to support market functions for both supply and demand, and at the same time, to ensure that standards of reliability are maintained. This is a critical issue of national importance and it is appropriate for the Department of Energy (DOE) to identify and correct National Interest Electric Transmission Bottlenecks (NIETB) . The issues are, however, complex and it is essential to interpret the term "bottlenecks" in a broad context that reflects both the physical and the institutional limitations of the existing transmission system.

In deregulated markets, market forces will inevitably push supply to the physical limits of the transmission system, but different limits will be reached at new locations when market conditions change. Bottlenecks will rarely occur at a specific location for extended periods. Path 15 in California is an exception rather than a typical bottleneck. Institutional limitations can also create bottlenecks. System operators in different regions are governed by different combinations of state and federal regulations. Under traditional regulation, different regions were relatively autonomous and inter-regional transfers were scheduled in advance. This type of arrangement is no longer appropriate in a fully deregulated market. Currently, price differences between regions often reflect institutional impediments rather than true differences in the costs of production (i.e. the "seams" problem). Improving the integration of markets in different regions will lead to more accurate price signals and to a more reliable transmission system.

Comments to the Designation of National Interest Transmission Bottlenecks (NIETB) Notice of Inquiry

1. Background

In the context of market design, market functions should be subservient to maintaining the reliability of supply functions. This is not easy in the sense that maintaining a desired level of reliability is one of many constraints upon an economic problem. New patterns of transmission flow and/or voltage characteristics should not be unexpected without a revision of transmission planning and use criterion.. By a bottleneck we mean any network limiting condition (e.g., voltage limit, stability limit, line thermal limit, protection limit, etc.) that alters the unconstrained flow of power in a network. In this context bottlenecks are inevitable: economic incentives created by market design will be pursued until an operational limit is reached. This implies that a change in market rules that modifies incentives can create, relieve, exacerbate or mitigate bottleneck behavior. Therefore, before embarking on any program to fix bottlenecks, the mechanisms that create them should be thoroughly understood using a total systems approach.

While market rules and the incentives they create have an effect on where bottlenecks appear, transmission bottlenecks can be substantial impediments to efficient wholesale markets for electricity. In many instances bottlenecks can also inhibit reliability both by reducing power flow alternatives and making the restoration of service more difficult. The term, “bottleneck ” as used in the request for comments is not necessarily understood by all to be as defined above. Its use has often meant flow restrictions on a line which is an unfortunate and overly restrictive (and simplistic) interpretation of what requires redress. As pointed out earlier, “bottlenecks,” are not merely a constriction of the flow of product from a supply source to the customer. The wine bottle is not a good analogy. Indeed, transmission requirements are part of a complex system where market design and regulatory policy are also factors, in addition to the traditional generation, transmission, and demand components of the system. If new transmission was costless, the optimal network would add new transmission capacity so that the resulting grid would connect any load center to any generation center within an ISO, and between ISO’s. PJM could sell to Georgia in the morning, and buy in the afternoon. Kentucky to Ontario, and so on. Obviously, financial risk, externality cost, and political cost combine to make the necessary rate of return for new transmission higher (not lower) than the rate of return necessary for other industry investments such as existing plant upgrades. A vertically integrated regulated or unregulated monopoly could easily balance out the profit equation for demand, generation, and transmission. In a restructured system, where markets have multiplied transmission transactions several fold, there is no institutional mechanism which has satisfactorily balanced the need for reliability in a growing system with rationalizing transmission needs with current and new generation. The electricity grid, a meshed network with multiple paths, is critical to the equation and is not just a series of bilateral pathways between pairs of buyers and sellers and yet bottlenecks are often perceived and defined to be over particular routes. While it is true that particular pathways in a network may become congested, in many cases the effective solution is not to simply add capacity or redundancy to that particular route; system-wide impacts and solutions must be explored. That requires someone to have the interest in and authority to explore wide area solutions that span existing organizations and regulatory responsibility. The danger in using the “bottleneck” terminology is the inference that it creates a problem at a

particular location - - that all that is required is to identify these congested paths and to issue commercial contracts to enhance those particular routes. Instead, what is required is a system-wide evaluation of the economic and reliability consequences of improvements in the grid, and existing "bottlenecks" merely offer one set of places to begin this inquiry.

When examined in this network context, which is applicable in most regions of the country, the complex nature of identifying situations that satisfy one of the three proposed criteria (security, reliability, and economic efficiency) becomes evident, since initiatives that improve reliability may in some instances reduce economic efficiency and security. For a service delivered over a network, these criteria may be competing in some circumstances, and so there is a danger in considering them "bottleneck" by "bottleneck".

And in considering the network nature of electricity supply, it is important to investigate potential improvements in transmission capability in the context of the overall energy supply network. As an example, rising natural gas prices encourage buyers to turn to power suppliers fueled by other sources which, however, may lead to congestion on previously underutilized lines. Depending upon the ownership and/or control pattern over both electricity supply facilities and of other links in the energy supply chain network, what are the opportunities to create bottlenecks for economic or other advantage?

2.Backstop Siting Authority

Since the over-riding problem with the electric transmission network is inadequate span of control, backstop siting authority is a minimalist step toward improvement, and therefore should certainly be authorized, subject to environmental and public health and safety review.

3. Specific Questions in Request

Question 1: Are the Electricity Advisory Board's recommended criteria for designation of National Interest Electric Transmission Bottlenecks appropriate and sufficient? If not, what should they be?

These are very qualitative descriptions that could be difficult to turn into engineering metrics. It would be useful to begin any investigation with an agreed upon quantitative description. The definition of a bottleneck as any network limiting condition (e.g., voltage limit, stability limit, line thermal limit, protection limit, etc.) that alters the unconstrained flow of power in a network is more useful but does not capture the national security concern. Disaster recovery should be included under the broad rubric of system security that encompasses human assaults and natural disasters.

Question 2: What should be the role of transmission grid operators, utilities, other market participants, regional entities, States, Federal agencies, Native American tribes and others in the process of identifying, designating, and addressing NIETBs?

The opinions and suggestions of all market participants need to be considered, but evaluations should not be limited to those requested by some specific party. Whoever is responsible for the overall integrity and effectiveness of the grid (presumably FERC) must have the authority to initiate an evaluation (designation) on its own initiative, given the network nature of the grid that transcends the interests of any specific party.

Question 3: How might DOE identify bottlenecks in regions where much pertinent data are not available, in contrast to regions where transmission expansion plans have been developed and made public?

"Bottlenecks" might be identified through substantial differences in levels of reliability or electricity price across particular boundaries (not artificially induced by or masked by the ISO's/RTO's averaging of prices). Broad areas of reliability lower than in neighboring areas, or of higher prices, might also trigger an investigation.

Question 4: What actions should DOE undertake to facilitate and monitor progress towards mitigation of designated NIETBs?

Pre-approved tariffs for newly constructed facilities thought to enhance the network might be one incentive used to encourage investment. These tariffs might be set for some specified period (e.g ten years) before reverting to normal rate-of-return regulated rates.

19. Comments of the Transmission Access Policy Study Group (TAPS), 9/20/04, 2:00pm

Designation of National Interest Electric Transmission Bottlenecks

COMMENTS OF THE TRANSMISSION ACCESS POLICY STUDY GROUP

The Transmission Access Policy Study Group (TAPS) commends the Department of Energy (DOE) for initiating its Notice of Inquiry "Designation of National Interest Electric Transmission Bottlenecks (NIETB)."[25] A robust transmission grid is essential to the safety and economic well-being of the United States. DOE's leadership is vital to the necessary and important task of identifying transmission needs and of developing and implementing solutions. TAPS has been very active in this area. It submits as part of these comments policy papers developed to promote planning and construction of the transmission grid needed to ensure reliable electricity service and competitive power supply markets.

TAPS is an informal association of transmission-dependent utilities in more than 30 states, promoting open and non-discriminatory transmission access.[26] It participates in policy proceedings at DOE, the Federal Energy Regulatory Commission (FERC), the Federal Trade Commission and other federal agencies that deal with electric transmission and market power in the electric utility industry. As entities entirely or predominantly dependent on transmission facilities owned and controlled by others, TAPS members have supported initiatives to form truly independent, regional transmission organizations and to foster efficient investment in transmission and generation facilities. TAPS recognizes the critical importance of structurally competitive markets, transmission adequacy, and access to long-term power supply (without exposure to debilitating congestion charges) to achieving a workably competitive electricity industry and enabling TAPS members to continue to provide reliable service to their customers at a reasonable, predictable cost.

Communications regarding these proceedings should be directed to:

Roy Thilly, CEO
WISCONSIN PUBLIC POWER INC.
1425 Corporate Center Drive
Sun Prairie, Wisconsin 53590

Robert C. McDiarmid
Cynthia S. Bogorad
Mark S. Hegedus

[25] 69 Fed. Reg. 43,833 (July 22, 2004).

[26] TAPS is chaired by Roy Thilly, CEO of Wisconsin Public Power, Inc. Current members of the TAPS Executive Committee include, in addition to WPPI, representatives of: American Municipal Power-Ohio; Blue Ridge Power Agency; Clarksdale, Mississippi; ElectriCities of North Carolina, Inc.; Florida Municipal Power Agency; Geneva, Illinois; Illinois Municipal Electric Agency; Indiana Municipal Power Agency; Madison Gas & Electric Co.; Missouri River Energy Services; Municipal Energy Agency of Nebraska; Northern California Power Agency; Oklahoma Municipal Power Authority; Southern Minnesota Municipal Power Agency; and Vermont Public Power Supply Authority.

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RESPONSE TO QUESTIONS

1. Are the Electricity Advisory Board's recommended criteria for designation of National Interest Electric Transmission Bottlenecks appropriate and sufficient? If not, what should they be? For example, should DOE also consider disaster recovery, economic development, and the enhancement of the ability to deal with market and system contingencies in designating NIETBs?

The Electricity Advisory Board recommends the following three criteria for designation of NIETBs:

1. The bottleneck jeopardizes national security;

2. The bottleneck creates a risk of widespread grid reliability problems or the likelihood that major customer load centers will be without adequate electricity supplies; or

3. The bottleneck creates the risk of significant consumer cost increases in electricity markets that could have serious consequences on the national or a broad regional economy or risks significant consumer cost increases over an area or region.

69 Fed. Reg. at 43,833-34. The recommended criteria are appropriate and sufficient, because they encompass the national security, reliability, and economic functions played by the transmission grid. Bottlenecks that adversely affect these functions should be NIETBs. The additional suggested criteria – disaster recovery, economic development, and the enhancement of the ability to deal with market and system contingencies – are included within the Board's criteria. For example, a bottleneck that "risks significant consumer cost increases over an area or region" impairs economic development. Mitigating a bottleneck that poses reliability risks will enhance the ability to deal with market and system contingencies.

DOE must take care, however, not to focus solely on bottlenecks with the greatest geographic or demographic impacts. Keeping the lights on or prices reasonable is as important in Peoria as it is in New York City or California. Criteria 2's reference to "widespread grid reliability problems" or "major customer load centers" should not be pre-judged or limited to minimum sizes.

Likewise, it is vital that Criteria 3 continue to include "economic consequences over an area or region" in addition to those having "national or a broad regional" impact.

Once NIETBs are identified and designated, they need to be mitigated. In response to Question 4 below, TAPS outlines a comprehensive set of structural changes and regulatory actions that can work to get needed transmission built, and submits its recent White Paper *Effective Solutions for Getting Needed Transmission Built at Reasonable Cost* as part of these comments.[27] One approach that will not work, however, is FERC's current policy of categorizing transmission upgrades as "reliability" or "economic" with only the former assured of ratebase treatment and with the latter potentially being addressed only if the "market" decides to do so. As demonstrated in the White Paper and the recent article *The Grid That Binds Us*,[28] market mechanisms, including ones based upon spot markets, are ineffective at ensuring the construction of needed transmission upgrades. Such mechanisms are poorly adapted to a dynamic AC grid, where benefits and beneficiaries of an upgrade are many, difficult to assign, change over time, and can be enjoyed by "free riders" (*i.e.*, entities other than the funding entity). The widespread, dispersed benefits of a major transmission upgrade make determination of specific beneficiaries for purposes of assigning investment responsibility particularly difficult. For this reason (as well as others discussed in the TAPS White Paper and *The Grid That Binds Us*), proposals such as market participant funding that depend upon an individual market player stepping forward to fund an upgrade, in return for a highly uncertain revenue stream that the upgrade should reduce or eliminate, is bound to fail. Participant funding invites a game of chicken where would-be beneficiaries may sit back in the hope that others will step forward to bear the cost of an upgrade. Meanwhile, transmission construction and the associated benefits to consumers are delayed. If a bottleneck is serious enough to qualify as an NIETB, we shouldn't wait around for a market response that is unlikely to materialize. Instead, DOE should support mitigation solutions that will yield results, such as those discussed in the TAPS White Paper.

2. What should be the role of transmission grid operators, utilities, other market participants, regional entities, States, Federal agencies, Native American tribes and others in the process of identifying, designating, and addressing NIETBs? For example, should a NIETB be designated only if some entity applies to DOE for designation? Should DOE accept applications only from entitites from regions that have an extant regional transmission (or resource) plan? Should DOE be able to designate a NIETB even if no entity asks DOE to do so?

In areas with RTOs, DOE should look to them and their transmission planning and expansion processes to help identify, designate and address NIETBs.[29] However, DOE should also insist

[27] The White Paper is Attachment A hereto and is also available at http://www.tapsgroup.org/EffectiveSolutions.pdf (last visited September 20, 2004).
[28] This article is Attachment B hereto and may be found at http://www.spiegelmcd.com/pubs/csb_msh_grid.pdf (last visited September 20, 2004).
[29] We address in response to Question 3 how bottlenecks might be identified in the absence of RTOs.

that the RTO planning and expansion process includes an affirmative obligation to assess and address the reliability and economic needs of all who rely upon the transmission grid. That process cannot be a mere clearinghouse for projects proposed by market participants nor should it rely on market forces to drive new transmission construction. The planning goal must be a robust transmission system that supports the national interest in reliable and economic (*i.e.*, lowest reasonable cost) power supply. The U.S. will be ill-served by the minimally adequate grid that would result from policies that require transmission to "compete" with generation, *i.e.*, a grid that would likely keep the lights on but prices high because of congestion. TAPS has developed "Balanced Principles for Electric Transmission Planning and Expansion" that include the following key features to ensure a robust transmission system: [30]

1. RTOs should develop a least-cost expansion plan to meet regional needs.

2. RTOs should be obligated to construct, or cause construction of, needed new facilities that (a) ensure transmission reliability and adequacy, (b) accommodate load growth, (c) preserve existing transmission rights, (d) provide loads with access to the competitive market, (e) maintain existing financial transmission rights ("FTRs") where FTRs are used, (f) facilitate major regional, inter-regional power transfers, and (g) integrate new generation into the regional grid.[31]

3. Transmission expansion costs should be recovered in rates, primarily on a rolled-in basis, but using a rate design that distinguishes between "highway facilities," the costs of which are broadly assigned over a region, and "local facilities" with costs borne by load and generation in a local area.

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[30] The Balanced Principles are Attachment C hereto. This list is illustrative. All the features of the model are set forth in the Balanced Principles.

[31] The planning process must ensure that "network" generation resources can be delivered to specific loads, not just to the aggregate load in an area ,as FERC has recently endorsed. *See Standardization of Generator Interconnection Agreements and Procedures*, Docket No. RM02-1-001, 106 F.E.R.C. ¶ 61,220, PP 531-33 (March 5, 2004). Generalized use of an "aggregate deliverability" standard (even if an individual customer may request load-specific deliverability, as the FERC permits; *id*. at PP 534-535) lowers the bar for assessing grid adequacy and resource adequacy. It renders the grid less able to support the long-term assurance of deliverability to load at a predictable price that is critical to maintaining the viability of existing generation investments and supporting new ones, especially those essential for fuel diversity. For example, the economics of wind power or large, baseload coal plants, which often must be located remote from load, depend upon long-term assurance of delivery to load of the low cost energy produced, without congestion charges that can upset the economic premises of the project. There is no point in investing in wind farms or coal plants if the delivered price reflects gas energy prices. In areas that use locational marginal pricing, use of aggregate deliverability standard for evaluating the upgrades required to support new network resources creates a severe mismatch with the simultaneously feasibility standard used to determine the availability of FTRs needed to hedge congestion associated with delivery of such resources to load.

RTO planning and expansion that reflects this model could be an integral part of the NIETB process.

Even with the assistance of RTOs, DOE itself must remain pro-active in identifying, designating and addressing NIETBs, because it can bring to the process a broad, public interest perspective. Imagine where we would be if the federal government had waited around for market responses to construct the interstate highway system. The federal government's leadership ensured the realization of that system which is today an engine of the U.S. economy. The electricity grid is no less central to the nation's well-being.

DOE should also encourage all entities, not just RTOs, to propose NIETBs. As described below and in the TAPS White Paper, an effective planning process should be inclusive of all interests, which would enable broad input into the NIETB process. However, TAPS members have learned through the school of hard knocks that those with the responsibility to plan and build transmission do not always take into account the needs of all who rely upon the grid. DOE should therefore not restrict which entities can ask for NIETB designations, even in areas with RTOs.

3. How might DOE identify bottlenecks in regions where much pertinent data are not available, in contrast to regions where transmission expansion plans have been developed and made public?

Regions without RTOs create additional challenges with regard to identification of bottlenecks. Planning processes often are neither public, nor coordinated among the various utilities in a region. To the extent that there is any coordination, transmission dependent utilities ("TDUs") are typically excluded. Nor is there a uniform method for determining transmission capability, or a mechanism in place to ensure that capacity is not being withheld for competitive purposes.

As described in the TAPS White Paper, the lack of a regional planning process focused on providing the foundation for vibrant regional markets has retarded construction and the development and implementation of new technologies to expand the transfer capability of existing transmission facilities. Due to the dynamic and highly integrated nature of the AC grid, an upgrade in one state may be required to enhance reliability and relieve congestion in an adjacent state. Also, a transmission addition may be required in one state to enable an upgrade undertaken in an adjoining state to function as planned. This can lead to a mismatch between the regional benefits of additions and localized rate recovery for their costs.[32]

Effective regional transmission planning is an essential component of identifying, designating and addressing NIETBs. DOE has previously called for "open regional planning processes that consider a wide range of alternatives, accelerating the siting and permitting of needed facilities, taking full advantage of advanced transmission technologies, and incorporating appropriate safeguards to ensure the physical and cyber security of the system."[33] As described in the TAPS White Paper, regional planning mechanisms have received the support of the National Governors Association as well as individual state governors in recognition of the regional benefits of transmission expansion. Thus, state and federal regulators should require that transmission be planned regionally to meet the needs of load serving entities on a least-cost, integrated system basis. In addition, RTOs, inclusive stand-alone transmission companies, and shared transmission systems all facilitate regional planning.[34] Transparency with regard to transmission information and plans, coupled with an open and collaborative planning process on a regional or state-wide basis, would plainly facilitate both the identification of bottlenecks and getting them addressed promptly.

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[32] An upgrade on one system may relieve a regionally significant constraint, but the cost is typically imposed on ratepayers of the system making the upgrade, deterring needed construction. After reviewing the decline in transmission investment over the last 15 years and noting that transmission represents a small portion of the vertically integrated utility's assets, FERC's Chairman, in Congressional testimony following last year's Blackout, pointed to a reluctance of vertically integrated utilities with regard to transmission "expansions that may benefit *another* utility's customers." *Testimony of Pat Wood, III, Chairman, Federal Energy Regulatory Commission, Before the Subcommittee on Oversight of Government Management, the Federal Workforce, and the District of Columbia, Committee on Governmental Affairs, United States Senate*, at 4 (Sept. 10, 2003), http://www.ferc.gov/press-room/ct-archives/2003/09-10-03-wood.pdf (last visited September 20, 2004).

[33] Department of Energy, *National Transmission Grid Study*, at 8 (May 2002), *available at* http://www.eh.doe.gov/ntgs/gridstudy/main_screen.pdf (last visited September 20, 2004).

[34] Inclusive (*i.e.* open to all load serving entities) stand-alone transmission companies and shared transmission systems are described in the White Paper.

An open, collaborative regional planning process can be put in place on a voluntary basis. For example, an impending transmission bottleneck affecting eastern North Carolina was brought to FERC's attention through comments presented on January 13, 2004 by Mr. Jesse Tilton, CEO of TAPS member ElectriCities of North Carolina, Inc.[35] ElectriCities is the management services provider to two municipal joint action power supply agencies -- North Carolina Municipal Power Agency No. 1 and North Carolina Eastern Municipal Power Agency ("NCEMPA"). Mr. Tilton testified that, according to transmission engineering studies performed by Progress Energy-Carolinas, Inc. (formerly Carolina Power & Light Company, or "CP&L"), there will be no import capacity available for importing power into CPL's eastern control area beginning in 2010. As it turns out, 2010 is precisely when NCEMPA will need to secure 1200 MW of capacity and associated energy to replace an expiring supply contract with CPL. Thus, while there is a generation glut in other parts of the Southeast, the lack of import capability means that NCEMPA's options are effectively limited to continued purchases from CP&L within the CP&L-East control area.

Subsequent to Mr. Tilton's presentation, the North Carolina Utilities Commission (NCUC) urged the stakeholders in the region to undertake a voluntary effort aimed at developing a collaborative regional planning process for North Carolina. The NCUC hosted a meeting of interested stakeholders on April 7, 2004, to obtain information on specific transmission-related issues, and to allow the Commission to become better informed about the status of the electric transmission facilities in North Carolina and the potential transmission-related issues that might arise in the future. Because the control areas of Progress Energy-Carolinas and Duke Power also cover portions of South Carolina, the South Carolina Public Service Commission and interested South Carolina stakeholders were invited to attend and participate.

Since the meeting on April 7, 2004, the primary load serving entities providing service in North Carolina (Duke Power, Progress Energy-Carolinas, North Carolina Electric Membership Corporation and ElectriCities) have been engaged in discussions to address many of the issues raised at that meeting. These entities have attempted to reach a consensus agreement on a collaborative approach to transmission planning, and they anticipate making public an initial proposal in late September.[36] If such an agreement is reached and accepted by regulatory authorities, the result should be a more open and transparent transmission planning process for North Carolina – one that is far more able than current processes to identify and address stakeholder concerns about the adequacy of the state's transmission infrastructure.

Beyond encouraging voluntary regional planning efforts, consideration should be given to utilizing authority under Section 202(a) of the Federal Power Act, 16 U.S.C. § 824a(a) (2000), which reads in pertinent part:

> For the purpose of assuring an abundant supply of electric energy throughout the United States with the greatest possible economy and with regard to the proper utilization and conservation of

[35] Mr. Tilton's comments may be found at http://ferris.ferc.gov/idmws/common/OpenNat.asp?fileID=10040946 (last visited September 20, 2004).

[36] The NCUC has scheduled a public meeting for October 5, 2004 to discuss the anticipated proposal.

> natural resources, the Commission is empowered and directed to divide the country into regional districts for the voluntary interconnection and coordination of facilities for the generation, transmission, and sale of electric energy, and it may at any time thereafter, upon its own motion or upon application, make such modifications thereof as in its judgment will promote the public interest.... It shall be the duty of the Commission to promote and encourage such interconnection and coordination within each such district and between such districts.

In ordering the return of Section 202(a) authority to FERC in October, 1998, then DOE Secretary Richardson noted that Section 202(a) affords the Commission "sufficient authority to establish boundaries for Independent System Operators (ISOs) or other appropriate transmission entities" and that "[p]roviding FERC with the authority to establish boundaries for ISOs or other appropriate transmission entities could aid in the orderly formation of properly-sized transmission institutions and in addressing reliability-related issues, thereby increasing the reliability of the transmission system." Department of Energy Delegation Order No. 0204-166 to the Federal Energy Regulatory Commission, 63 Fed. Reg. 53,889 (Oct. 7, 1998).

In any event, outside the RTO context it is particularly important that the DOE accept information from a range of market participants, and not just transmission providers, to identify bottlenecks that should be addressed. Vertically integrated transmission providers' assessment of the need for grid expansion may reflect their need to maximize profits by protecting generation investments that will be exposed to competition by a more robust grid. This factor creates an inherent conflict of interest when it comes to funding transmission expansion to support competitive markets.[37] As the FERC recently observed:[38]

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[37] *Regional Transmission Organizations,* Order No. 2000, 65 Fed. Reg. 810 (Jan. 6, 2000), *reprinted in* [1996-2000 Regs. Preambles] F.E.R.C. Stat. & Regs. ¶ 31,089, at 31,004 (1999), *order on reh'g*, Order No. 2000-A, 65 Fed. Reg. 12,088 (March 8, 2000), *reprinted in* [1996-2000 Regs. Preambles] F.E.R.C. Stat. & Regs. ¶ 31,092 (2000), *appeal dismissed sub nom. Public Utility District No. 1 v. FERC,* 272 F.3d 607 (2001); *Promoting Wholesale Competition Through Open Access Non-Discriminatory Transmission Services by Pub. Utils.; Recovery of Stranded Costs by Pub. Utils. and Transmitting Utils.*, Order No. 888, [1991-1996 Regs. Preambles] F.E.R.C. Stat. & Regs. ¶ 31,036, at 31,682 (1996), *clarified*, 76 F.E.R.C. ¶ 61,009 (1996), *modified*, Order No. 888-A, [1996-2000 Regs. Preambles] F.E.R.C. Stat. & Regs. ¶ 31,048 (1997), *order on reh'g*, Order No. 888-B, 81 F.E.R.C. ¶ 61,248 (1997), *aff'd in part and remanded in part sub nom. TAPS v. FERC*, 225 F.3d 667 (D.C. Cir. 2000), *aff'd on issues reviewed sub nom. New York v. FERC*, 535 U.S. 1 (2002) (No. 00-568), *order on reh'g*, Order No. 888-C, 82 F.E.R.C. ¶ 61,046 (1998).

> Market participants also complain that companies that own both transmission and generation under-invest in transmission because the resulting competitive entry often decreases the value of their generation assets. Much of this problem is directly attributable to the remaining incentives and ability of vertically integrated utilities to exercise transmission market power to protect their own generation market share.

The foregoing factors make it especially important for DOE to take a pro-active role in identifying, designating and addressing NIETBs.

4. What actions should DOE undertake to facilitate and monitor progress towards mitigation of designated NIETBs?

   There is much that the DOE can do to facilitate mitigation of designated bottlenecks. First, it can use its auspices to facilitate transmission siting through federal lands, and urge cooperation among states regarding siting. Second, it can promote the mechanisms outlined in the TAPS White Paper that are intended to reverse the current failure of transmission additions to keep pace with needs and get needed new transmission built promptly at reasonable cost. The White Paper proposes a comprehensive set of structural changes and regulatory actions to remedy this critical problem.

   One successful structural solution is an inclusive "transmission-only" company, open to ownership by all load-serving entities ("LSEs") that depend on the grid. Such a company can grow its business only by investing in transmission and is not burdened by the internal competition for capital that occurs within vertically-integrated investor-owned utilities. Nor is a transmission-only company faced with the disincentive to construct that is present for transmission owners that also own generation. Current examples of inclusive transmission-only companies include the American Transmission Company in Wisconsin and the Vermont Electric Power Company.

   Another successful structural model is the shared or joint system. By agreement, the transmission facilities of two or more LSEs are combined into a single system. Each participating LSE has the obligation to invest in new transmission facilities on a proportionate basis. Successful examples of this approach are in effect in Georgia, Indiana and the Upper Midwest.

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[38] *Proposed Pricing Policy for Efficient Operation and Expansion of Transmission Grid*, Notice of Proposed Policy Statement, Docket No. PL03-1-000, 102 F.E.R.C. ¶ 61,032, P 15 (2003).

> Where open to all LSEs in an area, these models expand sources of capital, reduce regulatory conflicts, and facilitate siting through joint planning, ownership and operation of the transmission grid.

In addition to strongly encouraging inclusive stand-alone transmission companies and shared systems, regulators should take a number of other actions that will facilitate needed grid investment, while minimizing the cost to consumers. They should:

(1) provide for current recovery of reasonable pre-certification expenses and include construction work-in-progress ("CWIP") in rate base to reduce risk and improve cash flow without increasing life-cycle costs to customers;

(2) align transmission costs and revenues through formula rates to eliminate regulatory lag;

(3) set equity returns and require use of capital structures that reflect regulated transmission's low-risk profile;

(4) develop new financing strategies to access investors seeking the stable, annuity-like returns that transmission can provide;

(5) require bidding of the capital requirements for new major improvements (debt and equity return, capital structure, depreciation, and taxes) where a vertically-integrated transmission owner refuses to build without an above-market "incentive" return or rates reflecting accelerated depreciation;

(6) allocate the cost of high voltage, backbone transmission on a regional basis to spread the cost burden and match cost responsibility to the broad regional benefits that will be realized from a robust grid;

(7) require regional, least-cost transmission planning for major additions; and

(8) set performance-based rates that reward reductions in the cost of congestion, responsiveness to customer needs, and inclusive planning and LSE investment rights, while holding transmission owners accountable for poor performance.

These targeted solutions are preferable to, and more effective than, the above-market equity returns and accelerated depreciation rate incentives some investor-owned transmission owners are seeking, or relying on "participant funding" to shift the costs of network additions away from transmission owners. These initiatives will not get needed transmission built on a cost-effective basis, and in some cases will mean that needed transmission is not constructed. Return incentives and accelerated depreciation for ratemaking purposes will burden consumers, adding to state resistance to transmission additions, while injuring competitive generation markets and doing little to address the real risks associated with transmission investment. Participant funding, which depends on individual market participants to fund transmission upgrades, is likely to delay needed construction and create new vested interests in maintaining congestion, instead of efficiently expanding the grid to reliably meet the needs of all users and providing the infrastructure required for vigorously competitive generation markets. For generation competition to work for consumers, the grid must be robust, not marginally adequate.

Respectfully submitted,

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September 20, 2004

20. Comments of American Transmission Company (ATC), 9/20/2004 2:09pm

UNITED STATES OF AMERICA
BEFORE THE
DEPARTMENT OF ENERGY
OFFICE OF ELECTRIC TRANSMISSION AND DISTRIBUTION

Designation of National Interest Electric Transmission Bottlenecks	**)**	**69 Fed. Reg. 43833 (July 22, 2004)**

Comments Of
American Transmission Company LLC

American Transmission Company LLC (ATCLLC) hereby comments on the Notice of Inquiry (NOI) published on July 16, 2004, by the Department of Energy, Office of Electric Transmission and Distribution (DOE), 69 Fed. Reg. 43833 (July 22, 2004).

Executive Summary

As a stand-alone transmission company (SATC), ATCLLC has a strong incentive to invest in needed transmission infrastructure, because providing transmission service to meet customer needs is the sole company focus; as a result, ATCLLC employs and advocates a planning process that is both "bottom-up" to meet local customer needs and "top-down" to meet broader regional needs. With input from its transmission customers and other key stakeholders, including local government officials and state regulators, ATCLLC annually prepares a 10-Year Transmission System Assessment, which identifies anticipated transmission system needs, existing and anticipated constraints, and potential solutions.

Because transmission planning is a critical starting point in ensuring the needs of transmission customers are met, ATCLLC welcomes the contribution the DOE can make in identifying areas in the United States that are experiencing transmission bottlenecks.

ATCLLC believes the most significant contribution the DOE can make is the collection, organization, and broad interpretation of the available data and analysis, in order to identify key areas of the country that are experiencing reliability constraints and/or economic challenges.

ATCLLC believes DOE could contribute to the planning and siting of transmission facilities as follows:

- Review electric data collection efforts of federal agencies' (such as the Energy Information Administration (EIA)) to determine if the appropriate data is being gathered and if the data is being gathered in an efficient, non-duplicative manner.
- Collect transmission system assessments and expansion plans from regional transmission organizations (RTOs), independent system operators (ISOs), SATCs, and other regional transmission entities. For areas of the country without a regional transmission organization, collect Transmission Loading Relief (TLR) data at specific flow gates and the number of transmission service requests denied due to a lack of available transfer capability.
- Collect annual (long-term reliability assessments) and seasonal (summer and winter) assessment reports from North American Electric Reliability Council (NERC) and its regional reliability councils.
- Collect the electric industry analysis being developed at the national laboratories.
- Collect state-level integrated resource plans and transmission line dockets.
- At the request of an applicant, coordinate among federal agencies involved in the siting process for projects that cross federal lands.

- Publish a report that would be issued every two years. The DOE would:
    - Assemble the data and analysis,
    - Interpret the data; and
    - Identify areas of the country that are experiencing or are predicted to experience reliability constraints and/or economic challenges.

In addition, ATCLLC agrees with the Edison Electric Institute and the electric industry in general that any process that is implemented by DOE must balance the need to collect information against the need to disseminate the information, in order to ensure that the security of the data and the any associated analyses is not compromised. The efforts of DOE as it implements any process should be coordinated with the appropriate federal agencies, such as the Department of Homeland Security to insure that the confidentiality of data is maintained and the security of the integrated transmission system network is not compromised by the availability of data.

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Description ATCLLC

ATCLLC is a transmission owner and participant in the Midwest Independent Transmission System Operator, Inc. (Midwest ISO) Regional Transmission Organization. ATCLLC is a stand-alone, for-profit transmission company that owns, maintains and operates

approximately 8,900 miles of transmission lines and related transmission facilities in the States of Wisconsin, Michigan and Illinois.

Comments

ATCLLC believes the most significant contribution the DOE can make is the collection, organization, and interpretation of the data, in order to identify key areas of the country that are experiencing reliability constraints and/or economic challenges. To accomplish this objective, the DOE could take on seven key roles.

Role 1: Review the current federal agencies' electric data collection efforts to determine if the appropriate data is being gathered in an efficient and non-duplicative manner.

The Energy Information Agency of the DOE currently publishes, and makes available to the public, high-quality statistical data that reflect national electric supply and demand activity. The Electric Power Division of the EIA develops statistical surveys that encompass each significant electric supply and demand activity in the United States. The EIA-specific survey forms are listed below, along with forms that the Federal Energy Regulatory Commission (FERC) uses to collect data. EIA uses some of the data collected by FERC for EIA analyses and publications. In addition, a table (in Appendix A) illustrates the required transmission data elements for each of the EIA and FERC surveys and forms[39].

- **EIA-411, "Coordinated Bulk Power Supply Program Report**," collects annual data on actual and projected energy and peak demand; existing and future generating capacity; historical data and projections of capacity, demand, purchases, sales, and scheduled maintenance; bulk power system maps; proposed transmission lines; and bulk transmission power flow cases.
- **EIA-412, "Annual Electric Industry Financial Report,"** collects annual accounting, financial, and operating and newly added transmission lines data from municipal, Federally-owned, and unregulated entities.
- **EIA-417R, "Electric Power Systems Emergency Report,"** collects information on electric power disturbances.
- **EIA-423, "Monthly Cost and Quality of Fuels for Electric Plants Report,"** collects monthly cost and quality of fossil fuels delivered to unregulated entities with a total fossil fueled nameplate generating capacity of 50 megawatts or greater.
- **EIA-767, "Steam-Electric Plant Operation and Design Report,"** collects data on air and water quality from steam-electric plants. Information collected on this form is used to derive emission estimates.
- **EIA-826, "Monthly Electric Sales and Revenue with State Distributions Report,"** collects monthly data on revenue, sales, and number of consumers.
- **EIA-860, "Annual Electric Generator Report,"** collects annual data on existing power plants of electric power producers and their 5-year plans for constructing new units and modifying and retiring units.
- **EIA-861, "Annual Electric Power Industry Report,"** collects annual electric utility data on electric sources and disposition, revenue, sales to ultimate consumers by State,

[39] The information contained in this section and in Appendix A is available at the Energy Information Administration website EIA Electricc Power Forms: Listing of Publicly Available and Confidential Data.

demand side management, non utilities in service area, and State/county for distribution system.

- **EIA-906, "Power Plant Report,"** collects data from electric generators on net generation; energy source consumption; end-of-month stocks of coal and petroleum; and useful thermal output from co-generators for each plant by prime mover and energy source combination.
- **FERC-1, "Annual Report of Major Electric Utilities, Licensees, and Others,"** collects financial data from regulated electric utilities.
- **FERC-423**, **"Monthly Report of Cost and Quality of Fuels for Electric Plants,"** collects data on the cost and quality of fuel used by regulated entities with a total fossil fueled nameplate generating capacity of 50 megawatts or greater.
- **FERC-714, "Annual Electric Control and Planning Area Report,"** collects data on electric utility control and planning areas in the United States.
- **FERC-715, "Annual Transmission Planning and Evaluation Report,"** collects data on reliability criteria and transmission planning assessment practices.

While the current collection of electric-specific data that is being performed by the EIA is extensive, ATCLLC recommends that the DOE, along with electric industry, review the data that is collected to determine which data is necessary in today's changing power market.

Role 2: Collect transmission system assessments and expansion plans from RTOs, ISOs, SATCs, and other regional transmission organizations.

> In Order 2000, FERC required each utility that "owns, operates, or controls facilities for the transmission of electric energy in interstate commerce" participate in an RTO. By requiring utilities to participate in an RTO, FERC believes that it is promoting efficiency in wholesale electricity markets and ensuring that electricity consumers pay the lowest price possible for reliable service.[40]

To date, the Eastern, Midwestern, and Southwestern portions of the "eastern interconnection" of transmission systems of the United States are currently, or will be in the near future, be administered by RTOs or ISOs. In addition, large portions of Texas and California are currently administered by an ISO. The RTO, among its responsibilities, is obligated to develop a long-term transmission expansion plan that identifies the constraints on the transmission system and their likely solutions for the transmission system administered by the RTO. Given the regional planning processes currently in place, any DOE actions should enhance the planning efforts and not be duplicative or potentially undermine the extensive stakeholder-based processes that already exist. DOE could collect and organize the RTO-specific transmission expansion plans and then interpret the information in the expansion plans in a broad, multi-regional context to better understand the already identified bottlenecks or constraints.

For most of the RTOs and ISOs, ATCLLC believes that there is already significant information available regarding congestion costs and current transmission constraints. This information, however, is not organized or readily available to the public or Market Participants. The DOE could collect the congestion cost and locational marginal price data, which can be used to assess the cost to the customer that results from the bottlenecks.

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40 *Order No. 2000* at 31,183-85, page 1.

For areas of the transmission system that are not administered by an RTO or ISO, or areas that do not have an organized regional transmission planning process, DOE may have a greater role in terms of collecting and evaluating data. For example, DOE could collect TLR data at specific flow gates, as well as the number of transmission service requests denied due to a lack of available transfer capability.

Role 3: Collect annual and seasonal assessment reports from NERC and its regional reliability councils.

The NERC and its ten regional reliability councils were established in 1968 to ensure that the bulk electric system in North America is reliable and secure. Since NERC is operated as a voluntary organization, it has relied on reciprocity, peer review, and the mutual self-interest of all involved, in order to achieve its reliability and security goals.

NERC issues regular assessments of the reliability of North American bulk electric systems.[41]

- **Ten-Year Reliability Assessments** - NERC prepares an annual assessment of the adequacy of the bulk electric system in the United States and Canada for a ten-year period. The report assesses projected electricity supply and demand, reviews transmission system adequacy, and discusses key issues and trends that could affect reliability.
- **Summer and Winter Assessments** - These annual reports assess the adequacy of electricity supplies in the United States and Canada for the upcoming summer and winter peak demand periods.
- **Special Assessments** - Special reliability assessments are conducted on a regional, interregional, or interconnection-wide basis as conditions warrant.

The DOE could collect and review the reports of NERC and its regional reliability councils and the data and analyses that support the reports. DOE could then compare the scope of data being used by NERC with that being collected by the EIA. In partnership with NERC, the data collection efforts by the EIA and the data needs of NERC could be coordinated.

Role 4: Collect the electric industry analysis being developed at the national laboratories.

Given the extensive network of national laboratories and technology centers that employ more than 30,000 scientists and engineers, DOE could catalog the electric research that is underway and suggest other possible research based on the data and analyses efforts identified in the NOI. The cataloged findings of the work efforts and analyses related to electric supply could be integrated into the broad picture of the national electric supply.

Role 5: Collect state-level integrated resource plans and transmission line dockets.

Many state public service or utility commissions in the United States receive utility-prepared projections on anticipated growth in electric demand, new transmission and generation construction anticipated, the need to purchase power from sources outside the state, and the type of fuel to used by the new generation plants. This information is often included in either a

[41] The information contained in this section is available at the NERC website Reliability Assessment Subcommittee Reports.

long-term integrated resource plan or strategic energy assessment, which is the case with ATCLLC. The purpose of these plans and assessments is to evaluate the adequacy and reliability of a state's current and future electrical supply given the current and projected needs of its electric customers.

The DOE could collect and review each of these plans and assessments, which would provide insight into what the states believes are the transmission constraints or "bottlenecks" in meeting the needs of each state's retail electric customers.

Role 6: Coordinate among federal agencies involved in the siting process for projects that cross federal lands at the request of an applicant.

The federal government owns about 650 million acres, which most of the land is in the western United States and Alaska. Four federal land management agencies are responsible for managing about 95 percent of this federally owned land, while the Department of Defense manages most of the remainder. The four agencies include:

- The Department of Agriculture's Forest Service,
- The Department of the Interior's Bureau of Land Management (BLM),
- Fish and Wildlife Service (FWS); and
- National Park Service (NPS).

Over the past 30 years, the Congress has enacted a number of laws to protect natural resources on federal, state, and private lands. The laws affect what can be done on these lands in connection with the air, water, soils, plants, and animals, and what uses can be made of federal lands. The land managed by the FWS and NPS are generally considered to be restricted for conservation purposes and includes land set aside for national parks, national wildlife refuges, wilderness and wilderness study areas, and wild and scenic rivers as well as areas of critical environmental concern. The Forest Service and BLM, however, view their role as land managers and set goals to:

- Meet the present and future needs of the American people,
- Sustain outputs of renewable resources; and
- Provide for other uses.[42]

The DOE could act as the lead federal agency to coordinate among the four federal agencies, in order to determine how federal land may be used and made available for electric transmission lines to meet the electric needs of the nation. Federal streamlining initiatives would appear to apply more appropriately to large tracts of federal land in the western United States. In Wisconsin and Michigan, ATCLLC has worked collaboratively with federal agencies in the Midwest to identify and permit rights of way for electric transmission lines and believes this approach works more effectively for smaller federal land holdings. Because siting a transmission line often involves not only federal land, but state, county, local and private land, as well, ATCLLC believes it would be desirable for a federal land use and permitting process runs in parallel with the state siting and permitting process, rather than sequentially. Even though this change may be outside the scope of this proceeding, ATCLLC believes the concept is worth pursuing.

[42] United States General Accounting Office, FEDERAL LANDS, January 1995.

Role7: Publish a report that would identify areas of the country that are experiencing reliability constraints and/or economic challenges and would issue the report every two years.

ATCLLC also believes that the DOE could assemble all the different data and all the wide-ranging electric-based analysis and research that it has collected and organized. Using a META-styled analysis, a process that combines results of independent analyses, the DOE could interpret the data and the analysis and use that interpretation to identify areas of the country that are experiencing reliability constraints and/or economic challenges. This over-all analysis would likely be helpful in carrying out the task of assuring a reliable transmission system for all users, which is the fundamental responsibility of the utilities that own, operate and construct the elements of the transmission system upon which the nation relies for reliable energy.

Conclusion

DOE can play an important role in:

- Educating the public on areas of the country that face significant electric system reliability and/or economic challenges,
- Discussing the causes of these challenges,
- Coordinating and facilitating projects on federally-controlled lands; and
- Focusing attention on proposed solutions to these constraints.

The DOE effort will likely add the greatest value to those areas of the county that lack an RTO or other regional planning body.A fine balance between information collection and information dissemination must be maintained to ensure that the security of the data and the analysis is not compromised.

Respectfully submitted this 20th of September, 2004.

American Transmission Company LLC

By its corporate manager, ATC Management Inc.

/s/ Julie Voeck

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Appendix A

Survey of Transmission Data Element List													
Data Categories	Data Collection Forms												
	EIA-411	EIA-417R	EIA-412	EIA-906	EIA-767	EIA-826	EIA-860	EIA-861	EIA-423	FERC-1	FERC 423	FERC 714	FERC 715
Ownership	X	--	X	--	--	--	--	X	--	X	--	--	--
Control Area Identification	--	X	--	--	--	--	--	X	--	--	--	X	--
Transmission Line Design	X	--	X	--	--	--	--	--	--	X	--	X	--
Transmission Miles	X	--	X	--	--	--	--	--	--	X	--	--	--
System Maps and Diagrams	X	--	--	--	--	--	--	--	--	--	--	--	X
Lines Added	X	--	X	--	--	--	--	--	--	X	--	--	--
Transmission Planning	X	--	--	--	--	--	--	--	--	--	--	--	X
Points of Interconnection	--	--	--	--	--	--	--	--	--	--	--	X	--
Energy Flows (Proposed Power Flow Cases)	X	--	--	--	--	--	--	--	--	--	--	X	X
Constraints (Proposed Power Flow Cases)	X	--	--	--	--	--	--	--	--	--	--	--	--
Wheeling	--	--	X	--	--	--	--	X	--	X	--	--	--
Generation Entering System	--	--	--	--	--	--	--	--	--	--	--	X	--
System Native Load (NERC region)	X	--	--	--	--	--	--	--	--	--	--	X	--
Point to Point Delivery	--	--	--	--	--	--	--	--	--	X	--	--	--
Peak Flows	--	--	--	--	--	--	--	--	--	--	--	X	--
System Lamda	--	--	--	--	--	--	--	--	--	--	--	X	--
Capital Costs of Building Lines	--	--	X	--	--	--	--	--	--	X	--	--	--
O & M Costs	--	--	X	--	--	--	--	--	--	X	--	--	--
Depreciation on Transmission Assets	--	--	--	--	--	--	--	--	--	X	--	--	--
Reliability (Outages)	--	X	--	--	--	--	--	--	--	--	--	--	--

Source: EIA website

21. Comments of Exelon Corporation, 9/20/2004 2:55pm

Exelon

September 20, 2004

BY EMAIL

William Parks
Acting Director, Office of Electric
Transmission and Distribution
U.S. Department of Energy
Forrestal Building, Room 6H050
1000 Independence Avenue, SW
Washington, D.C. 20585

Dear Mr. Parks:

Exelon Corporation ("Exelon"), appreciates the opportunity to submit comments in response to the July 22, 2004 Department of Energy ("DOE") Notice of Inquiry on electric transmission bottlenecks.[43] This inquiry was initiated to aid DOE in establishing a process for identifying "national interest transmission bottlenecks" ("NIETBs"). We applaud the efforts of DOE and appreciate the continued action that fulfills the broad range of recommendations made by the National Transmission Grid Study (NTGS) and the Electricity Advisory Board (EAB) Report in 2002. This inquiry to establish a process for identifying NIETBs is both needed and timely. Exelon participated in the development of the EAB Report and we view this new initiative as a positive step in support of several critical industry goals. Exelon writes to support and expand upon the comments submitted by the Edison Electric Institute ("EEI").

As noted in EEI's comments, DOE should consider NIETB designation based on requests made by industry participants and other groups with significant responsibilities for conducting electric transmission planning. Otherwise, DOE should not conduct independent assessments, including detailed technical modeling and planning, or provide NIETB designation in the absence of a specific request. The most effective role for DOE is to support completing

[43] 69 Fed. Reg. 43833 (July 22, 2004).

transmission projects that face unreasonable delay due to complex siting and/or permitting issues. Exelon believes that developing a process by which an industry participant could formally request DOE assistance in completing critical transmission projects would be beneficial. Such a process would allow DOE to focus its resources on key projects that are subject to delays, and it would also be a powerful tool for industry participants to gather broader support for projects necessary to improve the transmission grid.

Exelon encourages DOE to establish a process that recognizes groups that conduct organized transmission planning, including a Regional Transmission Organization ("RTO"), Independent System Operator ("ISO") or NERC Regional Reliability Council. These groups utilize all the necessary tools, expertise and experience to assess their respective regions' transmission planning needs and problems. In addition, they have studied and analyzed their systems over a long period of time and know where their transmission systems are most constrained. Therefore, these entities are most capable of efficiently and effectively identifying and designating NIETBs on their respective systems. Any separate assessment by DOE regarding an NIETB would unnecessarily duplicate the studies already conducted.

As noted in DOE's National Transmission Grid Study ("NTGS"), "[s]uccessfully addressing transmission bottlenecks requires careful analysis and consideration of their impacts on both market operations and system reliability, as well as analysis of the costs of transmission and non transmission alternatives. In other words, removing bottlenecks is not simply a matter of finding 'congested' transmission paths and then reinforcing existing transmission facilities along those paths or constructing new facilities." NTGS, p. 20 (May, 2002). To be economically efficient and to best promote grid reliability, solutions must be developed with the input of State public service commissions and stakeholders in the relevant regions. Most importantly, those solutions must include an appropriate allocation of costs to ensure that no group of end-use customers is unduly harmed.

In summation, the most effective approach for DOE is to work with industry participants and other groups with significant responsibilities for conducting electric transmission planning to establish procedures for initiating DOE involvement in siting and permitting of critical transmission projects that face unreasonable delays.

Sincerely,

/s/Steven T. Naumann
Steven T. Naumann
Vice President, Wholesale Market Development

22. Comments of Sempra Energy, 9/20/2004 3:10pm

Dan King
Senior Regulatory Counsel
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DAKing@Sempra.com

September 20, 2004

Via electronic mail

Office of Electric Transmission and Distribution, TD-1
Attention: Transmission Bottleneck Comments
United States Department of Energy
Forrestal Building, Room 6H050
1000 Independence Ave, SW
Washington, D.C. 20585

Re: Designation of National Interest Electric Transmission Bottlenecks

Dear Sir or Madam:

Sempra Energy Resources (Sempra Resources) submits these comments pursuant to the Notice published in the Federal Register on July 22, 2004 by the Department of Energy (DOE or Department) Office of Electric Transmission and Distribution. *Designation of National Interest Electric Transmission Bottlenecks,* 69 F.R. 43833 (July 22, 2004). The Department has requested comments with respect to the identification, designation and possible mitigation of National Interest Electric Transmission Bottlenecks (NIETBs).

I. Correspondence and Communications

Correspondence and communications concerning these comments should be directed to:

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II. Description of Sempra Global

Sempra Resources is a corporation organized under the laws of the State of California, and is a wholly owned subsidiary of Sempra Energy through Sempra Energy Global Enterprises. Sempra Resources acquires, develops and operates power plants and energy infrastructure for the competitive market.

III. Discussion

In the discussion that follows, Sempra Resources responds to the specific questions posed in the Notice.

1. Are the Electricity Advisory Board's recommended criteria for designation of National Interest Electric Transmission Bottlenecks appropriate and sufficient? If not, what should they be? For example, should DOE also consider disaster recovery, economic development, and the enhancement of the ability to deal with market and system contingencies in designating NIETBs?

The Electricty Advisory Board (EAB) Criteria No. 3 provides for an NIETB designation if:

> *The bottleneck creates the risk of significant consumer cost increases in electricity markets that could have serious consequences on the national or a broad regional economy or risks significant consumer cost increases over an area or region*

EAB Criteria No. 3 appears to be crafted broadly enough to capture most of the significant bottlenecks of concern to stakeholders. Sempra Resources assumes that Criteria No. 3 would include consideration of constrained interfaces between markets and/or market subregions, as well as international transmission projects crossing into Mexico or Canada. If reasonably priced supply is unable to reach load centers due to constrained interfaces, then clearly the constraint would have "serious consequences on the . . . regional economy" and could result in "significant consumer cost increases over an area or region." Sempra Resources requests that DOE confirm that it would interpret Criteria No. 3 in such a manner. Alternatively,

Sempra Resources requests that DOE adopt a specific criterion that would include as NIETBs the interfaces between markets and/or market subregions.

Similarly, the Department should consider whether to add a criterion that specifically takes into account a region's access to renewables. Enhanced access to renewables would have a beneficial effect on a region's economy, and it could impact national security (albeit in the long-term sense) by lessening our Nation's dependence on foreign sources of energy.

2. What should be the role of transmission grid operators, utilities, other market participants, regional entities, States, Federal agencies, Native American tribes and others in the process of identifying, designating, and addressing NIETBs? For example, should a NIETB be designated only if some entity applies to DOE for designation? Should DOE accept applications only from entities from regions that have an extant regional transmission (or resource) plan? Should DOE be able to designate a NIETB even if no entity asks DOE to do so?

In order to provide for consideration of NIETBs from the broadest possible pool of interested parties, the right to submit an application for NIETB designation should not be limited only to those entities from regions that have existing regional transmission/resource plans. By opening up the application process to a wider variety of stakeholders, DOE will be able to consider projects that are viewed as important by a wider array of market participants. At that point, by applying the NIETB criteria, DOE will ensure that only the appropriate projects ultimately receive the NIETB designation.

If the appropriate criteria are met, DOE should be able to designate a NIETB even if no entity requests that DOE do so. It is important for the DOE to be able to make such a designation independently, since local interests may benefit from seeing that a particular path remains constrained at the expense of the broader national interest.

3. How might DOE identify bottlenecks in regions where much pertinent data are not available, in contrast to regions where transmission expansion plans have been developed and made public?

To the extent resources permit, DOE should actively participate in other agency proceedings where this data is being sought by market participants. For example, in assessing whether an entity may sell electricity at market-based rates, the Federal Energy Regulatory Commission (FERC) considers whether transmission market power exists. In some regions of the Southeast for example, this problem is particularly acute, and FERC has initiated proceedings where these issues are being addressed. The participation by DOE as well as FERC staff in these

proceedings would continue to ensure that broader regional and national interests are represented.

4. What actions should DOE undertake to facilitate and monitor progress towards mitigation of designated NIETBs?

DOE should ensure that its Staff is able to actively monitor and, where necessary, directly participate in, regional transmission studies such as the Rocky Mountain Area Transmission Study (RMATS), the California ISO's Southwest Transmission Expansion Plan (STEP), and studies being undertaken by the Northwest Transmission Assessment Committee. These efforts will provide the Department with information that will assist in identifying, designating, and addressing NIETBs. Moreover, DOE Staff participation in efforts such as the RMATS and STEP processes would help to ensure that projects of particular importance do not stall in the sometimes-convoluted regional study processes. Finally, while it may be impractical for DOE to post ongoing updates regarding the progress of all the various studies being undertaken at a given time, the DOE at a minimum could serve as an information clearinghouse by providing links on its website to the sponsors of the studies in order to allow interested parties to monitor the processes as appropriate.

IV. Conclusion

Sempra Resources respectfully requests that full consideration be given to the comments above. Sempra Resources appreciates the opportunity to participate in this process and looks forward to working with the Department to address and resolve the issues raised by this proceeding.

Respectfully submitted,

_/s/ Daniel A. King_____
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San Diego, California 92101
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On behalf of Sempra Energy Resources

23. Comments of The Valley Group, Inc, 9/20/2004 3:11pm

Office of Electric Transmission and Distribution, TD-1
Attention: Transmission Bottleneck Comments
U.S. Department of Energy
Forrestal Building
Room 6H050
1000 Independence Avenue SW
Washington, DC 20585

E-mail: **bottleneck.comments@hq.doe.gov**

Comments regarding National Interest Electric Transmission Bottlenecks

September 20, 2004

Our comments address mainly Question 4 of the inquiry.

The electric power transmission system of the United States is seriously deficient. Experts generally agree that fixing this system to an adequate level could take many years and cost of tens of billions of dollars. But the root causes of the deficiency can be solved in a relatively short time and at a much more reasonable cost.

The root causes of the present problems are:

- A substantially outdated reliability philosophy; and
- Inadequate real time monitoring of the transmission grid.

Historical Background

After the 1965 Eastern Blackout, the network owners and operators investigated what could be done by electric system operators, and in what timeframe, if a system disturbance occurred. It was then decided that operators required 15 minutes to react to an event. This was in an era where operators were still watching analog meters and communicating to each other via telephones and teletypes. Thus, 15 minutes became the almost universally accepted timeframe for emergency actions.

The National Electric Regulatory Commission (NERC) devised a system operations philosophy by which the transmission system was supposed to be operated to be able to withstand the largest credible single "contingency" - the loss of a single line, substation, generator, etc. - after which the system had to be restored to a contingency-proof state within the 15-minute interval. This philosophy is still applied, with modifications, in most of the United States. Importantly, it is also assumed that all contingencies are equal. But all contingencies are not equal, as explained in the following.

All contingencies are not equal

The implicit NERC assumption, followed by all reliability council regions, is that all contingencies are equal. This assumption is not justified. There are different kinds of contingencies. A contingency event can result in a voltage event (a voltage declines below a safe level), a stability event (the electric system enters into an unstable oscillation), or a thermal event (transmission lines, or other circuit elements such as transformers, heat to an unsafe temperature).

A voltage or stability event can happen at any moment following a contingency event. For example, in 1996, it took only 27 seconds after a voltage contingency in Portland, OR for the blackout on the West Coast to travel as far as El Paso, TX. Thus, for a voltage or stability event, the 15 minute time assumption is clearly a severe underestimate, and represents, at best, a disguised probabilistic assumption. Voltage and stability events are deterministic and uncontrollable, and must be avoided at all times, even at high costs.

On the other hand, thermal events are probabilistic. A thermal event - an unsafe temperature of a transmission line or a substation component - occurs only if the line current is high at the same time when cooling conditions are poor and if the condition persists for long enough for the conductor and/or other circuit elements to heat to a critical temperature. This heating, depending on the size and characteristics of the line, takes approximately 15-60 minutes. Thus, not surprisingly, most assumed thermal overload events do not happen in reality. Whereas, if the operators have real time information of the actual state of the lines, they can make proper corrective actions and avoid premature unnecessary actions.

An analysis of the events of the 2003 blackout indicates that thermal overload events started in Indiana-Ohio area several hours before the thermal cascade accelerated to the point of system failure by rapid voltage collapse. Proper monitoring of the state of the system would have indicated that the thermal conditions were unfavorable in a wide area and would have guided operators to more correct actions. [44]

The consequences of present operating practices

Because all contingencies are considered equal under present operating practices, they overestimate the consequences of thermal events and greatly underestimate the consequences of voltage and stability events. Thus, voltage and stability events are allowed to persist for too long, creating unstable situations, while thermal events may result in unnecessary, premature operator reactions that can weaken the system and instigate system collapses.

Because transmission lines are dispatched based on worst assumed contingency events, under worst possible thermal contingencies, the vast majority of transmission facilities are utilized only to a fraction of their full thermal capability. For example, a path consisting of two parallel and equal circuits cannot be loaded to more than 50% of its capability and a path consisting of three equal circuits to no more than 2/3 of its theoretical capability. A practical example is California's Path 15. This multi-circuit path is contingency limited by thermal capability of two 230 kV lines. Increasing the capability of each of these two lines by 10% (35 MW each) would increase the contingency capability of the whole path by over 400 MW.

There are no generally agreed facility rating standards

[44] "Fried Wire?", Tapani Seppa: Public Utilities Fortnightly, Dec. 2003, pp.39-41

Transmission facility ratings are generally determined by individual transmission owners. In most parts of U.S., the circuit capability assumptions of even neighboring utilities can differ substantially. For example, in Ohio, the capability of a 345 kV transmission line with identical construction and identical maximum operating temperature could vary from 1,150 MW to 1,670 MW, because of different weather assumptions between transmission owners. This is an area where development of a uniform framework of ratings methodology should be mandated. This has been recognized by the U.S.-Canada Power System Outage Task Force in its Recommendation 27. At the same time, this need has been also recognized by IEEE and CIGRE, which have established a Joint Task Force titled: "Selection of Weather Parameters for Transmission Line Ratings".

The fastest available solution – Transmission line monitoring in real time

The solution which we recommend for decreasing transmission congestion is real time thermal monitoring, also called dynamic line rating. Instead of using assumptions of the thermal state of the lines, these variables can be accurate monitored and displayed to the utility operators in real time. Typically, operators find transfer capabilities more than 20% in excess of their assumptions. Infrequently, they detect cases where their "book" assumptions are overly aggressive. This means that, most of the time, they can utilize the additional capability of the transmission lines with deterministic safety, while being warned in advance of unsafe situations. This has been also recognized by the Task Force in its Recommendation 27. [45]

The key advantage of the real time thermal monitoring is that it allows all the benefits of probabilistic planning and dispatch with deterministic operational safety and reliability. Systems are now dispatched assuming the worst-case contingency events - a loss of generator, a loss of line or a transformer - which the system must withstand. These events are very rare, in many cases, occurring only once a year or once in a decade. If the system operator has the capability of monitoring the lines and has the capability of initiating remedial actions during a contingency event, he can typically dispatch the system at a 15-20% higher capability. This, by itself, would almost negate the lack of transmission construction in the past two decades.

The cost? The Valley Group, Inc. estimates that there are about 1,000-1,500 thermally limiting, economically significant lines in the U.S. Equipping all of them with transmission line monitors would cost an estimated $150-250 million, which is less than the cost of one typical transmission line. The real time data could be transmitted not only to the utilities' operators, but it could also become an invaluable data base for future assessment of the capabilities of U.S. transmission system and a guide to the costs and benefits of future transmission improvements.

[45] " Further, the appropriate use of dynamic line ratings needs to be included in the review because adjusting a line's rating according to changes in ambient conditions may enable the line to carry a larger load while still meeting safety requirements."

A large number of utilities are already applying this technology on more than 100 lines in United States and abroad. So far, the solutions have been usually single-line based, mainly to allow utilities to defer transmission line upgrades. On the other hand, some utilities are on the verge of much more broad utilization of these technologies, especially regarding contingency management.

One of the remaining deterrents for broad and beneficial application of real time ratings systems is the diversity of rating practices within ISOs. Another one is that ISOs are generally most motivated about system reliability and to a much lesser extent motivated by increases of transmission capability. Only one ISO (ERCOT) has fully recognized the benefits of real time ratings. A third problem is the difficulty in translating the net benefits of constraint mitigation into the specific benefits of the stakeholders.

What could DOE do to facilitate this development?

1. Support the Blackout Task Force Recommendation 27 and the parallel effort by IEEE Task Force on Selection of Weather Parameters for Transmission Line Ratings. Uniform rating practices would simplify and rationalize the definition and management of transmission bottlenecks.

2. Develop a procedure by which real time rating is considered as a standard alternative for addressing the mitigation of NIETBs.

3. Facilitate the development of standardized methodology and software for delivering real time (dynamic) line ratings for the different affected parties.

4. Fund a study to identify the areas that could benefit most from area-wide dynamic ratings and quantify the net economic benefits.

5. Consider the development of a national information system on real time line ratings, to be shared by all transmission network users and operators.

Comments to the Designation of National Interest Transmission Bottlenecks (NIETB) Notice of Inquiry

Tapani O. Seppa

President, The Valley Group, Inc.

U.S. Representative in CIGRE SC B2 ("Overhead Lines")

Chairman, IEEE/CIGRE TF "Selection of Weather Parameters for Transmission Line Ratings"

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24. Comments of National Grid USA, 9/20/2004 3:16pm

UNITED STATES OF AMERICA
BEFORE THE
DEPARTMENT OF ENERGY

Designation of National Interest Electric Transmission bottlenecks (NIETB) **69 Fed. Reg. 43833 (July 22, 2004)**

Comments of National Grid USA to the Office of Electric Transmission and Distribution, Regarding the Notice of Inquiry (NOI) published on July 16, 2004, on the Designation of National Interest Electric Transmission Bottlenecks (NIETB).

Correspondence
Communications and correspondence regarding this filing should be directed to the following:

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Introduction

National Grid USA is an investor owned utility whose core business is the ownership, development, operation and maintenance of energy delivery networks in electricity and gas. In the United States, National Grid owns and operates electric transmission and distribution systems in New England and New York, as well as a gas distribution network in New York. In addition, National Grid is the managing member for Grid America, an independent transmission company within the Midwest Independent System Operator region. In the UK, National Grid owns and operates both the high voltage electric transmission system in England and Wales, and the gas transmission and distribution networks throughout Great Britain.

Comments to the Designation of National Interest Transmission Bottlenecks (NIETB) Notice of Inquiry

National Grid USA strongly supports the Department of Energy's (DOE) efforts to establish clear criteria to identify which of the many electric transmission bottlenecks[46] in the United States merit a "national interest" designation. Numerous reports published by the Department of Energy, industry leaders and consulting firms have concluded that the electric transmission infrastructure needs upgrades, expansion and development in order to reliably meet the nation's need for affordable electricity. The National Transmission Grid Study ("Grid Study") established the fundamental premise that "when the consequences of bottlenecks become large, it is in the national interest to insure that they are addressed in a timely fashion." S*ee* Grid Study at page 10. The Federal government's identification of critical bottlenecks can provide the first step in encouraging the activities and investments needed to remove those bottlenecks and create a more reliable infrastructure that can provide greater access to energy markets and reasonably priced electricity.

In general, most of the electric transmission bottlenecks are known by the transmission owners, utilities, state commissions, regional transmission organizations, independent system operators, coops, municipalities or those participating in the wholesale electric market. Factors creating bottlenecks range from siting problems, lack of regional planning or ineffective regional planning, to policies that impede solutions or provide the wrong types of incentives. National Grid sees DOE's role as one of choosing from among those electric transmission bottlenecks that merit national attention. Such national attention to critical bottlenecks should help to marshal the resources needed to eliminate the bottlenecks in a timely manner.

However, assigning to DOE the responsibility for pro-actively planning the nation's entire electric transmission system would be a duplication of regional and local planning efforts. Local and regional stakeholders are generally better acquainted with local and regional system needs, and are thus better suited to more effectively identify problems in the first instance. Therefore, DOE need not take on a national electric transmission system planning and modeling role.

1. *Are the Electricity Advisory Board's recommended criteria for designation of National Interest Electric Transmission Bottlenecks appropriate and sufficient? If not what should they be?*

[46] The Electric Advisory Board's *Transmission Grid solutions Report,* issued September 2002, cites bottlenecks as: 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 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.

Comments to the Designation of National Interest Transmission Bottlenecks (NIETB) Notice of Inquiry

National Grid USA supports the criteria recommended by the Energy Advisory Board and expands on its perspectives as follows.

National Grid agrees that the risk of widespread grid reliability problems or major customer load centers being without adequate electricity supplies are appropriate criteria by which to identify a NIETB. Electricity is essential for a healthy economy, and the lack of reliable electricity has not only longer-term economic consequences but also significant immediate health and safety implications

With respect to the third suggested criteria -- economic risks in electricity markets – the criterion is both appropriate and important. In such transmission-constrained areas, access to lower cost electricity, and the opportunity for the introduction of more competition to promote lower rates, is critical to economic health. .

Often times, reliability risks and economic risks are strongly interactive and difficult to separate. For example, the lack of transmission into a load pocket could require an old expensive generator to be provided a reliability must run contract to maintain reliability on the electric transmission or distribution system. However, this economic cost will become a reliability risk at the point that the generator reaches the end of its life and is not able to continue in operation. More over, maintaining less efficient generation for electric transmission reliability sake can be harmful to the environment. Transmission expansion may provide access to electricity generated from more efficient generation sources and multiple fuel sources, such as wind, biomass or coal. Access to diverse generation sources provides for greater energy price stability.

Given that economic constraints are closely linked to reliability and the health of local and regional economies, National Grid USA supports the inclusion of economic criteria in the NIETB identification process.

2. *What should be the role of transmission grid operators, utilities, other market participants, regional entities, States, Federal agencies, Native American tribes and others in the process of identifying, designating and addressing NIETBs? Should a NIETB be designated only if some entity applies to DOE for designation? Should DOE accept applications only from entities from regions that have an extant regional transmission (or resource) plan? Should DOE be able to designate a NIETB even if no entity asks DOE to do so?*

All stakeholders should be provided the opportunity to submit applications to DOE requesting that a certain area within the nation's electric transmission system be identified as a NIETB. Stakeholders will know not only that a bottleneck exists, but also what the potential solutions for the bottleneck will be. Implementation of known solutions may be stymied, however, by difficulties facing transmission owners and stakeholders in navigating the various applicable state, local and Federal regulations, laws, ordinances or permitting processes.

Additionally, other stakeholders may attempt to block or delay projects because their individual interests may not align with regional or national interests and they may stand to benefit economically from the persistence of bottlenecks. Designation of a transmission bottleneck as an NIETB by the Department of Energy may provide assistance to the stakeholders to more expeditiously come to an agreement and deliver solutions to remove critical bottlenecks.

Applicants should not be limited to those regions that have a regional transmission or resource plan. Transmission bottlenecks exist both within and between regions and states. Regions can be identified broadly as North American Electric Reliability Council (NERC) regions, areas within an RTO or ISO, or simply as a sub-grouping of states or parts of several states where there is a natural exchange of commerce and sharing of infrastructure. Not all areas of the United States have an electric transmission planning process. But even in those areas, transmission owners and stakeholders will have a clear idea of where transmission bottlenecks exist. DOE need not and should not duplicate planning efforts that are already underway in a region.

3. *How might DOE identify bottlenecks in regions where much pertinent data are not available, in contrast to regions where transmission expansion plans have been developed and made public?*

Assuming that any stakeholder may apply to the DOE to designate an NIETB, it will be to the stakeholders' benefit to provide for the Department's review the data necessary to support such a designation. The application process should require the submission of supporting data if it is not readily available in a regional transmission expansion plan (RTEP).

Alternatively, in regions where there is not an existing RTEP or regional planning process, the DOE could request and analyze appropriate data pursuant to its existing authority under the Department of Energy Organization Act, Pub. L. No. 95-91, 42 U.S.C. §§ 7111 *et seq.* *See, e.g.,* section 205 of the DOE Organization Act, 42 U.S.C. § 7135(a)(2). Data collected pursuant to these existing authorities could be helpful in determining the extent, nature and cause of electric transmission bottlenecks.

4. *What actions should DOE undertake to facilitate and monitor progress towards mitigation of designated NIETBs*?

Prior to designating any transmission path as an NIETB, DOE must establish criteria and metrics to form the basis for such a designation. When potential remedies for an NIETB are implemented, these same metrics can be used to measure the effectiveness of the solution applied. If the remedy is construction, DOE may wish to consider establishing a liaison with those responsible for the construction to ensure that key milestones are met, that outside forces are not unduly impacting construction efforts, and operational procedures and coordination are established among impacted parties prior to implementing the solution. The Department could

update the list of NIETBs periodically to assess the progress made in resolving previously designated bottlenecks.

With respect to the actions that DOE may take to facilitate resolution of NIETB, DOE may be in a position to use its good offices to facilitate agreements among stakeholders aimed at resolving specific bottlenecks. More generally, DOE should exercise continuing leadership in calling national attention to the economic impacts of transmission congestion and the pressing need for improvements in the transmission system.

Questions on how the costs incurred in resolving NIETBs are allocated could ultimately determine whether a bottleneck is removed or not. DOE is in a position to work with the Federal Energy Regulatory Commission (FERC) to assure the adoption and implementation of policies that will facilitate needed grid upgrades. DOE should also consider exercising its authority to make recommendations to the FERC on other ways in which the Commission can contribute to the resolution of NIETB.

Finally, National Grid USA urges the Department to continue to press for legislative solutions to assure that the nation has a robust, reliable and secure power transmission grid for the 21st Century.

25. Comments of Tennessee Valley Authority, 9/20/2004 3:19pm

September 17, 2004

Office of Electric Transmission and Distribution, TD–1,
Attention: Transmission Bottleneck Comments
U.S. Department of Energy
Forrestal Building, Room 6H050, 1000 Independence Avenue, SW.
Washington, DC 20585

Thank you for the opportunity to provide input on DOE's efforts related to designating and dealing with National Interest Electric Transmission Bottlenecks (NIETB). It is encouraging to see open and candid dialog among government decision-makers and industry participants when dealing with issues related to the reliability of our electric grid.

As we all were reminded on August 14, 2003, our entire national economy is placed in jeopardy when the reliability of the transmission grid is compromised. TVA is prepared to work cooperatively with DOE and other industry participants to ensure grid reliability and a continued reliable supply of low-cost electric power for the citizens of the U.S.

DOE has identified and requested comments on 3 criteria for designating NIETB:

1. The bottleneck **jeopardizes national security**;
2. The bottleneck **creates a risk of widespread grid reliability problems** or the likelihood that major customer **load centers will be without adequate electricity** supplies; or
3. The bottleneck **creates the risk of significant consumer cost increases** in electricity markets that could have serious consequences on the national or a broad regional economy or risks significant consumer cost increases over an area or region.

Our comments on the three criteria and DOE's specific questions follow:

1. **Are the Electricity Advisory Board's recommended criteria for designation of National Interest Electric Transmission Bottlenecks appropriate and sufficient? If not, what should they be? For example, should DOE also consider disaster recovery, economic development, and the enhancement of the ability to deal with market and system contingencies in designating NIETBs?**

Response: If DOE chooses to pursue this initiative, we believe that it would be most constructive to focus its attention on the first criterion, i.e., primarily related to national security/grid security needs regardless of commercial significance. We would define transmission problems with potential to affect national security as those where there is insufficient redundancy to withstand a targeted attack rather than insufficient redundancy to

withstand random equipment outages, etc. The industry has traditionally planned well for the latter, but has only recently begun addressing the kind of failures that could be brought about through a coordinated, intelligent attack. In many respects, we envision this as an analysis of the system's vulnerability, not its reliability. We suspect that the weak points that leave the system vulnerable to attack may be different from the congested interfaces that are commercially significant.

We believe that commercially significant congestion problems will tend to self-mitigate by market forces or can be easily addressed in the traditional transmission planning process by transmission providers, and/or through studies undertaken by NERC, FERC, the States, and other research entities such as CERA. The points on the grid that are vulnerable from a national security standpoint but have minimal commercial significance, however, may require government attention to identify and mitigate the exposure in a timely manner. These are the areas we believe DOE's expertise would have the greatest benefit.

2. **What should be the role of transmission grid operators, utilities, other market participants, regional entities, States, Federal agencies, Native American tribes and others in the process of identifying, designating, and addressing NIETBs? For example, should a NIETB be designated only if some entity applies to DOE for designation? Should DOE accept applications only from entities from regions that have an extant regional transmission (or resource) plan? Should DOE be able to designate a NIETB even if no entity asks DOE to do so?**

Response: If, as we have suggested above, DOE chooses to focus its attention on national security/grid security issues, two things become evident:

1) Satisfactory resolution will require cooperation and participation by all transmission owners and operators and we would recommend participation by other market participants as well so that initiatives undertaken can be understood in the market.
2) Because the focus of the effort is on security vulnerabilities, designation of critical facilities should be unrelated to ownership, participation, or any other factors. If a facility is deemed critical, the focus must be on eliminating vulnerabilities regardless of ownership or control.

3. **How might DOE identify bottlenecks in regions where much pertinent data are not available, in contrast to regions where transmission expansion plans have been developed and made public?**

Response: With a focus on national/grid security issues, it is appropriate that all data necessary to complete the task be provided, regardless of ownership or control. With this narrow focus, we believe existing legislative authority (either DOE or FERC) would allow for collection of the necessary data. It will be essential that data providers have complete confidence that data will remain confidential. Any work or conclusions on system vulnerabilities and remediation will also require high security.

4. What actions should DOE undertake to facilitate and monitor progress towards mitigation of designated NIETBs?

Response: Focusing this effort on national/grid security problems rather than economic bottlenecks provides a more appropriate role and opportunity for DOE involvement. DOE could lead the effort by engaging appropriate industry participants, compiling and prioritizing deficiencies, and monitoring projects to completion. Financing the necessary improvements may also become an issue suitable for DOE to address. Such an effort will require a much higher level of confidentiality and security than that of earlier work such as the National Transmission Grid Study. This fact may limit DOE's options with respect to contractors suitable for conducting such classified work.

5. Other comments/suggestions on other transmission bottleneck issues that may be relevant to the development of procedures to designate and address NIETBs.

Response: We believe that the responsibility and expertise for addressing and mitigating reliability and grid security issues rests with the NERC Regions and the transmission owners. If DOE chooses to pursue this initiative, it should re-draft the description of its task to narrow and clarify its focus and should concentrate in the areas of national security and grid vulnerability which may not be fully addressed by conventional planning and reliability criteria. In particular, the task should avoid consideration of purely economic bottlenecks, which may have very little to do with national interest other than simple economic efficiency. EPRI has recently been working on the second phase of a multi-utility study, and individual utilities are also working on studies and various levels of protection, obviously in non-public efforts. While it is not possible to draw absolute conclusions from these limited efforts, it seems likely that the weak points that leave the system vulnerable to attack are different from the congested interfaces that are commercially significant. Individual utility study quality may vary significantly and industry participants may be reluctant to participate in open forums to exchange results and ideas. These issues present potential for a constructive DOE role.

26. Comments of Northeast Utilities Service Company (NUSCO), 9/20/2004 3:57pm

September 20, 2004

Mr. Bill Parks
Office of Electric Transmission and Distribution, TD-1
U.S. Department of Energy
Forrestal Building, Room 6H050
1000 Independence Avenue, SW
Washington, D.C. 20585

Re: Transmission Bottleneck Comments

Dear Mr. Parks:

Northeast Utilities Service Company on behalf of its operating company affiliates ("NUSCO") is pleased to take this opportunity to comment on the Department of Energy's July 16, 2004 Notice of Inquiry ("NOI") regarding the Designation of National Interest Electric Transmission Bottlenecks ("NIETB"), 69 FR 43833 (July 22, 2004).[47] Over the last decade, various national and regional initiatives have moved a once vertically integrated, localized, monopoly to unbundled, competitive regional markets. Much of this movement toward competition has occurred in the northeastern United States. Enhanced competition and standardization of regional market design has encouraged increasingly remote transmission transactions and has augmented system demands, particularly to meet needs of daily or hourly market transactions. This fundamental change in the use of the transmission system, as well as significant load growth in certain areas, has created an urgent need for increased infrastructure support. One of the most difficult challenges in meeting this need is siting. NUSCO has first

[47] NUSCO's operating company affiliates are The Connecticut Light and Power Company, Western Massachusetts Electric Company, Public Service Company of New Hampshire, Holyoke Power and Electric Company and Holyoke Water Power Company

hand experience in the difficulties that arise in the siting of new transmission infrastructure. As the largest electric transmission providing utility in southwest Connecticut, a region that has been designated as one of the nation's areas in greatest need of new infrastructure, NUSCO is aggressively seeking approval of projects that meet this region's growing demand.

SUMMARY OF COMMENTS

NUSCO believes that reasonably defined NIETB designations, which identify critical transmission facilities that are needed to maintain the nation's transmission grid, will assist in siting transmission projects needed to ensure reliability. These designations must be clear, must take into account existing planning processes and standards, and must have system reliability as a primary goal. DOE should take into account existing reliability authorities such as the North American Electric Reliability Council ("NERC"), and monitor existing coordination processes such as NERC's Version"0" Standards to develop more clearly defined criteria for NIETB designations.

When considering the designation of NIETB status, DOE should give considerable deference to the outcome of existing regional planning processes. A new national transmission planning authority is not needed. The intent of the NIETB initiative, to improve the reliability of the nation's bulk power system, can best be met through maintaining the planning function at a regional level. In New England, where regional planning exists, there already is ample opportunity for stakeholder participation to ensure that all interests are addressed. In addition to the inherent risk associated with taking the planning function away from those who are most

familiar with the intricacies of the system and the needs of the region, there is a significant risk that the additional regulatory oversight associated with a national planning process could further slow down an already difficult siting process.

Finally, DOE should promote the alignment of federal, regional and state siting processes to expedite the siting of NIETB facilities. The benefits associated with the proposed designation would be greatly improved with the establishment of federal backstop legislation to facilitate siting of NIETB facilities. Since NIETB designated facilities serve a national purpose, federal siting authority would ensure the ability to site projects that are critical to the nation's electric infrastructure and its national security interests. NUSCO supports pending legislation (H.R. 6, the "Energy Policy Act of 2003" – please confirm) that would give DOE responsibility for identifying "national interest electric transmission corridors" as well as provide FERC with backstop transmission siting authority. NUSCO believes that these legislative enactments are imperative to ensure the timely improvement of the nation's transmission system. In addition, DOE should coordinate with other Federal agencies to propose and/or support procedures that would expedite Federal agency permit approval processes for NIETB facilities (e.g., Army Corps of Engineers, U.S. Department of Transportation, etc.). Consideration should also be given to allowing the use of Federal lands, interstates highways or other federally funded highways for transmission corridor use.

INQUIRY RESPONSES

Response to Question 1: *Are the Electricity Advisory Board's recommended criteria for designation of National Interest Electric Transmission Bottlenecks appropriate and sufficient? If not, what should they be? For example, should DOE also consider disaster recovery, economic*

development, and the enhancement of the ability to deal with market and system contingencies in designating NIETBs?

NUSCO believes that reliability should be the primary criteria considered by the DOE in issuing a NIETB designation. While national security and economic interests are important considerations, a reliable transmission grid is a precondition for security and economic stability. National security, disaster recovery, and ability to respond to market demand are all inherently improved by planning transmission system reinforcement projects to assure reliable service. The system is already operated to assure adequate and stable service even with the loss of the most limiting element (Standards S1 and S2, also called a "single contingency" in "NERC Planning Standards, approved September 16, 1997".) Notwithstanding the primary focus on reliability, NUSCO agrees with EEI that DOE is an appropriate forum for addressing national security issues. DOE should balance both the information it receives from regional entities as well as information received from federal agencies in order to determine whether certain NIETB projects may require additional national security consideration. NUSCO believes, however, that establishing a separate national security criterion may draw unwarranted attention to certain facilities and may serve to undermine the nation's overall interest in maintaining the confidentiality of information about such facilities.

NUSCO also believes that using purely economic criteria for NIETB designations has the potential of pitting one region against another. For example, resolution of an economic need in one region may result in increased economic pressure in its neighboring region to serve that need. In this instance, the designation could create a bottleneck issue for one region while easing

it for the other and defeat the purpose of the designation. Furthermore, the inevitable arguments on the issue could serve to further lengthen an already lengthy local siting process.

It is important that whatever criteria the Department chooses, the standards for meeting such criteria must be clear, while taking into consideration regional differences. In establishing these standards, the Department should take input from existing regional reliability authorities such as the North American Reliability Council ("NERC") and Northeast Power Coordinating Council ("NPCC") (and NPCC's counterparts in the south, west and midwest), Independent System Operators ("ISOs") and Regional Transmission Organizations ("RTOs"). These authorities have already established reliability standards that take into consideration the configuration and needs of the transmission systems they cover. In addition, the results of existing regional transmission system planning processes should be given great weight, as those established processes include the ability for significant stakeholder input.

Response to Question 2: *What should be the role of transmission grid operators, utilities, other market participants, regional entities, States, Federal agencies, Native American tribes and others in the process of identifying, designating and addressing NIETBs? For example, should a NIETB be designated only if some entity applies to DOE for designation? Should DOE accept applications only from entities from regions that have an extant regional transmission (or resource) plan? Should DOE be able to designate a NIETB even if no entity asks DOE to do so?*

DOE should maximize the use of existing reliability forums and processes. As noted in the response to Question 1, transmission planning is, by its nature, a regional activity. It requires ample consideration of unique aspects of the regional bulk power system, first hand knowledge of the physical system, and the regional geography. Planning is a highly technical activity where the expertise of individuals familiar with the region and existing facilities are critical to the

development of any workable transmission expansion plan. As such, it is appropriate to maintain to the extent possible the regional planning processes that are in place today. Existing entities like NERC, NPCC, ISOs and RTOs have access to a tremendous amount of expertise and information regarding the needs of the regions they serve. In addition, regions, such as New England, with centralized independent regional planning processes already have had the opportunity to do the technical studies and obtain the necessary stakeholder input to independently assess transmission needs. DOE should take advantage of the information gathered in these processes, as well as input from these entities, in determining whether to designate a project as an NIETB. DOE should also give significant deference to the outcome of existing transmission planning processes. Rather than independently identifying projects eligible for designation as NIETBs, DOE should require regional planning authorities such as RTOs, ISOs or reliability councils to identify possible NIETBs in regional plans. Finally, NUSCO believes that while applications for NIETB designations are best made by regional planning authorities, individual entities should not be denied the right to make such applications, provided that they can demonstrate that the regional planning process has been fully utilized.

Response to Question 3: *How might DOE identify bottlenecks in regions where much pertinent data are not available, in contrast to regions where transmission expansion plans have been developed and made public?*

NUSCO endorses EEI's comments in response to this question. NUSCO believes that there is sufficient data available in the EIA Form 411 and FERC Form 715 to determine whether there is a need for NIETB designations. Even in regions without ISOs or RTOs, existing planning procedures reflect NERC planning standards. DOE should not try to audit existing

planning processes but rather seek to support projects which are already proposed to resolve bottlenecks

Response to Question 4: *What actions should DOE undertake to facilitate and monitor progress towards mitigation of designated NIETBs?*

NUSCO agrees with EEI that DOE should publicly report all NIETB designated projects at least biennially. This report should highlight critically important projects. In addition, upon request, it would be helpful for the Office of Electric Transmission and Distribution staff to participate as intervenors in state siting and permitting proceedings where NIETB projects are under consideration.

CONCLUSION

NUSCO is hopeful that these comments will assist the DOE in developing a meaningful tool to aid in the siting and construction of critical transmission infrastructure. NUSCO looks forward to actively working with the DOE in developing processes to ensure that adequate transmission infrastructure is in place to meet customer demand and maintain the security of the nation. If you have any questions concerning these comments, please feel free to call me or Michael Ahern, Director, Northeast Utilities Transmission Operations and Planning at (860) 665-4911.

Very truly yours,

Monique Rowtham-Kennedy
Senior Counsel
Northeast Utilities Service Company

27. Comments of Southern Company, 9/20/2004 4:16pm

William O. Ball
Senior Vice President
Transmission Planning
and Operations

600 North 18th Street / 13N-8200
Post Office Box 2641
Birmingham, Alabama 35291
Tel 205.257-6218 Fax 205.257-5390

September 20, 2004

BY EMAIL

William Parks
Acting Director, Office of Electric Transmission and Distribution
U.S. Department of Energy
Forrestal Building, Room 6H050
1000 Independence Avenue, SW
Washington, D.C. 20585

Dear Mr. Parks:

Southern Company Services, Inc. ("Southern Company"), appreciates the opportunity to submit comments in response to the July 22, 2004 Department of Energy ("DOE") Notice of Inquiry on electric transmission bottlenecks.[48] This inquiry was initiated to aid DOE in establishing a process for identifying "national interest transmission bottlenecks" ("NIETBs"). Southern Company writes to support and expand upon the comments submitted by the Edison Electric Institute ("EEI").

[48] 69 Fed. Reg. 43833 (July 22, 2004).

As noted in EEI's comments, the most effective role for DOE is to provide support to a Transmission Planning Entity ("TPE"),[49] upon the TPE's request, in completing transmission projects proposed by the TPE, but which face unreasonable delay due to complex siting and/or permitting issues. Southern Company believes that developing a process by which a TPE could formally request DOE assistance in completing critical transmission projects would be beneficial. Such a process would allow DOE to focus its resources on key projects that are subject to delays, and it would also be a powerful tool for TPEs to gather broader support for projects necessary to improve the transmission grid.

Currently, TPEs utilize all the necessary tools, expertise and experience to assess their respective regions' transmission planning needs and problems. In addition, TPEs have studied and analyzed their systems over a long period of time and know where their transmission systems are most constrained. Thus, TPEs are the entities most capable of efficiently and effectively identifying and designating NIETBs on their respective systems. Any separate assessment by DOE to initially identify NIETBs would be very difficult on a nation-wide basis and would unnecessarily duplicate the studies already conducted by TPEs.

In summation, the most effective approach for DOE is to work with TPEs to establish procedures for initiating DOE involvement in siting and permitting of critical transmission projects that face unreasonable delays.

Sincerely,

[49] TPEs include ISOs, RTOs, NERC, regional reliability councils (e.g., SERC), State public service commissions, and other regional or sub-regional groups with significant responsibilities for conducting transmission planning.

28. Comments of Powerex, 9/20/2004 4:31pm

Office of Electric Transmission and Distribution, TD-1
Attention: Transmission Bottleneck Comments
US Department of Energy
Forrestal Building, Room 6H050
1000 Independence Avenue, SW
Washington, D.C. 20585

This letter is being submitted in response to the Notice of Inquiry and Request for Comment on the U.S. Department of Energy's "Designation of National Interest Electric Transmission Bottlenecks" (NIETBs), published in the Federal Register, July 22, 2004.

Powerex was established in 1988 as a wholly-owned marketing and trading subsidiary of British Columbia Hydro (BC Hydro), Canada's 3rd largest utility. Powerex has significant experience and knowledge with hydroelectric systems and is an active participant in the physical power market and as a result, a significant user of transmission services within the United States. By way of example, our FY 2003 portfolio was over 3,700 aMW (33,000 GW-hours), which was supported by BC Hydro's system capability, wholesale market purchases and the Canadian Entitlement[1]. Powerex is an active participant in the Pacific Northwest market and throughout the western interconnection. Powerex also participates in most of the major eastern markets, including PJM, NY ISO, New England ISO, MISO and in Ontario, Canada. As a result, Powerex has a direct and substantial interest in the state of the U.S. transmission system, and in the elimination of National Interest Electric Transmission Bottlenecks.

Powerex shares the opinion that investment in transmission has not kept pace with market demands and as a result bottlenecks (or constraints) in a number of transmission systems impede economic efficiency, confuse operational procedures and threaten safe and reliable operations. We believe that system constraints impose significant direct costs (e.g., additional transmission purchases, redispatch and in some cases, load curtailment) as well as significant indirect costs (e.g., in work-around systems, uncompensated deratings, unnecessary capacity limitations, non-comparable treatment) on market participants, and ultimately, consumers. As well, system constraints inhibit the ability of competitively priced energy to get to customers who need it.

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[1] Canadian Entitlement is the short-hand name given to the power obligation of the Bonneville Power Administration and numerous US utilities as a result of an international Treaty arrangement that was put into effect in the 1960s. In short, as a result of the Province of British Columbia developing three reservoirs in the province (upstream from US reservoirs), significant improvements in the form of flood control and increased firm generation was realized in the US, at both federal (Corps of Engineers and US Bureau of Reclamation) and non-federal projects. For thirty years, the incremental benefits of this arrangement were made available to US systems and, in the second thirty years of this arrangement, the incremental benefits are being made available in the form of capacity and firm energy deliveries to Canada at the US/Canada border via the Bonneville Power Administration transmission system.

We believe that identification of NIETBs is important. however. we suggest that the criteria identified by the Electricity Advisory Board be expanded to include bottlenecks that could jeopardize the satisfaction of long-term commitments such as the case for international Treaty obligations. Currently. under the Skagit River Treaty. the Province of British Columbia has an obligation to deliver electricity (currently, 230 MW of transmission capacity has been reserved) to the City of Seattle through 2066 and as a result of the Columbia River Treaty, the Bonneville Power Administration has an obligation to deliver Canadian Entitlement (currently 1,154 MW of capacity) to the US/Canada border through 2024. Because the interconnected North American electrical grid is an international grid (a fact that was highlighted by the August 2003 blackout), the effects of bottlenecks on the ability to meet international obligations is an appropriate factor for the U.S. government to consider in making an NIETB designation.

We agree that the evaluation and determination of constraints is a regional issue and for Powerex. the most pertinent planning regions are both the western interconnection as well as the Northwest Power Pool. Quite recently, transmission constraints on the western interconnection have been studied by the Planning Work Group for the Seams Steering Group – Western Interconnection.[2] Some of the evaluation tools that we believe to be particularly relevant include:

- Peak Seasonal Path loading;
- Percentage of time that path loadings exceed 75% of OTC ratings;
- Individual Path Flow Distributional Plots.

When judged against these criteria, the significance of the constraints on Path 3, the transmission interconnection between the State of Washington and the Province of British Columbia, become clear. While only North-South flows on Path 3 were evaluated for this study, Path 3 was reported as having extremely high Peak Seasonal Path loadings for all three of the seasons studied (Winter, Spring and Summer) for the time period Winter 1998-1999 through Spring 2002.

In addition. we have been directly involved in recent efforts spearheaded by the Bonneville Power Administration for the purpose of better understanding the relationship between transmission schedules and constraints. This effort is necessary not only to improve methods for calculating and posting Available Transfer Capability (ATC), but also in order to improve the Transmission Provider's understanding and effectiveness in terms of redispatch and/or curtailing transmission schedules in order to relieve constraints. This is of particular importance to Powerex, as the NWPP region has historically relieved internal constraints on the BPA Network system by curtailing transactions on the transmission interconnections between the Pacific NW and Canada as well as the transmission interconnections between the Pacific NW and California. In effect, Powerex and others engaged at transactions at the fringe of the BPA system have been curtailed disproportionately in order to relieve internal constraints. Therefore, we suggest that methods for determining OTC. ATC and constraint relief be included in the criteria to be considered in determining whether an NIETB exists

[2] Western Interconnection Transmission Path Flow Study, February 2003. http://www.ssgwi.com/documents/320-2002_Report__final_pdf.pdf

As to the specific request for comments on the questions that were posed, we offer the following comment:

Question 1.
Are the Electricity Advisory Board's recommended criteria for designation of National Interest Electric Transmission Bottlenecks appropriate and sufficient?

As noted above, we believe that the criteria are quite general, which enables the default of greater identification of NIETBs rather than less, which is probably appropriate. However, we respectfully suggest that the criteria be expanded to specifically include the ability of the transmission system to accommodate transmission necessary to meet long-term international obligations.

Question 2.
What should be the role of transmission grid operators, utilities, other market participants, regional entities, States, Federal agencies, Native American tribes and others in the process of identifying, designating, and addressing NIETBs?

We believe that all entities that own and use transmission facilities should have the opportunity to be involved in regional planning discussions that should provide a forum for any entity affected by transmission capacity to raise questions or concerns about NIETBs.

Part and parcel of this process should be the development of a methodology that identifies costs and benefits associated with various solutions (both wires and non-wires) to NIETBs. The adoption of a generally accepted methodology could offer important clarification to investment decisions by providing guidance in terms of how to reasonably allocate financial responsibility and benefits associated with various investments. One of the benefits of regional transmission organizations is that prudent regional transmission investments would be made and their costs recovered.

Question 3.
How might DOE identify bottlenecks in regions where much pertinent data are not available, in contrast to regions where transmission expansion plans have been developed and made public?

Before answering this question, a discussion about what data are pertinent must occur. We believe that some level of consistency in how to quantify bottlenecks is important, however, we also submit that there are cases where some data is relevant to some regions but not others. Already available data, such as the data on transmission constraints compiled by the North American Electric Reliability Council, should be relied upon to the greatest extent possible to minimize the duplication of data collection efforts.

Question 4.
What actions should DOE undertake to facilitate and monitor progress towards mitigation of designated NIETBs?

We suggest that the most important action that DOE should undertake is clarifying the designation or the criteria that will be used to determine what are NIETBs and what data should be collected and exercised. By doing so, the necessary studies and mitigation procedures can be carried out by existing planning organizations. In other words, we do not endorse the establishment of addition processes outside of already existing and functioning regional planning efforts.

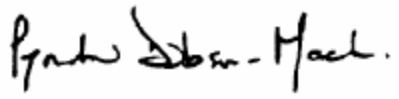
Power Marketing Administrations (PMAs) are major owners of transmission in several regions of the United States, and thus are likely to have a large role to play in the mitigation of NIETB. DOE should use its relationship with the PMAs to assure the active participation of these agencies in efforts to address NIETB. The cooperative efforts to upgrade Path 15 in California offer an excellent recent example of how leadership by the Department can contribute to the resolution of a significant transmission constraint.

DOE should also consider making recommendations to the Federal Energy Regulatory Commission on ways in which the Commission can contribute to the resolution of NIETB. One area in which the Department may be able to offer useful perspectives is in connection with the further development of regional transmission planning policies.

As noted above, the development of a cost and benefit allocation methodology will be critical to the ultimate success of all efforts to resolve NIETB. Regional organizations are best situated to make comprehensive determinations of the benefits, and the appropriate allocation of the costs, of relieving NIETB. DOE would be in a position to provide a national perspective to FERC and state regulators on these matters.

Thank you for seeking comment on this issue.

Sincerely yours,



Gordon P. Dobson-Mack
Manager, Transmission Issues
Powerex

29. Comments of Entergy Services Inc., 9/20/2004 4:33pm

William Parks
Acting Director, Office of Electric Transmission and Distribution
U.S. Department of Energy
Forrestal Building, Room 6H050
1000 Independence Avenue, SW
Washington, D.C. 20585

Dear Mr. Parks:

Entergy Services Inc. (Entergy) appreciates the opportunity to offer the following as a response to the July 22, 2004 Department of Energy ("DOE") Notice of Inquiry on electric transmission bottlenecks. Entergy agrees with and supports the response submitted by the Edison Electric Institute (EEI).

Entergy supports the long standing regional transmission planning processes and encourages DOE not to engage in any initiative that would duplicate these processes. From Entergy's perspective, the opportunity for DOE to contribute lies in facilitation of issues among the parties, where a transmission provider requests DOE assistance in resolving transmission project siting and permitting difficulties. Such a role will allow DOE to use its present authority and personnel to add immeasurably in resolution of issues among multiple parties, in some cases including responsible state and federal regulatory agencies.

The recommended approach for DOE in this matter is the development of a process that enables any entity involved in transmission project development to request DOE participation in resolving issues that delay or preclude completion of needed transmission system improvements. DOE, in this role, would have, at its disposal, all the extensive transmission planning expertise, data, and tools of the parties involved. As such, there would be no requirement for DOE to develop an in house capability to investigate the complex technical issues encapsulated in the existing transmission planning processes.

In closing, Entergy encourages the DOE to pursue a mediation role (when requested) by facilitating resolution of complex and difficult issues that sometimes arise in development of new transmission projects.

30. Comments of New York Public Service Commission (NYPSC), 9/20/2004 4:42pm

STATE OF NEW YORK DEPARTMENT OF PUBLIC ERVICE

THREE EMPIRE STATE PLAZA, ALBANY, NY 12223-1350
Internet Address: http://www.dps.state.ny.us

PUBLIC SERVICE COMMISSION

WILLIAM M. FLYNN
Chairman
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General Counsel

JACLYN A. BRILLING
Secretary

September 20, 2004

Office of Electric Transmission
and Distribution
TD-1
Attention: Transmission Bottleneck
Comments
U.S. department of Energy
Forrestal Building, Room 6H050
1000 Independence Avenue, S.W.
Washington, DC 20585
(via first class mail and e-mail)

Re: Notice of Inquiry – Designation of National Interest Electric Transmission Bottlenecks

To whom it may concern:

Attached, for your consideration, are the comments of the New York Public Service Commission regarding the above-entitled inquiry. Should you have any questions, please feel free to contact me at (518) 473-8178.

Very truly yours,

/s/

David G. Drexler

Assistant Counsel

Attachment

UNITED STATES OF AMERICA
DEPARTMENT OF ENERGY

Designation of National Interest Electric Transmission Bottlenecks	) Notice of Inquiry)

COMMENTS OF THE PUBLIC SERVICE COMMISSION OF THE STATE OF NEW YORK

Pursuant to the above-entitled Notice of Inquiry (NOI) published in the Federal Register on July 22, 2004, the Public Service Commission of the State of New York (NYPSC) hereby files these comments. Copies of all documents and correspondence should be sent to:

Dawn Jablonski Ryman, Esq.
Public Service Commission
of the State of New York
3 Empire State Plaza
Albany, NY 12223

Raj Addepalli
Public Service Commission
of the State of New York
3 Empire State Plaza
Albany, NY 12223

BACKGROUND AND SUMMARY

The Department of Energy (DOE) issued a NOI regarding the Designation of National Interest Electric Transmission Bottlenecks (NIETBs), and the criteria that should be used to designate such NIETBs.[50] The NOI requests comments on several questions related to the procedures for designating and addressing NIETBs.[51] We comment below upon aspects of the first, second and fourth questions.

[50] Before a designation as a NIETB can be made, the bottleneck would need to meet one of three criteria. These criteria are: 1) The bottleneck jeopardizes national security; 2) The bottleneck creates a risk of widespread grid reliability problems or the likelihood that a major customer load center will be without adequate electricity supplies; or 3) The bottleneck creates the risk of significant consumer cost increases in electricity markets that could have serious consequences on the national or a broad regional economy, or risks significant consumer costs increases over an area or region.

In general, we note that the NOI does not mention what the import of a designation as a NIETB will be. Knowing the purpose for designating a bottleneck as a NIETB would enable us and other parties to provide DOE with a more thorough analysis of the proposed process. However, we offer our preliminary thoughts at this point and ask that DOE provide its objectives for consideration by parties, so that any future rulemaking can benefit from a full discussion of how to best achieve DOE's goals.

Specifically, we recommend that DOE distinguish between reliability bottlenecks and economic bottlenecks. While the standards adopted by the North American Electric Reliability Council (NERC) should be used in determining whether a reliability bottleneck exists, economic bottlenecks require an analysis of the costs and benefits, as well as viable alternatives. We also recommend that DOE facilitate a process whereby parties could work to reach consensus on how to design congestion cost approaches. However, we recommend that DOE defer to the designations of reliability and economic bottlenecks made by Independent System Operators (ISOs) or Regional Transmission Organizations (RTOs). If DOE decides to take the lead in making such designations, it should provide interested stakeholders with an opportunity to provide comments on the potential designation of NIETBs. Finally, we note the security

[51] The four questions include: 1) Are the Electricity Advisory Board's recommended criteria for designation of NIETBs appropriate and sufficient? If not, what should they be?...; 2) What should be the role of transmission grid operators, utilities, other market participants, regional entities, Federal agencies, Native American tribes and others in the process of identifying, designating, and addressing NIETBs?...Should DOE be able to designate a NIETB even if no entity asks DOE to do so?; 3) How might DOE identify bottlenecks in regions where much pertinent data is not available, in contrast to regions where transmission expansion plans have been developed and made public?; and, 4) What actions should DOE undertake to facilitate and monitor progress towards mitigation of designated NIETBs?

implications of designating NIETBs that jeopardize national security, and ask that DOE evaluate appropriate means to protect such designated NIETBs from disclosure to all but those who have a need to know.

DISCUSSION

I. The DOE Should Distinguish Between Reliability Bottlenecks and Economic Bottlenecks

There is an important distinction between reliability bottlenecks, which the second criteria is designed to identify (i.e., it creates a risk of widespread grid reliability problems or the likelihood that major customer load centers will be without adequate electric supplies), and economic bottlenecks, which are addressed by the third criteria (i.e., it creates the risk of significant consumer cost increases). While reliability bottlenecks must be addressed to ensure safe and adequate service, consideration should be given to the costs and benefits of resolving congestion and the viable alternatives before economic bottlenecks are identified as NIETBs.

A. NERC Standards Should Be Used In Determining Whether A Reliability Bottleneck Exists

As far as reliability bottlenecks are concerned, the reliability standards adopted by NERC are designed to address such bottlenecks.[52] Although the NERC standards are not obligatory, New York has adopted mandatory reliability standards, and in some cases the standards are more stringent than those recommended by NERC. For example, more stringent standards apply to New York City in order to protect the sensitivity of the loads therein. While we encourage the

[52] Criteria for identifying system upgrades required to address security concerns should also be developed through the existing NERC process. NERC should be encouraged to determine if additional planning criteria need to be developed to accommodate homeland security concerns.

adoption of mandatory reliability criteria, it is essential that states be permitted to implement reliability standards that are more stringent than the minimum standards in order to address unique regional circumstances.[53]

B. The Costs And Benefits of Addressing Economic Bottlenecks Should Be Analyzed Prior To Designating Such Bottlenecks as NIETBs

Regarding economic bottlenecks, a thorough analysis of the costs and benefits should be taken into consideration before designating such bottlenecks as NIETBs. Although the third criteria proposes using "significant consumer cost increases" as the standard for designation as a NIETB, we are concerned that greater clarity is required. While consumer costs may mean those related to congestion, we recommend that any determination of "significance" take into consideration the total market dollar amounts and other offsetting factors. Taking the New York market for 2003 as an example, it is estimated that eliminating all congestion in the State would have resulted in production cost savings of $68 million.[54] Compared to an approximately $7 billion total New York Independent System Operator, Inc. (NYISO) market,[55] however, all congestion in New York State would have only equaled about 1% of the market. Furthermore, while eliminating such congestion could save consumers money in energy prices, the cost of building new transmission lines could easily exceed such relatively small energy savings.

[53] The New York transmission system has been designed to comply with all applicable reliability standards, and as a result, no reliability bottlenecks exist.
[54] NYISO Electric System Planning Process Initial Planning Report, prepared by the NYISO Planning Staff, dated September 2, 2004.
[55] This amount includes the wholesale energy and ancillary services markets, and excludes bilateral transactions.

The fact that an economic bottleneck exists does not mean that the grid is unreliable or even uneconomical. It simply means that lines in congested areas are effectively operating at full capacity during some hours of the year. It is evidence only of the fact that there may not be enough transmission to take advantage of all the lower cost generation capacity during these times.

Another important factor to consider is that economic bottlenecks have the ability to move around on the grid. For example, in 1992 the Central East interface in New York State was congested only about 4 percent of the time. By 1996, due largely to changes in purchasing patterns, that some interface was constrained about 70 percent of the time. By 2000, with no new investment or reinforcement of the transmission system, congestion on this interface had dropped down to about 40 percent of the time. In the past few years, congestion levels have continued to drop. While there may still be economic reasons to upgrade this area of the system, clearly the economics have changed over time. Solutions for a "70 percent congestion" problem are likely to be quite different from a solution for a "40 percent or less congestion" problem. A large investment could have potentially been made to eliminate or reduce this "congestion problem" in 1996, but by allowing the market to address the congestion issue first, a more reasoned analysis of the need for an upgrade can now be made.

C. Alternative Solutions Should Be Considered Before Designating An Economic Bottleneck as a NIETB

There may be numerous ways to address economic bottlenecks, such as siting power plants within load pockets, investing in demand reduction and energy efficiency measures, or building generation on-site, which may be more efficient and economical than reinforcing

transmission facilities. Such alternatives should be thoroughly evaluated and considered prior to designating economic bottlenecks. Economic bottlenecks do not necessarily warrant investments in new transmission lines; that is one of several methods of addressing it.

II. DOE Should Facilitate Agreement On How To Design A Congestion Cost Approach

The NOI requested comments on what the role of Federal agencies, such as DOE, should be in the process of identifying, designating, and addressing NIETBs. Our experience has been that regions utilize different approaches for identifying congestion costs and benefits. This has led to some difficulty in comparing congestion costs between regions, and indicates the need for a uniform approach that can be used across the country. Thus, we recommend that DOE play a role in facilitating agreement among market participants as to the approach to be used in determining the costs of congestion and the costs/benefits of relieving such congestion.

III. DOE Should Defer To The Designations of Economic And Reliability Bottlenecks Made By ISOs/RTOs

The second question in the NOI asks whether DOE should be able to designate a NIETB, even if no entity asks DOE to do so. As illustrated above, there are various factors that play into whether a designation as a NIETB is appropriate or not. Many of these factors may be known to states and local entities, but not to Federal agencies, such as DOE. Thus, DOE should defer to the designations of bottlenecks made by ISOs or RTOs that have a regional planning process in place. ISOs/RTOs are best equipped to evaluate the transmission system and make determinations about which bottlenecks should be addressed. Moreover, the regional planning

process provides a way to address the bottlenecks once they are identified.[56] However, if DOE decides to take the lead in designating NIETBs, it should provide stakeholders, including states, with an opportunity to comment upon the potential designation of reliability or economic NIETBs.

IV. The DOE Should Evaluate Means To Protect The Dissemination Of Critical Security Information From Unwanted Disclosure

We are concerned with the security implications of making "bottlenecks that jeopardize national security" publicly available, as the first criteria contemplates. By labeling such a bottleneck as a NIETB, it would place a spotlight on those areas of the transmission system that are particularly important and vulnerable to disruption. Thus, the DOE should carefully weigh the benefits of making security-related NIETBs publicly available against the possibility that such vulnerabilities could be exploited. While there are various ways to protect sensitive information, one option could be to make security-related NIETBs available only to interested parties on a confidential and "need to know" basis.

CONCLUSION

As discussed above, there is an important distinction between reliability and economic bottlenecks, and any decision to label an economic bottleneck as a NIETB should take into account the costs and benefits of resolving such bottleneck, as well as viable alternatives. By identifying the purpose for which a bottleneck is being designated as a NIETB, parties can better inform DOE of what considerations are needed in the decisionmaking process.

[56] The New York ISO has developed a process for addressing needed reliability-based projects, and is currently working to develop such a process for economic-based projects.

Comments to the Designation of National Interest Transmission Bottlenecks (NIETB) Notice of Inquiry

While we suggest that DOE defer to the designations of bottlenecks by ISOs/RTOs, it is essential that, if DOE takes the lead in designating NIETBs, it first make potential designations of reliability or economic NIETBs available for public comment. However, we urge DOE to develop a process for protecting the unwanted dissemination of information relating to national security. In addition, we recommend that DOE facilitate a process for developing common congestion cost approaches.

Respectfully submitted,

/s/

Dawn Jablonski Ryman
General Counsel

By: David G. Drexler
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Dated: September 20, 2004
Albany, New York

31. Comments of the City of New York, 9/20/2004 4:44pm

Comments of the City of New York re: Department of Energy Notice of Inquiry Concerning Designation of National Interest Electric Transmission Bottlenecks

The City of New York (City) hereby submits comments in response to the July 16, 2004 Notice of Inquiry issued by the Department of Energy, as published in the Federal Register of July 22, 2004.

Encouragement of entrepreneurial efforts to develop merchant transmission lines without financial risk to ratepayers has been suggested by the Secretary of the Department of Energy[57] However, in actual practice, there have been very few entrepreneurial projects undertaken, thus suggesting the need for another model to address the reality of a partially deregulated electricity marketplace. The Federal Register Notice itself also takes note of the fact that there has been a marked decline in transmission investment in recent years.

The facilitation of economic growth and prosperity through transmission system improvements is a goal that the Secretary of Energy has characterized as "essential"[58] In so doing, he recognized the considerable costs imposed on consumers by the continued existence of electricity trade constraints in the form of system congestion. Nowhere is this truer than in New York City, where electricity costs remain persistently high when compared to the nation at large. There are undoubtedly many underlying reasons for such disparities, and the solutions for the market in New York City and elsewhere will require manifold approaches, including greater use of demand side measures, and the introduction of some additional generation facilities. In fact, the latter is happening already with three (3) new or repowered power plants now under construction in the City, and an additional 250 MW having already come on from KeySpan Energy in the spring of 2004.

But future transmission development must also form part of the overall solution for the City - both technological improvements to existing pathways and lines, and expansion of the transmission facilities themselves. As was observed in the National Transmission Grid Study, among the highest levels of congestion within the Eastern Interconnection are those between the mid-Atlantic states (i.e., the PJM territory) and New York. Addressing that congestion, and its attendant costs, will require the concerted efforts of all market stakeholders as well as the constructive action of governmental interests, both state and federal.

In the City's view, therefore, the Department should give consideration to adoption of each of the alternative criteria for NIETBs suggested by the Electricity Advisory Board.

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[57] Statement of the Secretary of Energy, PR-02-080, May 8, 2002

[58] Statement of the Secretary accompanying dissemination of the National Transmission Grid Study (May 2002)

National security concerns and meeting the risk of grid reliability problems must be of paramount concern to DOE. However, the Board's consideration of bottlenecks that result in significant costs to consumers on either a national or more typically, a regional scale is also critically important. The overall criteria suggested by the Advisory Board are sound, but could be enhanced by considerations beyond improvement of grid reliability. Thus, the use of a negative formulation, i.e., a bottleneck "creating the risk of reliability problems" should, when considering solutions, be recast in a broader formulation. In a similar vein, the role of economic development in a currently constrained area is surely a valid consideration when assessing the need for potential remedies for transmission bottlenecks.

The Department in its Notice herein, and in earlier documents addressing the question of transmission constraints, has itself recognized the critical dimension of both comity and recognition of the respective spheres of federal and state governmental entities, and has noted the necessity for a process that takes into account the legitimate needs of stakeholders. The City urges the use of a cooperative and inclusive approach, and adds that there must be functional responsibility and a proper role accorded to state and federal regulators, and representatives of ISO/RTO organizations. At the same time, there must be a recognition of overarching system needs -- needs that may sometimes be in conflict with the parochial concerns of some incumbent participants.

Conversely, there should be a presumption that when a market participant undertakes an infrastructure project, the costs thereof will be borne by those who benefit from the project. When undertaken by a regulated entity, as long as it can be demonstrated that the proposal is sound, it should properly be limited to the provision of a just and reasonable return subject to traditional state regulatory oversight. There are potential avenues that might be explored in an effort to attract the financing needed to build new transmission lines. The use of a request for proposal (RFP) process to encourage market responses to perceived transmission needs is one such avenue. RTPs offer the prospect of narrowly targeting desired results, thereby avoiding the over-inclusiveness that might well flow from an unduly prescriptive governmental plan - one that might impose costs without providing commensurate public benefits.

There have been developments in transmission planning and in electricity market development that may serve to make new infrastructure proposals more economically attractive and more socially acceptable, even in densely populated areas such as the City of New York. The more prevalent use of subterranean and submarine cables is one such welcome innovation. While initially more expensive, such lines offer enhanced reliability compared to traditional overhead lines, while simultaneously reducing local siting and aesthetic concerns. In addition, the use of controllable HVDC lines can both benefit reliability and enhance the attractiveness of transmission investments to the extent that they can qualify for the greater capacity payments made available under an LBMP model in certain highly constrained areas.

Congress has traditionally shown considerable deference to the prerogatives of the states in utility regulation.[59] As FERC Chairman Wood has observed, the Federal Power Act jurisdiction of his agency concerning transmission grid reliability is somewhat tangential, with responsibility for reliable service now largely vested in state utility regulators.[60]

It remains possible that comprehensive energy legislation now under consideration in Congress may mandate a change in that relationship. It may, for example, require that the DOE Secretary designate transmission corridors of national interest, or provide the FERC with so-called backstop transmission siting authority to address issues that go beyond the borders of any one state. Regardless of whether such legislation is enacted, the Department should under the existing National Energy Policy assume a coordination role in conjunction with the FERC through the jurisdictional authority it now has. Such participation by the relevant federal agencies, even if permissive in nature, would serve to highlight the inevitable regional and national transmission concerns that may well transcend state jurisdiction, and that recent experience has shown should not be left solely to the vagaries of market forces.

As the lead agency for the formulation of a sound national energy policy, DOE is well positioned to assert a leadership role in this area that remains consistent with the jurisdictional scope of other governmental and quasi-governmental entities.

September 20, 2004

Respectfully submitted,

/s/ Michael J. Delaney

Michael J. Delaney, Esq.
Vice President
Economic Development Corporation
City of New York

[59] *See* F.E.R.C. v. Mississippi, 456 U.S. 742,765; 102 S.Ct. 2126, 2141, n.29 (1982)

[60] Testimony of Patrick Wood, III before Subcommittee on Oversight of Government Management, Committee on Government Affairs, United States Senate, at pp. 5-6 (September 10, 2003)

32. Comments of American Electric Power (AEP), 9/20/2004 4:46pm

September 20, 2004

BY EMAIL AND OVERNITE MAIL

William Parks
Acting Director, Office of Electric
Transmission and Distribution
U.S. Department of Energy
Forrestal Building, Room 6H050
1000 Independence Avenue, SW
Washington, D.C. 20585

Dear Mr. Parks:

American Electric Power Company, Inc. ("AEP") welcomes the opportunity to provide comments in response to the July 22, 2004 Department of Energy ("DOE") Notice of Inquiry on electric transmission bottlenecks.[61] This inquiry was initiated to assist DOE in establishing a process for identifying "national interest transmission bottlenecks" ("NIETBs"). AEP supports the establishment of such a process as a positive step to ensure construction of the much needed transmission infrastructure improvements for enhancing reliability and safety, especially in light of growing customer demands and the increasing usage of existing transmission systems to facilitate development of stronger regional wholesale markets. AEP writes to support and expand upon the comments submitted by the Edison Electric Institute ("EEI").

At present, there are well-established processes and tools for planning transmission facilities at the local and regional levels. Planning activities are primarily conducted by transmission owning utilities and RTOs/ISOs and are well coordinated with neighboring utilities, RTOs/ISOs, NERC, State Public Service Commissions, local authorities and other stakeholders. These entities have vast experience and resources, and therefore are most capable of identifying and designating NIETBs on their respective systems. These existing processes allow the development of economically efficient transmission solutions with the input of State Public Service Commissions and stakeholders in the relevant regions. AEP strongly encourages DOE to make maximum usage of these well established processes and not conduct separate independent assessments of identifying NIETBs in order to avoid/reduce duplication of efforts and potential confusion.

[61] Federal Register citation -- Vol. 69, No. 140, July 22, 2004, pp. 43833-43834.

As noted in EEI's comments, AEP encourages DOE to develop a formal process by which a transmission project originator could request DOE's assistance in completing critical transmission projects which face unreasonable delays due to complex siting problems, in a timely fashion. AEP's Wyoming – Jacksons Ferry 765 kV Project is a very good example in this regard. Such a process would allow DOE to focus its resources on key transmission projects that are subject to siting delays, and it would allow requesters to gather broader support for projects necessary to improve the transmission system at local and regional levels.

In summary, the most effective approach for DOE is to work with the existing planning processes to establish procedures for initiating DOE involvement in siting and permitting of critical transmission projects that face unreasonable delays.

Sincerely,

J. Craig Baker

Senior Vice President-Regulatory Services

33. Comments of National Rural Electric Cooperative Association (NRECA), 9/20/2004 4:51pm

Comments of the
National Rural Electric Cooperative Association (NRECA)
On the U.S. Department of Energy's
Office of Electric Transmission and Distribution's
Notice of Inquiry and Opportunity to Comment on
Designation of National Interest Electric Transmission Bottlenecks (NIETBs)
(Federal Register, Volume 69, No. 140, Thursday, July 22, 2004)

NRECA offers the following comments in response to the U.S. Departments of Energy's (DOE) Office of Electric Transmission and Distribution's notice of inquiry and opportunity to comment on issues relating to the identification, designation and possible mitigation of NIETBs.

In general, NRECA is supportive of the efforts of DOE to assist utilities, states and regional transmission organizations in mitigating transmission bottlenecks that are significant barriers to the efficient operation of regional wholesale electricity markets, threaten the reliable operation of the electric grid and/or impact national security, subject to the following:

(1) The recommended criteria for designating NIETBs must continue to place particular emphasis on both reliability and economic impacts of transmission congestion and bottlenecks. NRECA is pleased to see that DOE has specifically identified in the NOI increased consumer costs and economic impacts as critical to the designation of NIETBs. The industry has historically viewed reliability as the primary area of concern when studying the impacts of transmission congestion/bottlenecks. However, today there are numerous new wholesale and retail market designs in place that increase the economic impacts of transmission congestion/bottlenecks on cooperatives and their member consumers. Those new costs can cause significant harm to individual consumers and entire communities and dramatically undermine the potential benefits of the new market designs. Currently there are situations in the country where cooperatives are not experiencing reliability problems due to transmission congestion/bottlenecks; however, they are suffering from damaging economic impacts due to those same transmission congestion/bottlenecks. In many instances the economic impacts are not due to changes in electric infrastructure or bulk power system operations. The economic impacts are often due to the implementation of new market designs that penalize consumers simply because of where they are located on the transmission grid. The transmission owners/operators where the congestion/bottlenecks exist are familiar with the reliability impacts that may need to be addressed, but in many instances the economic impacts are not addressed due to a number of factors, including conflicts of interest, inappropriate default cost allocation mechanisms, and uncertain cost recovery. While negative short-term economic impacts can be expected in the areas of congestion/bottlenecks, there must be an expectation that short-term impacts will not be allowed to turn into larger, more damaging long-term impacts especially due

to inattention by the transmission owner/operator. NRECA urges, therefore, that DOE treat both reliability and economic impacts as equally important in the designation of NIETBs.

(2) DOE should not look to recreate the wheel by conducting its own national analysis to identify transmission congestion/bottlenecks. Instead, DOE should rely on the data and proposed regional transmission expansion plans developed by regional transmission organizations, among others. There are many resources for DOE to use in this arena and evaluation of identified problem areas should be the focus of DOE's efforts. These resources are available from the North American Electric Reliability Council (NERC) and its Regional Reliability Councils (RRCs), FERC approved RTO/ISOs, FERC recognized Regional State Committees, and State PUCs. It is critical that the experts (including transmission owners/operators, transmission customers and consumers) in a particular region and the corresponding states are involved in determining the location of potential NIETBs. NRECA believes, however, that if a particular region is experiencing unusual congestion/bottleneck problems that are not being resolved from a reliability or economic standpoint in a timely manner, we see an expanded opportunity for DOE to assist the region with developing options. Generally, however, NRECA recommends that DOE utilize existing studies and data when determining the location designation of NIETBs.

(3) NRECA supports DOE efforts to facilitate and support completion of proposed NIETB transmission projects that are or could be facing significant delays due to complex siting and/or permitting delays, or other unusual circumstances. DOE should generally rely on requests for NIETB designation from RTO/ISOs, NERC, RRCs, state agencies and utilities. DOE must be careful to coordinate its efforts with all parties for a proper solution to result.

NRECA looks forward to working with DOE on the critically important issues related to transmission congestion/bottlenecks.

Respectfully Submitted,

/s/

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September 20, 2004

34. Comments of Federal Trade Commission (FTC), 9/20/2004 4:53pm

Before the
United States Department of Energy
Office of Electric Transmission and Distribution

Designation of National Interest Electric Transmission Bottlenecks

Comment of the
Federal Trade Commission

September 20, 2004

Before the
United States Department of Energy
Office of Electric Transmission and Distribution

Designation of National Interest Electric Transmission Bottlenecks

Comment of the
Federal Trade Commission

I. INTRODUCTION AND SUMMARY

The Federal Trade Commission (FTC) appreciates this opportunity to present its views concerning designation of National Interest Electric Transmission Bottlenecks (NIETBs).[62] The Department of Energy's Electricity Advisory Board (EAB) recommended in its 2002 Transmission Grid Solutions Report that DOE initiate a process to identify NIETBs to improve the physical and financial state of the Nation's

[62] 69 Fed. Reg. 43833 (July 22, 2004).

transmission infrastructure.[63] In addition, economic analyses of private investment in electricity transmission have found actual or potential underprovision of transmission investment.[64] This proceeding is DOE's initial step to identify and designate NIETBs to "help mitigate transmission bottlenecks that are a significant barrier to the efficient operation of regional electricity markets, threaten the safe and reliable operation of the electric system, and/or impair national security."[65]

Before designating a particular area of transmission congestion as a NIETB, DOE may wish to require that (1) there is compelling evidence that the benefits of alleviating the congestion exceed the costs and (2) the market is unlikely to provide an efficient level of investment in a reasonable time frame. NIETB designations are more likely to benefit

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[63] Electricity Advisory Board, "Transmission Grid Solutions Report" (Sept. 2002), *available at* http://www.eab.doe.gov/Documents/TGSReport1-10.pdf.

[64] *See, e.g.*, Paul Joskow and Jean Tirole, "Merchant Transmission Investment," NBER Working Paper 9534 (Feb. 2003); Thomas-Olivier Leautier, "Transmission Constraints and Imperfect Markets for Power," 19 J. Reg. Econ. 27 (Jan. 2001); S. Auerbach, M. Crew, and P. Kleindorfer, "Transmission—Enabler of Wholesale Competition," in Expanding Competition in Regulated Industries (M. Crew, ed., 2000). The Federal Energy Regulatory Commission (FERC) has testified before Congress that transmission investment has not kept pace with electricity consumption. *See* Testimony of Pat Wood, III, Chairman, Federal Energy Regulatory Commission, before the Subcommittee on Energy and Air Quality of the Committee on Energy and Commerce, United States House of Representatives, May 19, 2004, *available at* http://www.ferc.gov/EventCalendar/Files/200405191157713/wood-05-17-04.pdf.

[65] 69 Fed. Reg. at 43833. DOE has stated that the NIETB designation process may also serve as a preliminary step toward implementation of "backstop" transmission siting authority that is proposed for DOE in some versions of the pending energy legislation before Congress. Id. at 43834. "Backstop" provisions would provide DOE with transmission siting authority if an NIETB designation occurred and the affected states did not grant siting permits or develop an alternative approach to alleviate the associated transmission congestion.

consumers in areas that do not have processes to identify and – where efficient – to alleviate transmission congestion.[66] DOE also may wish to include sensitivity analysis and contingent designations in its NIETB process because NIETB designations are likely to change with changes in underlying market conditions, such as changes in relative fuel prices or in U.S. energy policies.

The FTC is an independent agency responsible for maintaining competition and safeguarding the interests of consumers through enforcement of the antitrust and consumer protection laws and through competition advocacy. In the electric power industry, the FTC often analyzes regulatory or legislative proposals that may affect competition or the efficiency of resource allocation and reviews proposed mergers involving electric and gas utility companies. In the course of this work, as well as in antitrust research, investigations, and litigation, the FTC applies established legal and economic principles and recent developments in economic theory and empirical analysis to competition issues. As part of its competition advocacy program, the FTC has released two Staff Reports on electric power industry restructuring issues at the wholesale and retail levels.[67] The FTC and its staff have also filed numerous competition

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[66] Where the costs of alleviating transmission congestion exceed the benefits, congestion is consistent with efficient operation of the grid.

[67] FTC Staff Report: Competition and Consumer Protection Perspectives on Electric Power Regulatory Reform (July 2000), *available at* http://www.ftc.gov/be/v000009.htm (this report compiles previous comments that the FTC staff provided to various state and federal agencies); FTC Staff Report: Competition and Consumer Protection Perspectives on Electric Power Regulatory Reform, Focus on Retail Competition (Sept. 2001), *available at* http://www.ftc.gov/reports/elec/electricityreport.pdf.

advocacy comments on electricity restructuring efforts with FERC, the states, and international competition organizations.[68]

II. SOME TRANSMISSION CONGESTION CONDITIONS MAY WARRANT A NIETB DESIGNATION, BUT NOT ALL

Generally, profit incentives motivate investments by private parties in a market economy, and these investments often result in benefits for consumers in the form of lower prices, higher quality, and an increased pace of innovation. Current economic incentives to invest in transmission capacity, however, may be insufficient. Regulatory problems – such as regulatory approval of inefficient pricing of transmission congestion, local government impediments to entry of new generators or transmission projects, long litigation delays in reaching siting decisions, or other factors[69] – may cause socially suboptimal investment in transmission.

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[68] Related comments include Comment of the Staff of FTC's Bureau of Economics and the Office of the General Counsel, In the Matter of Standards of Conduct for Transmission Providers, FERC, Docket No. RM01-10-000 (Dec. 20, 2001); Comment of the Staff of the FTC Bureau of Economics, In the Matter of Deployment of Wireless Services Offering Advanced Telecommunication Capability, Federal Communications Commission, Docket No. 98-147 (Sept. 25, 1998); Comments of the Staff of the Bureau of Economics, In the Matter of Procedures for Consideration of Contract Rules, Postal Rate Commission, Docket No. RM89-5 (Feb. 20, 1990); Statement of the United States Federal Trade Commission Staff, In the Matter of Inquiry into Alleged Anticompetitive Practices Related to Marketing Affiliates of Interstate Pipelines, FERC, Docket No. RM87-5-000 (Jan. 29, 1987).

[69] Other causes for socially suboptimal private investment may include incentives of vertically integrated utilities to discriminate in granting transmission access to independent generators that compete with the generation assets of the utility (*see* FERC Orders No. 888 and 2000), or incentives to cross-subsidize affiliated generators when the regulated utility has unexercised market power. *See* FTC Comment in the Matter of Solicitation Processes for Public Utilities Acquisition and Disposition of Merchant Generation Assets by Public Utilities, FERC Docket Nos. PL04-6-000 and PL04-9-000 (July 14, 2004), *available at* http://www.ftc.gov/os/comments/ferc/v040022.pdf.

Despite these known and potential problems, DOE should not assume that all transmission congestion is a result of socially suboptimal transmission investment. Where there is transmission congestion, transmission service should be priced to take account of its scarcity.[70] If transmission capacity expansion and its substitutes are costly, then some level of congestion (during at least some time periods or conditions) is efficient, even in long-run equilibrium. Absent lumpiness in investments to reduce transmission congestion, it is inefficient to expand transmission capacity (or substitute investments such as generation located within a transmission constraint) so much that all congestion is eliminated. An investment to relieve transmission congestion may not be efficient and economically attractive to investors, for example, when the associated transmission congestion is expected to be temporary and, therefore, the project's expected cost is greater than the expected profits from the investment. A variety of events could cause transmission congestion to be short-lived.[71] These include, for example, generation

[70] Efficient transmission pricing also may provide the market with efficient signals for investment to reduce transmission congestion.

[71] Transmission investments are just one of a portfolio of approaches to reduce transmission congestion. As DOE explained in its National Transmission Grid Study, better grid operations, introduction of advanced transmission system technologies, or improved security can also increase transmission capacity on a particular transmission path. U.S. Dept. of Energy, "National Transmission Grid Study" (May 2002), *available at* http://www.eh.doe.gov/ntgs/gridstudy/main_screen.pdf. Better grid operations include consideration of alternative ownership and management arrangements. Shmuel Oren, George Gross, and Fernando Alvarado, "Alternative Business Models for Transmission Investment and Operation," Attachment C to the National Transmission Grid Study. Advanced transmission technologies include ultra-high-voltage transmission lines, high-voltage direct current transmission lines, energy storage devices, distributed generation, and enhanced power device monitoring. National Transmission Grid Study at 62.

investment inside the transmission constraint,[72] programs to promote price-responsive demand for electricity,[73] shifts in geographic patterns of growth in demand,[74] changes in relative fuel prices,[75] or transmission investments in other locations.[76]

[72] Generation investment inside the transmission constraint can supply an additional portion of the demand in the area and, therefore, reduce the amount that must be transmitted into the area to meet demand.

[73] An increase in the price-responsiveness of demand generally will reduce consumption during high price periods and, therefore, may reduce the amount that must be transmitted into the area.

[74] Shifts in relative economic growth in one area can result in changes in transmission patterns and generation investment patterns that can reduce (or increase) transmission congestion in other areas.

[75] Short-term changes in relative fuel prices will change the dispatch order of generators, and this may directly reduce (or increase) transmission congestion. Non-transitory changes in relative fuel prices may create incentives for new generation that will relieve transmission congestion (or, in rarer cases, increase it).

[76] Because electric power flows over the path of least resistance, transmission investments in one part of the grid may relieve congestion in other parts of the grid. In more unusual circumstances, transmission investment in one part of the grid may increase transmission congestion in other parts of the grid because of loop flows. Steven Stoft, Power System Economics: Designing Markets for Electricity 397 (2002).

Because transmission congestion may reflect efficient investment decisions, there is a risk that NIETB designations could distort efficient investments rather than steer them toward the socially optimal level. Consumers could be harmed by a suboptimal level of investment that wastes resources and results in higher electricity prices caused by more transmission congestion in other areas of the transmission grid. To avoid this outcome, DOE may wish to focus its NIETB designation program on transmission congestion areas exhibiting robust indications of a suboptimal level of investment to alleviate the congestion. The NIETB designation program is less likely to improve social welfare where (1) high-quality data are available to identify congestion bottlenecks so that private investors can accurately compare investment opportunities or (2) a functioning Regional Transmission Organization, with sufficient geographic scope to internalize transmission congestion issues such as loop flows, has a process to identify and alleviate congestion (where it is efficient to do so) even if private incentives to invest are insufficient to achieve an efficient level of investment.

III. DOE MAY WISH TO DESIGNATE CONTINGENT NIETBS BASED ON THE SENSITIVITY OF ITS NIETB ANALYSIS

Market conditions highly influence when and where transmission congestion occurs. The previous section of this comment discussed conditions that could reduce congestion over time in a given area. Other conditions may lead to increases in congestion. Examples include growth in local demand relative to supply and complex transmission loop flows caused by demand, generation, or transmission changes in other areas. If NIETB designations lead to inefficient investments and if the economic

conditions warranting the investments are transitory, the NIETB program may reduce economic efficiency rather than improve it.

One approach to minimize this potential harm to consumers is to utilize sensitivity analysis when making NIETB designations and to publicize the results of these analyses. For example, DOE may wish to separate NIETB designations that are robust from those that are contingent on one or more prospective conditions (such as changes in relative fuel prices or in U.S. energy policies).

DOE and FERC have already been presented with an example of how NIETB designations may vary based on prospective changes in U.S. energy policy and relative fuel prices. The 2003 report of the Seams Steering Group-Western Interconnect examined prospective transmission congestion patterns projected for 2013 and transmission investments to alleviate the projected congestion.[77] These transmission congestion areas might well be prospective NIETB designations in the West. In the study, congestion patterns and associated transmission projects to alleviate the congestion were developed for three different scenarios about the fuel sources for new generation in the West. The first scenario assumed that natural gas prices were relatively low, leading to use of natural gas to fuel 86% of new generation added between 2008 and 2013. This capacity was assumed to be sited close to load centers. The second scenario assumed that coal prices were relatively low, leading to use of coal to fuel 66% of new capacity in the

[77] Steve Waddington (PacifiCorp), "Western Perspective," presentation at the DOE Workshop on Designation of NIETBs (Salt Lake City, July 14, 2004), *available at* <http://electricity.doe.gov/documents/nietb_workshop/waddington.pdf>; Seams Steering Group-Western Interconnection, "Framework for Expansion of the Western Interconnection Transmission System" (Oct. 2003), *available at* http://www.ssg-wi.com/documents/316-FERC_Filing_103103_Final_TransmissionReport.pdf.

period. The third scenario assumed that security concerns prompted policies resulting in 72% of new generation coming from renewables (largely wind generation).

The results of these transmission simulations are directly relevant and important for DOE's NIETB designation process. The simulations reveal that the prospective NIETB designations under the three scenarios are substantially different. A few individual prospective NIETBs are common to all three scenarios, but most are contingent upon changes in relative fuel prices or in U.S. energy policy. The NIETB designations common to all three scenarios are likely to be robust, while the others are best categorized – and should be recognized – as contingent NIETB designations.

A contingent designation has implications for the process DOE uses to designate NIETBs. DOE has proposed that NIETB designations be initiated by private applications. For two reasons, DOE may wish to retain the ability to designate these conditions and not rely solely on private applications. First, DOE may be better situated than private applicants to identify these alternative scenarios. Second, contingent NIETB designations are unlikely to attract private applications.

IV. CONCLUSION

DOE's proposed program to designate NIETBs may provide a mechanism to identify and publicize actual and prospective transmission congestion areas where investment levels are suboptimal. DOE's NIETB designation efforts are most likely to benefit consumers in areas where (1) investors do not already have the data to identify attractive investments to relieve transmission congestion and (2) no mechanisms are present to alleviate congestion in instances where private incentives are unlikely to result in an efficient level of investment. DOE's NIETB designation efforts also are more

likely to benefit consumers if designations that are contingent upon specific economic and policy scenarios are distinguished from those that are robust to changes in economic conditions and energy policies.

35. Comments of North American Electric Reliability Council (NERC), 9/20/2004 4:54pm

Comments of the
North American Electric Reliability Council
on the
U.S. Department of Energy's
Office of Electric Transmission and Distribution's
Notice of Inquiry and Opportunity to Comment
on
Designation of National Interest Electric Transmission Bottlenecks (NIETBs)
(Federal Register, Volume 69, No. 140, Thursday, July 22, 2004/Notices)

The North American Electric Reliability Council (NERC) offers the following comments in response to the U.S. Department of Energy's (DOE) Office of Electric Transmission and Distribution's notice of inquiry and opportunity to comment on issues relating to the identification, designation, and possible mitigation of National Interest Electric Transmission Bottlenecks (NIETBs).

NERC commends DOE on its efforts to identify, designate, and possibly mitigate NIETBs and for raising the profile of this issue. NERC is particularly interested in the identification, designation, and mitigation of NIETBs that jeopardize national security or create a risk of widespread grid reliability problems or the likelihood that major customer load centers will be without adequate electricity supplies.[78] NERC offers its assistance to DOE on its NIETB efforts.

Scope the NIETB Process — NERC recommends that DOE scope a proposed overall NIETB process that describes how NIETBs can be identified and designated and what could be expected from DOE in terms of helping the electric industry alleviate or mitigate them. DOE should seek assistance from NERC, the electric industry, and the regulatory community in establishing this NIETB process.

Rely on Industry Analyses — DOE should rely as much as possible on analyses already conducted by the industry for identifying NIETBs. The electric industry is well equipped to identify NIETBs and to meet appropriate guidelines or criteria that may be established.

Establish an NIETB Nomination Process — DOE should consider NIETB designation based on requests or nominations by the industry and regulatory community. NERC, regional reliability councils, independent system operators (ISOs), regional transmission organizations (RTOs), individual systems, state commissions, and other groups with significant responsibilities for conducting transmission planning or for approving transmission projects could submit nominations to DOE for its consideration.

Work with Industry and Regulators to Address NIETB Obstacles — DOE and the regulatory community could prove to be particularly helpful in addressing and resolving obstacles to needed transmission expansion and reinforcement that fall in their areas of responsibility. Two such areas include the timely recovery of transmission investments and the siting and routing of proposed

[78] These areas are embodied in two of the three primary criteria for determining NIETBs, as suggested in the
Secretary of Energy's Electricity Advisory Board "Transmission Grid Solutions Report," September 2002.

transmission projects. The stakeholders must develop solutions to NIETBs with their respective state commissions in the relevant region. These solutions can take various forms, not only additional transmission. They can also include the installation of appropriate generation and the implementation of appropriate demand-side management programs. Because of the international aspects of transmission, identifying and resolving transmission bottlenecks will also require close cooperation and coordination with transmission entities and government agencies in Canada.

Pursue Recommendations in NERC's "Transmission Expansion: Issues and Recommendations"

Report — NERC published a "Transmission Expansion: Issues and Recommendations" report in February 2002 that analyzed the issues and obstacles that are impacting the planning and expansion of the transmission systems, and presented recommendations to reduce or eliminate those obstacles. DOE is encouraged to review this report to determine those recommendations that DOE can pursue that are beyond NERC's scope of responsibility. NERC's specific comments on the proposed NIETB criteria and its specific responses to DOE's four proposed questions are detailed below.

A. Criteria for Designating NIETBs

The U.S. DOE Secretary's Electricity Advisory Board recommended that to be designated a NIETB, the bottleneck must meet one of three criteria:

1. The bottleneck jeopardizes national security;
2. The bottleneck creates a risk of widespread grid reliability problems or the likelihood that major customer load centers will be without adequate electricity supplies; or
3. The bottleneck creates the risk of significant consumer cost increases in electricity markets that could have serious consequences on the national or a broad regional economy or risks significant consumer cost increases over an area or region.

Response:

NERC encourages DOE to provide a clarifying general definition for the term National Interest Electric Transmission Bottleneck and more detail on the several criteria listed above. NERC is particularly interested in the identification, designation, and mitigation of NIETBs that jeopardize national security or create a risk of widespread grid reliability problems or the likelihood that major customer load centers will be without adequate electricity supplies. The EAB report also listed three other factors that could appropriately be used to provide additional support for particular facilities being identified as a NIETB:

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

DOE should consider these factors in developing its more detailed criteria.

NERC published a "Transmission Expansion: Issues and Recommendations" report in February 2002 that analyzed the issues and obstacles which are impacting the planning and expansion of the transmission systems, and presented recommendations to reduce or eliminate those obstacles. The report focused on actions or activities that NERC can pursue.

For areas beyond NERC's responsibility, the report also encouraged the electric industry, the regulatory community, and others to consider a number of actions.

The issues and recommendations in this report are grouped into four areas: planning, cost recovery, siting, and education. Coordination is an underlying theme in each of these four areas. Coordination is required among various stakeholder groups and regulatory bodies. It is also necessary among those entities that deal with the technical elements of planning, siting, and constructing transmission facilities, including regional reliability groups and transmission entities responsible for the reliability of the bulk electric systems. DOE is encouraged to review NERC's Transmission Expansion: Issues and Recommendations report to determine those recommendations that DOE can pursue to address the obstacles and issues impacting the expansion and reinforcement of the transmission systems that are beyond NERC's scope of responsibility.

B. DOE's Proposed Questions for Comment
To assist DOE in its NIETB effort, NERC is also offering the following comments to DOE's additional four questions.

1. Are the Electricity Advisory Board's recommended criteria for designation of National Interest Electric Transmission Bottlenecks appropriate and sufficient? If not, what should they be? For example, should DOE also consider disaster recovery, economic development, and the enhancement of the ability to deal with market and system contingencies in designating NIETBs?

Response:
In general, the three broad categories (criteria) for designating NIETBs may be appropriate; however, more detail should be provided for each criterion in terms of how to quantify transmission constraints within these categories. For example, exactly what type of transmission constraint would jeopardize national security? Would criterion 2 bottlenecks be those that are identified through the application of NERC reliability standards and regional council planning and operating criteria? In the case of criterion 3, what amount over what period of time constitutes 'significant' consumer cost increases over an area or region — 10%, 50%?

In today's world, the reasons for transmission development, expansion, and reinforcement must be reexamined not only from a reliability perspective but also from the context of competitive electricity markets. These markets require transmission expansion not only to interconnect new generation capacity but also to provide flexibility for the delivery of that generation capacity to customers. Open access to the transmission systems has raised concern about the definition or justification of need for new transmission projects. In the future, the need for new transmission will likely be based on or driven by access to competitive power supplies in addition to the traditional reliability needs. However, the potential for economic gains or increased electric system flexibility should not be allowed to degrade or encroach upon the reliability of the bulk electric systems. While increased flexibility and economic choices in electric power supplies may be desirable, they should not be achieved at the expense of reliability.

2. What should be the role of transmission grid operators, utilities, other market participants, regional entities, States, Federal agencies, Native American tribes and others in the process of identifying, designating, and addressing NIETBs? For example, should a NIETB be designated only if some entity applies to DOE for designation? Should DOE accept applications only from entities from regions that have an extant regional transmission (or resource) plan? Should DOE be able to designate a NIETB even if no entity asks DOE to do so?

Response:
DOE should not conduct independent assessments or make independent decisions concerning NIETB designations. Such independent assessments would unnecessarily duplicate the studies conducted by the regional reliability councils and their member systems, ISOs, RTOs, and individual transmission owners. These entities have the necessary tools, expertise, and experience to study and analyze the transmission systems in their respective areas or regions and already know where transmission constraints exist and where future transmission constraints may materialize. NERC suggests that DOE consider NIETB designation based on requests or nominations by NERC, regional reliability councils, ISOs, RTOs, individual systems, state commissions, and other groups with significant responsibilities for conducting transmission planning. Entities that are familiar with the aspects of transmission grid operation, expansion, and utilization can identify transmission bottlenecks for investigation and perform the engineering analysis to qualify transmission for bottleneck designation. DOE should develop more specific criteria for this identification or designation to prevent unnecessary review of unqualified projects. It should also include in its process how conflicts will be resolved when one party applies for NIETB status for one of its projects and another party objects to the recommendation. As noted in the National Transmission Grid Study (p. 20), "Successfully addressing transmission bottlenecks requires careful analysis and consideration of their impacts on both market operations and system reliability, as well as analysis of the costs of transmission and non-transmission alternatives. In other words, removing bottlenecks is not simply a matter of finding "congested" transmission paths and then reinforcing existing transmission facilities along those paths or constructing new facilities." The stakeholders must develop solutions with their respective state commissions in the relevant region, including the appropriate allocation of costs to ensure that no transmission entities or groups of end-use customers are unduly harmed. These solutions can take various forms, not only additional transmission.
They can also include the installation of appropriate generation and the implementation of appropriate demand-side management programs. Identifying and resolving transmission bottlenecks will also require cooperation and coordination with Canada and its appropriate transmission entities and regulators.
Initially, DOE should focus its efforts on developing and implementing a process to identify:
1) national transmission bottlenecks as suggested by NERC, the regional reliability councils and their member systems, the ISOs, RTOs, and individual system owners, and
2) the regional/national benefits in relieving these bottlenecks. The transmission systems should include transmission generally above 100 kV, including transmission owned by investor owners, municipals, federal (WAPA, TVA, BPA, etc), cooperatives, etc.

Another role for DOE, in conjunction with state commissions and regional state committees, in the designation of NIETBs would be, upon request by the transmission entities and other parties involved, to facilitate and support the completion of proposed transmission projects that face significantly complex siting and permitting issues that could unreasonably delay such projects. Consideration must also be given to in-progress or planned mitigation measures before qualifying particular transmission assets as an NIETB.

3. How might DOE identify bottlenecks in regions where much pertinent data are not available, in contrast to regions where transmission expansion plans have been developed and made public?

Response:
NERC, the regional reliability councils and their member systems, the ISOs, RTOs, and individual system owners essentially cover all portions of the United States, Canada, and the

northern portion of Baja California Norte, Mexico. Transmission data and proposed transmission expansions recommended by these transmission entities and their transmission customers eventually become available as the plans progress, especially through the NERC and regional council reports and publications. Any DOE NIETB program should be complementary to these existing efforts.

DOE should also recognize that the process of identifying and dealing with significant assets and NIETBs would likely need to be handled to some extent in a confidential manner. The information, including the selection process itself, could be a blueprint for potential terrorist activities. Procedures, such as the Critical Energy Infrastructure Information procedures, would likely need to come into play. Without some type of associated confidential process, involved parties will likely be unwilling to share or even produce sensitive system information. Conversely, this confidentiality issue must also recognize that major transmission projects generally involve a public process. The details and information that would be made public need further review and development.

4. What actions should DOE undertake to facilitate and monitor progress towards mitigation of designated NIETBs?

Response:
Consistent with FERC Order 2000, DOE should work with the appropriate regulators to develop and authorize cost-recovery mechanisms that encourage investment in needed transmission facilities. Further, where regional transmission projects are involved, regional cost-recovery mechanisms should be developed.

DOE should work with NERC, the regional reliability councils, ISOs, RTOs, state commissions, regional state committees, and other stakeholders to establish procedures for initiating DOE involvement in the siting and permitting of critical transmission projects that face unreasonable delays. In some cases, siting and routing issues represent significant obstacles to the expansion of the transmission systems. These issues revolve around the difficulties of acquiring regulatory approval and rights-of-way for transmission lines. Such obstacles can occur at the local, state, provincial, and even federal levels.

Further, as stated above under item 2, DOE's NIETB process should include regular reviews of the status of efforts to mitigate identified transmission bottlenecks. NERC, regional councils, ISOs, RTOs, individual systems, transmission owners, market participants and local regulatory agencies should be involved, as appropriate, depending on the category of the transmission bottleneck, in both the identification process and in the development and authorization of the mitigation work.

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N A R U C
National Association of Regulatory Utility Commissioners

September 20, 2004

Office of Electric Transmission and Distribution, TD-1
Attention: Transmission Bottleneck Comments
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Forrestal Building, Room 6H050
1000 Independence Avenue, S.W.
Washington, D.C. 20585

Re: Designation of National Interest Electric Transmission Bottlenecks

The National Association of Regulatory Utility Commissioners (NARUC) submits these comments in response to the Department of Energy's (DOE) Office of Electric Transmission and Distribution's notice of inquiry and opportunity to comment in this docket.[79] DOE released the notice of inquiry and opportunity to comment with publication in the Federal Register on July 22, 2004 (Vol. 69, No. 140).

INTRODUCTION

NARUC, founded in 1889, is "the national organization of the State commissions" responsible for economic and safety regulation of the intrastate operation of utilities. Specifically, NARUC's member commissions have the obligation under State law to ensure the establishment and maintenance of such energy utility services as may be required by the public convenience and necessity as well as to ensure that such services are provided at just and reasonable rates. NARUC's members include the

[79] DOE's notice of inquiry does not ask for comment on any of the National Interest Transmission Corridor and related provisions of pending energy legislation. The comprehensive energy legislation contains provisions that would require the Secretary of Energy, within one year after enactment into law, and every three years thereafter, to designate "National Interest Transmission Corridors". The pending legislation would also give certain Federal backstop siting authority to the Federal Energy Regulatory Commission for facilities to be located within DOE-designated National Interest Transmission Corridors.

government agencies in the fifty States, the District of Columbia, Puerto Rico and the Virgin Islands charged with regulating conditions of service of the intrastate operations of electric, natural gas, water, and telephone utilities. Both Congress and the Federal courts have long recognized that NARUC is a proper party to represent the collective interest of State regulatory commissions.

The reliability of electric service, including the adequacy of supply and the security of system operations, is essential to the economic well-being and domestic security of the nation. There is a national interest in a transmission network that is reliable and available to support competitive and efficient electricity markets. Historically, the level of electric reliability experienced in the United States has been achieved through the voluntary efforts of the electric utility industry, through the North American Electric Reliability Council (NERC) and the regional reliability councils, to police themselves with federal and State regulatory oversight. Absolute reliability is not physically possible and reliability of transmission does not have infinite economic value. The public interest in a reliable and cost-efficient transmission system requires that the level of reliability to be achieved and the standards and criteria to be complied with be established with public input and oversight.

An illustration of the effects when reliability is compromised is the August 14, 2003 Blackout. The August 14 Blackout was a cascading blackout resulting in electric service interruptions to an estimated 50 million people representing 61,800 megawatts in the Northeastern portion of the United States and Ontario, Canada. Such a cascading blackout or lengthy disruptions of electric service are extreme events that endanger the health and welfare of those impacted and requires the mobilization of State police, fire and emergency resources. It has been estimated that the August 14 Blackout resulted in an economic cost estimated to be between four and ten billion dollars, disrupting business, mass transportation, and people's lives in general. As such, State and provincial economies bear the burden of the economic impacts of the Blackout.

BACKGROUND

Today, bottlenecks in the transmission system impede economically efficient electricity transactions and potentially threaten the safe and reliable operation of the transmission system. DOE estimates that these bottlenecks cost consumers several billion dollars per year by forcing wholesale electricity purchasers to buy from higher-cost suppliers.[80] Thus, DOE seeks comments on issues relating to the identification, designation and possible mitigation of National Interest Electric Transmission Bottlenecks (NIETB).

DOE's inquiry is the initial step in seeking to identify and designate NIETBs. By publicly identifying identifying and designating NIETBs, DOE believes it will help

[80] This estimate doe not include the reliability costs associated with such bottlenecks.

mitigate transmission bottlenecks that are a significant barrier to the efficient operation of regional electricity markets, threaten the safe and reliable operation of the electric system, and/or impair national security.[81] The *National Energy Policy*,[82] DOE's *National Transmission Grid Study*,[83] and the *Transmission Grid Solutions Report*[84] issued by the Secretary's Electricity Advisory Board, recommend that DOE initiate a process to determine how to identify and designate transmission bottlenecks of national interest, as a first step toward their mitigation.

The *National Transmission Grid Study* states the following:

> Transmission bottlenecks affect national interests by increasing the cost of electricity to consumers and the risk of transmission system reliability problems in various regions throughout the United States. Relieving transmission bottlenecks is a regional issue. DOE will work in partnership with FERC, States, regions, and local communities to designate significant bottlenecks and take actions to ensure that they are addressed.

The Electricity Advisory Board's *Transmission Grid Solutions Report* states, in relevant part:

> 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.

In addition, DOE has completed some preliminary scoping studies to support DOE identification of NIETBs.[85] Finally, in July 2004, DOE organized a workshop in Salt Lake City, Utah, immediately following the NARUC Summer Meetings.[86]

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[81] With the advent of wholesale electricity markets, trade has increased exponentially, and utilities now shop for the lowest cost power from suppliers reachable through the transmission network. The increase in regional electricity trade saves electricity consumers billions of dollars, but it places significant additional loads on the transmission facilities over which this trade is conducted. Steady growth in demand for electricity also has contributed to the growth in demand for transmission service. While transmission service has become more important economically and operationally, investment in new transmission facilities has not kept pace. While this decline in investment does not reflect on the reliability of the system, it does limit economic transactions.

[82] May 2001

[83] May 2002

[84] September 2002

[85] These scoping studies include a survey of existing models and tools that could support bottleneck assessment by DOE and a survey of bottlenecks reported by regional transmission operators or independent system operators.

NARUC's comments on the pertinent issues are developed below under the relevant sections.

I. Electricity Advisory Board's Recommended Criteria for Designation of NIETBs

To assist in developing a procedure for identifying, designating, and addressing NIETBs, DOE requests comments on the appropriateness and sufficiency of the Electricity Advisory Board's recommended criteria for NIETB designation. The Electricity Advisory Board recommends that the bottleneck must meet one of three criteria, as follows: (1) the bottleneck jeopardizes national security; (2) the bottleneck creates a risk of widespread grid reliability problems or the likelihood that major customer load centers will be without adequate electricity supplies; or (3) the bottleneck creates the risk of significant consumer cost increases in electricity markets that could have serious consequences on the national or a broad regional economy or risks significant consumer cost increases over an area or region.[87]

As to the first criteria that the bottleneck jeopardizes national security, NARUC urges DOE to carefully consider the security implications of designating NIETBs that jeopardize national security. NARUC recommends that DOE carefully weigh the benefits of making security-related NIETBs publicly available against the possibility that such vulnerabilities could be exploited. While publicly labeling bottlenecks that jeopardize national security, DOE should protect against the possibility that such vulnerabilities could be exploited once they are highlighted. Finally, where State authority exists to impose sanctions against those who engage in actions that abuse, misuse, or manipulate the grid in a manner that threatens reliability to the detriment of the State's local retail markets, it should be preserved.[88]

As to the second criteria that the bottleneck creates a risk of widespread grid reliability problems or the likelihood that major customer load centers will be without adequate electricity supplies, NARUC addressed these issues in response to the August 14 Blackout. After the August 14 Blackout, NARUC resolved that the U.S.-Canada Task Force coordinate with NERC and other appropriate entities to ensure that the necessary engineering studies are performed to determine whether the operation or failure to operate of existing system protection, stabilization, voltage control, load shedding, or other equipment, or the replacement or addition of such equipment, could have mitigated

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[86] The purpose of the workshop was to learn from stakeholders what they believe to be the major issues associated with the designated of NIETBs, and how they believe the process should be designed to maximize its benefits to the users of the grid and to electricity consumers.

[87] If the recommended criteria are not appropriate and sufficient, DOE asks whether it should also consider disaster recovery, economic development, and the enhancement of the ability to deal with market and system contingencies in designating NIETBs.

[88] *Resolution on Electric System Reliability*, November 12, 1997.

the cascading of the August 14 Blackout and, whether such improvements could be of value in protecting against future blackouts.[89] In the same regard, NARUC supports studies to mitigate the risk that NIETBs will affect widespread grid reliability. In addition, NARUC has urged that it is incumbent upon the States to work with DOE and the industry to formulate and implement structural changes in the bulk electric system to mitigate the possibility of another event such as the August 14 Blackout.[90] To the extent that structural changes result from the NIETB inquiry that are intended to improve reliability, NARUC supports State coordination with DOE's efforts. Finally, NARUC has urged that actions by the federal government and States to ensure a reliable electricity transmission system should be consistent with the following principle: Reliability standards and criteria addressing both the planning and the operation for the bulk transmission system should be comprehensive and should consider the economic value of reliability, the practical engineering of the network, and a full range of alternatives to additional transmission line investments. [91]

As to the third criteria that the bottlenecks create the risk of significant consumer cost increase in electricity markets that could have serious consequences on the national or a broad regional economy or risks significant consumer cost increases over an area or region, NARUC addressed these issues in response to price spikes of unusual and unexpected proportions through many regional electric markets throughout the country. These price spikes led to curtailment or shutdown of operations of some large industrial customers and are likely to lead to increased prices in the future for smaller commercial and residential customers. The high market price volatility raised concerns about the integrity of the markets, leading to calls from numerous participants, consumers and policy makers for investigation and heightened monitoring of these markets by regulatory bodies. Such investigation and monitoring was necessary to either confirm the markets are functioning well or to determine whether or not there are flaws or market power abuse which otherwise raise prices above competitive levels.

In response to the price volatility described above, NARUC has urged the voluntary reliability councils and systems operators to adopt policies that allow timely access by regulatory bodies to information necessary to enable adequate monitoring of the wholesale electricity market.[92] NARUC has also resolved to work with its member State Commissions and other federal and State regulators to develop recommendations on the types of information necessary to adequately monitor wholesale electricity markets and to assure proper access to such information.[93] In order to identify corrective policy

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[89] *Resolution Supporting Full Examination of Blackout Cases and Full Disclosure to the States of the Results*, March 10, 2004.

[90] *Id.*

[91] *Resolution on Electric System Reliability*, November 12, 1997.

[92] *Resolution on Access to Data Necessary to Monitor the Developing Wholesale Electricity Market*, July 26, 2000.

[93] *Id.*

options to assure the public of the competitiveness and efficiency of the developing wholesale electric market and its prices, regulatory bodies need access to data such as production for generating plants, transmission path schedules and actual flows.[94] By the same token, NARUC supports the approach described above in gathering information in the NIETB context as it relates to monitoring significant increases in electricity consumer costs.

II. Role of Market Participants, Regional Entities, State, Federal Agencies in the Process of Identifying, Designating, and Addressing NIETBs

DOE also requests comments on the question on the role of transmission grid operators, utilities, other market participants, regional entities, States, Federal agencies, Native American tribes and others in the process of identifying, designating, and addressing NIETBs. NARUC concurs with the *National Transmission Grid Study* that relieving transmission bottlenecks is a regional issue. Thus, NARUC applauds DOE's commitment to work in partnership with FERC, States, regions, and local communities to designate significant bottlenecks and take actions to ensure that they are addressed. Also, NARUC supports the Electricity Advisory Board's proposal that 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.

NARUC requests that DOE provide interested stakeholders, including States, with an opportunity to provide comments on the potential designation of NIETBs. The input of stakeholders is important because various factors, many known to State and local entities only, play into whether a designation as an NIETB is appropriate. The level of reliability to be achieved and the standards and criteria to be complied with must be established with public input and oversight.[95] This is necessary to both preserve the public interest and prevent anti-competitive abuses with respect to the transmission system.[96] NARUC urges that the governance of the NERC and the regional councils should be fairly representative of all industry interests and should include mechanisms to allow input from federal and State regulatory authorities and other public interest groups while preserving independent regulatory oversight.[97] Meetings to establish reliability criteria and standards should be open to public input.[98] Federal agencies and federal legislation should facilitate effective decision-making by the States and recognize the authority of the States to create regional

[94] *Id.*

[95] *Resolution on Electric System Reliability*, November 12, 1997.

[96] *Id.*

[97] *Id.*

[98] *Id.*

mechanisms including, but not limited to inter-State compacts, or regional reliability boards, for the purpose of addressing transmission reliability issues.[99] NARUC supports the collaborative approach described above in the process for identifying, designating, and addressing NIETBs.

CONCLUSION

NARUC respectfully urges DOE to rely heavily on the expertise and unique experience of the State regulatory utility commissions as reflected in these comments.

Respectfully submitted,

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August 20, 2004

[99] *Id.*

37. Comments of PJM Interconnection, L. L. C., 9/20/2004 4:55 pm

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Re: Designation of National Interest Electric Transmission Bottlenecks
Notice of Inquiry and Opportunity to Comment (Issued July 16, 2004)

Dear Sir or Madam:

PJM Interconnection, L.L.C. ("PJM"), pursuant to the U.S. Department of Energy's ("DOE") Notice of Inquiry ("NOI") issued on July 16, 2004 (Federal Register / Vol. 69, No. 140 / Thursday, July 22, 2004 / Notices), hereby submits comments to the NOI. PJM's comments address the three criteria recommended by the Secretary's Electric Advisory Board in the *Transmission Grid Solutions Report* (September 2002) for designating National Interest Electric Transmission Bottlenecks ("NIETB") and the four questions set forth in the NOI.

Introduction & Summary

In the NOI, the DOE seeks comments on issues relating to the identification, designation and possible mitigation of NIETB. The NOI states, "[b]y publicly identifying and designating NIETB, DOE will help mitigate transmission bottlenecks that are a significant barrier to the efficient operation of regional electricity market, threaten the safe and reliable operation of the (nation's) electric system, and/or impair national security."

PJM believes that there are key areas where DOE's designation could play an important role and other areas where, if not carefully considered, it would not. Key areas where a national designation would be helpful include:

1. Providing a focus for the establishment of independent planning processes in those areas of the nation not covered by RTO/ISO footprints or other independent planning processes;

2. In all areas of the nation, providing an inventory of those facilities which have regional or inter-regional impacts and which require a coordinated siting process among states;

3. In all areas of the nation, providing an inventory of those facilities which may require the application of cost allocation principles beyond existing RTO/ISO or individual utility boundaries.

ries.

4. In all areas of the nation, identifying the type of facilities where, as a result of their special impact, appropriate cost recovery mechanisms are critical to ensure needed investment.

The criteria for designating NIETB must be clearly defined. Unless the definitions of thresholds for NIETB are clearly set forth, they will ferment disagreement. Moreover, the designation must not be seen as interfering with the need for the appropriate consideration of generation and demand side solutions, in addition to transmission solutions, prior to the force of the federal government designating a particular line or facility.

Answer to Question # 1/Criteria to Designate NIETB

NOI Question 1: *Are the Electricity Advisory Board's recommended criteria for designation of (NIETB) appropriate and sufficient? ....*

The three criteria for designating NIETB set forth in the NOI are as follows:

1. *The bottleneck jeopardizes national security;*
2. *The bottleneck creates a risk of widespread grid reliability problems or the likelihood that major customer load centers will be without adequate electricity supplies; or*
3. *The bottleneck creates the risk of significant consumer cost increase in electricity markets that could have serous consequences on the national or a broad regional economy or risks significant consumer cost increases over an area or region.*

The recommended criteria may be acceptable for identifying a national interest in bottlenecks but they are too general for use in application and potentially duplicative of existing processes. As stated above, PJM is concerned that the criteria do not clearly define the thresholds for determining NIETB.

There are questions that must be answered to clarify the recommended criteria. For instance, as to the first criterion, how do you decide that a bottleneck jeopardizes national security and how do you derive a bright line test for jeopardizing national security? What

threshold would you apply? Further, it will be difficult to reconcile the need for confidentiality related to national security issues with the stated goal of public identification of NIETB. As to the second criterion, the existing NERC reliability criteria and Regional Reliability Council criteria already identify the type of reliability problems described in the criterion. DOE should be wary of creating a new standard at this time absent compelling evidence that the NERC standards development process has failed in its mission of identifying appropriate reliability criteria. For example, what would be the measure of how much load would have to be lost for a problem to arise to be designated a NIETB as opposed to a violation of NERC reliability criteria? Moreover, the second criterion

refers to the existence of "adequate electric supplies." It should be noted that planning and ensuring adequacy of electric supply is different than planning for the security of supply. Adequacy is addressed in many different ways around the nation---from market based capacity solutions to forms of integrated resource planning conducted at the state level. Transmission adequacy is reviewed at the state and regional level subject to FERC oversight within RTO/ISO areas and undertaken on a utility by utility basis subject to state review in non-RTO/ISO areas. The DOE needs to be cautious to ensure that its designation complements rather than complicates the role of FERC, states, utilities, the marketplace and RTOs/ISOs in ensuring adequacy of supply.

It is very difficult to imagine how a threshold would be established for the third criteria. At what level do you determine that the higher costs justify serious consequences on the national or a broad regional economy? If you could establish that threshold, then you would have to establish that the impact is not transitory and that it justifies building transmission facilities to bring cheaper energy from somewhere else rather than building generation in the affected area. Finally, the criterion implies that all bottlenecks must be mitigated and all transmission congestion be eliminated. PJM's LMP system identifies the cost of congestion and allows the marketplace to determine whether appropriate investments can be made. Except in areas of unhedgable congestion, the marketplace weighs whether continuing to pay congestion offset by markedly lower energy prices is superior than resolving the congestion through additional transmission infrastructure development.

Answer to Question # 2/Role of RTOs

NOI Question 2: *What should the role of transmission grid operators, utilities, other market participant, regional entities, States, Federal agencies, Native American Tribes an others in the process of identifying, designating, and addressing NIETB? …*

As stated above, PJM believes the role of the DOE should be limited in regions where the transmission grid is operated by an independent RTO/ISO. RTOs/ISOs should identify bottlenecks in the course of their planning process and cooperative planning with neighboring regions. PJM believes that regional planning by RTOs/ISOs play a significant role in ensuring the reliability the grid. PJM was the first RTO to implement a Regional Transmission Expansion Planning Process ("RTEPP") that requires facilities to

be put into service to maintain reliability. An independent RTO, such as PJM, with a "big picture" look at the entire grid and a transparent stakeholder process can ensure that the appropriate transmission facilities are in place to support reliability. The continuing evolution and growth of PJM's robust and competitive regional markets rests on a foundation of bulk power system reliability, ensuring PJM's ongoing ability to meet control area load-serving obligations. PJM's FERC-approved RTEPP preserves this foundation through independent analysis and recommendation, supported by broad stakeholder input and approval by an independent RTO Board in order to produce a single RTEP Plan.

The RTEPP is driven by a number of planning perspectives and inputs, including reliability assessments based on applicable Reliability Council criteria, assessments of transmission system congestion, assessments of transmission system operational performance, evaluation of requests for generation and merchant transmission interconnection, evaluation of requests for firm transmission service, and the evaluation of transmission owner identified and interregional transmission plans.

The cumulative effect of these drivers is analyzed through the RTEPP to develop a single RTEP Plan which recommends specific transmission facility enhancements and expansion on a reliable, economic and environmentally acceptable basis. The assurance of a reliable transmission system and the protection of the customer rights with respect to that system coupled with the timely provision of information to stakeholders are the foundation principles of the PJM planning process.

Overall, PJM's RTEPP, under a FERC-approved RTO model, encompasses independent analysis, recommendation and approval to ensure that facility enhancements and cost responsibilities can be identified in a fair and non-discriminatory manner, free of any market sector's influence. PJM's RTEPP also includes an economic planning component to develop cost-effective solutions to alleviate congestion on the transmission system that, in the judgment of PJM, cannot be helped by the use of financial transmission rights or other hedging instruments available pursuant to the PJM Tariff or the Operating Agreements and that no market participant or other entity has proposed to resolve. [100]

PJM has also taken affirmative steps to promote joint planning with neighboring control areas in an effort to identify and address bottlenecks and improve the reliability, congestion management and adequacy of the transmission grid. For instance, on April 16, 2003, the Midwest Independent System Operator, Inc. (MISO), PJM and the Tennessee Valley Authority (TVA) signed a memorandum of understanding (MOU)

[100] The DOE should not implement a plan which has the potential to interfere with PJM's market structure and RTEPP or other RTO/ISO planning processes that are designed to assure that transmission bottlenecks are identified and addressed in a way that encourages market-driven operating and investment actions for preventing and relieving congestion. In Order 2000, the FERC confirmed that an RTO must have exclusive authority for maintaining the short-term reliability of the grid it operates. In discharging its responsibilities, an RTO must adhere to NERC reliability standards. PJM is concerned with any program or process which could undermine RTO/ISO transmission planning processes by injecting competing transmission congestion analysis and solutions. Such a process would only serve to encourage disputes in the RTO/ISO planning processes which could delay the implementation of solutions to alleviate bottlenecks.

which provides for data exchange to pursue the development of a multi-regional approach that will strengthen coordination of their respective systems' electric transmission, operations and related transactions. The ultimate goal of the MISO, PJM and TVA is to improve the reliability, congestion management and adequacy of the transmission grid while providing broad, seamless, non-discriminatory transmission service and energy markets across a large portion of the Eastern Interconnection.

In another example, PJM entered into a Joint Operating Agreement with MISO on December 30, 2003. This JOA establishes an exchange of information and establishes or confirms other arrangements and protocols in furtherance of the reliability of their systems and efficient market operations. The JOA achieves several goals. First, it enhances reliability of the parties' operations as currently configured and as they may be expanded. Second, the JOA establishes the technical prerequisites to the coordinated administration of the MISO and PJM joint and common market. Third, the JOA facilitates the integration of new companies into the PJM and MISO markets and operations.

In RTO/ISO areas a designation could assist in both the siting and cost recovery process. As to siting, the designation of national lines, particularly in areas where solutions span two RTO/ISO boundaries, could provide the basis for a coordinated state regional siting process with limited FERC backstop authority if necessary. The FERC would defer to regional solutions arrived at through independent processes and only step in if siting of the facility has been stalled or if federal land issues interfere with the siting of the facility determined through the independent process. Moreover, the FERC would provide deference to regional cost allocation solutions and only arbitrate inter-regional disputes concerning the assignment of costs and benefits. Finally, DOE's designation would be helpful to ensuring that cost recovery for such critical facilities is clear.

In non-RTO/ISO areas, the designation of either specific areas or even types of facilities as having regional and national impacts can plant the seeds for the development of independent planning processes that allow for regional collaborative solutions. DOE would, in effect, be designating those facilities which have a significant regional impact beyond an individual utility's planning footprint. For those facilities or types of facilities, an independent process would be developed at the regional level to ensure that the determination of need is made with a focus on the region as a whole, that an appropriate allocation of costs and benefits has occurred and that siting decisions take into account the regional nature of the facility. The states would play a key role in the development of these processes, some of which are already in place to varying degrees.

In short, the DOE process should not supplant existing processes but instead focus on and incent the development of independent planning processes in those places where the process is less than complete today. Instead, in all areas DOE's focus should work to foster:

---Independent planning processes;

---Appropriate identification and allocation of costs and benefits;

---Collaborative regional siting processes among states

---Identification of the need for cost recovery mechanisms which incent development of the identified needed infrastructure.

Answer to Question # 3

NOI Question 3: *How might DOE identify bottlenecks in regions where much pertinent data are not available, in contrast to regions where transmission expansion plans have been developed and made public?*

As discussed above, PJM has in place a FERC-approved transmission expansion plan (RTEPP). But PJM supports the need to obtain pertinent data so that the DOE can identify bottlenecks in regions where transmission expansion plans have not been developed. In doing so, however, the DOE must be mindful that information concerning transmission bottlenecks may be critical energy infrastructure information (CEII) restricted from disclosure under the FERC's rules and regulation (18 C.F.R. § 388.113). When amending its regulations in the aftermath of the September 11, 2001, terrorist attacks on the United States of America (FERC Order No. 630, 102 FERC ¶ 61,190), the FERC recognized that such information should not be given easy public access. The DOE must also consider the potential public safety threat in its handling of such information and data.

Answer to Question # 4

NOI Question 4: *What actions should the DOE undertake to facilitate and monitor progress towards mitigation of designated NIETBs?*

PJM believes that there is a need for independent analysis and identification of transmission bottlenecks and that the DOE may play a role in that process, especially in regions of the country where the electric transmission grid are not operated by an independent RTO. In those areas, the DOE may provide a valuable role in identifying and mitigating NIETB. However, in regions that are operated by an RTO or ISO, the role of the DOE should be limited to situations where the RTO cannot or fails to address the NIETB.

The DOE's could play an important role facilitating the siting of transmission facilities when bottlenecks can not be resolved, whether the DOE or an RTO identifies such bottlenecks. Moreover, the DOE should take steps to ensure that fair rate recovery be provide for transmission owner investments. DOE could play a role in seeing that adequate rate incentives are provided to transmission owner to build transmission facilities needed to address transmission bottlenecks.

PJM appreciates the opportunity to provide the DOE comment in response to the NOI and respectfully requests that DOE consider the foregoing when developing procedures to designate and address NIETB.

Respectfully submitted,

*_/s/ Steven R. Pincus_*

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38. Comments of San Diego Gas & Electric Company (SDG&E), 9/20/2004 5:05pm

DEPARTMENT OF ENERGY

OFFICE OF ELECTRIC TRANSMISSION AND DISTRIBUTION

Notice of Inquiry: Designation of National Interest Electric Transmission Bottlenecks

69 Fed. Reg. 43833

COMMENTS OF SAN DIEGO GAS & ELECTRIC COMPANY ON ISSUES RELATING TO THE IDENTIFICATION, DESIGNATION AND POSSIBLE MITIGATION OF NATIONAL INTEREST ELECTRIC TRANSMISSION BOTTLENECKS

Pursuant to the Notice of Inquiry ("NOI") published at 69 Fed. Reg. 43833 (July 22, 2004), San Diego Gas & Electric Company ("SDG&E") submits these comments on issues relating to the identification, designation and possible mitigation of National Interest Electric Transmission Bottlenecks ("NIETB"). As we understand it, the NOI seeks comments on criteria and process for designating NIETB, with the expectation that transmission corridors so designated will be subject to federal "backstop" siting authority by the Federal Energy Regulatory Commission ("FERC") for facilities to be located within the DOE-designated corridors. Presumably, such authority would preempt state and federal permitting obstacles.

Introduction – reliable power supply to San Diego's growing load may be frustrated by competing layers of regulation

San Diego Gas & Electric (SDG&E) is a regulated public utility providing electric service to 3 million consumers within a 4,100 square mile service area, covering two counties and 25 cities.

Electric service to the San Diego region is constrained by transmission bottlenecks owing to history and geography. San Diego is the second largest city in California, yet imports into the San Diego basin are constrained by limitations on the existing 500 kV and 230 kV interconnections to resources East and North of San Diego. Because the Pacific Ocean, the Republic of Mexico, and federal, state and Indian lands buffer the SDG&E service area, transmission corridor acquisition is very difficult.

In sum, San Diego, located in the extreme Southwest corner of the United States, with desert to the East, faces the challenge of providing reliable and economic service to an ever-growing load in an electrical cul-de-sac. State and federal regulation has frustrated SDG&E's efforts to increase its import capability and reduce its reliance on local, obsolete must-run generation.

For example, in 2001, SDG&E applied to the California Public Utilities Commission ("CPUC") for authority to address reliability needs forecast for 2005 with a 500 kV interconnection project. This project not only would have met service area reliability requirements, but would have saved San Diego ratepayers many millions of dollars annually in Reliability Must Run (RMR) costs. Unfortunately, the regulators rejected SDG&E's proposal, and SDG&E was compelled to return to its planners to develop a new proposal to meet future capacity requirements.[101] This led to issuance of a Grid Reliability Request for Proposals, resulting in two major power plants being built in San Diego beginning in 2006. However, without another major transmission upgrade, yet to be approved by the CPUC, one of these power plants will depend on a substantially constrained interconnection and would subject SDG&E ratepayers to additional congestion costs.

In October 2001, SDG&E proposed a new 230 kV transmission line, internal to SDG&E's transmission grid on *existing right of way*, with a 2004 in-service date. This project was proposed to relieve congestion between new sources of power generation and SDG&E's load center, and to provide ratepayers with access to cost-effective power. SDG&E applied for Certificate for Public Convenience and Necessity in July 2002, but did not receive approval to start construction until July 2004. The regulatory delays for this project, on right-of-way with substantial facilities already in-place, are costing California ratepayers millions of dollars per month.

Others share this perspective on San Diego's power supply situation. The Consortium for Electric Reliability Technology Solutions Transmission Bottleneck Project Report for the Department of Energy (March 19, 2003) surveyed certain Independent System Operators, including the CAISO. The report detailed the enormous congestion costs that currently exist in the California market and described that the San Diego market is affected by transmission bottlenecks and would benefit from reliability projects to increase import capability into San Diego.

As for the future, SDG&E has not given up improving the San Diego area interconnections. SDG&E has now identified a reliability need for a new 500 kV transmission line interconnecting its system with the rest of the grid in 2010. Although timing for the reliability in-service date for this line is subject to many variables, including demand projections and generation additions and retirements, it is essential for SDG&E, state agencies and interested Stakeholders to study and identify the other benefits associated with a new line including potential congestion savings from added transmission infrastructure, a third independent corridor providing greater access to potentially lower cost, fuel diverse resources, and access to renewable resources and potential savings.

SDG&E knows first hand that electric transmission does not get timely regulatory action. We also know that the thinnest rationale can catapult minority public opposition and NIMBY thinking into the lead role in thwarting infrastructure projects that are

[101] In addition, inflexibility by the U.S. Forest Service severely limited alternative routes that could have resolved substantial intervenor opposition to the project.

desperately needed by and benefits the larger "public." And we know that utilities need to work diligently with affected communities far in advance of need when siting these projects. Incredibly, we now see that California's public-spirited goal to develop renewable energy may itself fall victim to this malaise. The DOE proposal is an important step to improve the transmission siting process, to achieve goals such as the growth of renewable generation, as well as the economic and reliable delivery of electricity.

In the wake of such recent experience, SDG&E believes that DOE should aggressively move forward to designate NIETB. DOE would provide a national perspective that can be integrated into existing regional planning. SDG&E supports legislation that would give certain Federal "backstop" siting authority to the FERC for facilities located within DOE-designated NIETB corridors. However, regional planning must be preserved as the mechanism to implement national criteria regarding NIETBs.

SDG&E Response to Questions

1. Are the Electricity Advisory Board's recommended criteria for designation of National Interest Electric Transmission Bottlenecks appropriate and sufficient? If not, what should they be? For example, should DOE also consider disaster recovery, economic development, and the enhancement of the ability to deal with market and system contingencies in designating NIETBs?

SDG&E concurs with the three criteria proposed by the Electricity Advisory Board. The criteria addressing reliability and economic stability are consistent with current California and SDG&E transmission planning policy. As stated above, SDG&E conducts an annual grid assessment and expansion study. As a result of the annual grid planning studies, transmission expansion plans are identified that ensure continued compliance with the CAISO Statewide Grid Planning Standards. The annual process also considers transmission projects that are based on providing economic benefits to customers and/or stakeholders.

SDG&E would support adding criteria to the current grid planning process addressing transmission constraints that may jeopardize national security. Issues such as disaster recovery, economic development, and market and system contingencies should be dealt with on a regional basis because customized programs based on local concerns will provide the optimum solutions to these issues.

In addition, SDG&E would also point out that the term "transmission bottleneck" can consist of either a single transmission corridor or a collection of lines and transformers that supply a major pocket of load.

Specific comments on each criteria:

a. *The bottleneck jeopardizes national security*;

SDG&E encourages including this criteria in its planning process. Consideration of facilities used for national security and public health should be given a high priority for reliability projects. For example, San Diego serves numerous defense facilities which should be explicitly considered under DOE's proposed criteria. And the criteria should address the timely review and decisions by permit approval agencies. Any methodology

should be developed through a stakeholder process. Since national security issues are sensitive to public scrutiny, suitable precautions should be developed to insure confidentiality of all information.

> b. *The bottleneck creates a risk of widespread grid reliability problems or the likelihood that major customer load centers will be without adequate electricity supplies; or*

The CAISO has developed well-defined grid reliability assumptions to serve all customers in the California market. Together with the transmission owners participating in the CAISO, the CAISO performs grid reliability planning studies to address these specific criteria. Local transmission providers and owners should determine the best way to conform to any national standards given unique regional differences.

c. The bottleneck creates the risk of significant consumer cost increases in electricity markets that could have serious consequences on the national or a broad regional economy or risks significant consumer cost increases over an area or region.

SDG&E supports the development of general economic criteria to encourage competitive markets and minimize large swings in price. Criteria should be developed through a stakeholder process that provide an acceptable range of what economic costs justify modification to a particular bottleneck. Local transmission providers and owners should determine the best way to conform to any national standards given unique regional differences.

2. What should be the role of transmission grid operators, utilities, other market participants, regional entities, States, Federal agencies, Native American tribes and others in the process of identifying, designating, and addressing NIETBs? For example, should a NIETB be designated only if some entity applies to DOE for designation? Should DOE accept applications only from entities from regions that have an extant regional transmission (or resource) plan? Should DOE be able to designate a NIETB even if no entity asks DOE to do so?

Transmission reliability and economic choice are not limited to any particular constituency. Any location meeting the specific criteria developed should be designated as a NIETB. All market participants should be involved in the process of identifying, designating, and addressing NIETBs, including those market participants not engaged in the direct transmission of electricity. This would include DOE. Forums could be set up to address identification of NIETBs through NERC, or other regional or local reliability councils.

3. How might DOE identify bottlenecks in regions where much pertinent data are not available, in contrast to regions where transmission expansion plans have been developed and made public?

The burden of demonstrating the need for a DOE bottleneck-designation should be placed on the proponents of such designation. This means the responsibility for obtaining the necessary data is not a DOE concern.

4. *What actions should DOE undertake to facilitate and monitor progress towards mitigation of designated NIETBs?*

DOE should publicly identify NIETBs in a transparent process that makes available the data it relies on. Mitigation will be subject to feasibility, affordability, and local support of the projects. DOE must coordinate its activities with the FERC. Consistency of market design and functionality are key drivers in providing reliable and cost effective electric transmission service.

CONCLUSION

SDG&E appreciates this opportunity to comment. In sum, SDG&E submits that national defense is in an important part of any "national interest" designation. In addition, the DOE designation process should give substantial deference to views of local and regional entities (RTOs and reliability councils), ultimately, federal preemption and "one-stop shopping" of the sort the NOI contemplates is needed to prevent multiple "bites of the apple" for mindless opposition to infrastructure. Finally, time is important – the San Diego area has compelling bottleneck issues **now.** The DOE should implement its designation process as soon as possible.

Respectfully submitted,

SAN DIEGO GAS & ELECTRIC COMPANY

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September 20, 2004

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39. Comments of ISO New England Inc., 9/20/2004 5:14pm

September 20, 2004

Via Email

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Re:Designation of National Interest Electric Transmission Bottlenecks (NIETB),

69 Fed. Reg. 43,833 (July 22, 2004) - Comments of ISO New England Inc.

To Whom It May Concern:

Enclosed for filing in the above-referenced proceeding are the Comments of ISO New England Inc. If you have any questions, or need further information regarding this submission, please do not hesitate to contact us.

Sincerely

/s/
Sherry A. Quirk
Montina M. Cole

UNITED STATES OF AMERICA
BEFORE THE
DEPARTMENT OF ENERGY

Designation of National Interest Electric Bottlenecks (NIETB))	)	Notice of Inquiry and Opportunity to Comment
	)	
	)	69 Federal Register 43,833
	)	(Issued July 22, 2004)

COMMENTS OF ISO NEW ENGLAND INC.

I. EXECUTIVE SUMMARY

The ISO New England Inc. ("ISO") appreciates the opportunity to provide comments in response to the Department of Energy's ("Department" or "DOE") Notice of Inquiry ("NOI") regarding the identification, designation and possible mitigation of National Interest Electric Transmission Bottlenecks ("NIETB").[102] The ISO commends the Department on requesting public comment on this important issue.

As noted in the Department's NOI, the DOE Secretary's Electricity Advisory Board has proposed that one of the following three criteria must be met for an area of the power system to be defined as a NIETB:

1. The bottleneck jeopardizes national security;
2. The bottleneck creates a risk of widespread grid reliability problems or the likelihood that major customer load centers will be without adequate electricity supplies; or
3. The bottleneck creates the risk of significant consumer cost increases in electricity markets that could have serious consequences on the national or

[102] Designation of National Interest Electric Bottlenecks ("NIETB"), 69 Fed. Reg. 43,833 (July 22, 2004) ("NOI").

> a broad regional economy or risks significant consumer cost increases over an area or region.[103]

The ISO supports use of the criteria that address reliability concerns and economic concerns as appropriate to fulfill the Electricity Advisory Board's recommendation that the Department "identify and designate transmission bottlenecks of national interest, as a first step towards mitigation of them."[104] The ISO believes that these criteria are necessary for the Department to track adequately transmission bottlenecks of national interest and thereby take appropriate mitigating action. Importantly, the ISO, pursuant to a federally-approved open access transmission tariff, has for the past four years, conducted a regional planning process to identify areas of the New England bulk power system that are in need of just such upgrades.

By instituting a process for identifying NIETBs, and by relying on the established and ongoing system planning work of independent entities like the ISO, the Department may identify critical areas of the country that are in dire need of transmission upgrades. The Department may thereby take steps to help preserve the uninterrupted service of electricity to the nation's industrial, commercial, and residential users, and thereby help prevent the type of disruptions that the nation experienced on August 14, 2003.

The ISO herein provides comment on the Department's proposed second and third criteria for NIETB designation, and how the Department may rely on existing processes within New England to determine whether NIETBs exist in the New England region.

II. INTRODUCTION – ISO NEW ENGLAND INC. IS RESPONSIBLE FOR IDENTIFYING TRANSMISSION UPGRADES TO ADDRESS

[103] NOI, 69 Fed. Reg. at 43,833-34.
[104] NOI, 69 Fed. Reg. 43,833.

RELIABILITY AND ECONOMIC CONCERNS THAT CAN IMPACT THE NEW ENGLAND REGION

Created in 1997, the ISO is a not-for-profit corporation responsible for the day-to-day reliable operation of New England's bulk electric power generation and transmission system. It provides oversight and fair administration of the region's wholesale electricity markets, and management of a comprehensive regional bulk electric power system planning process. The ISO is independent of any financial interest in the region's wholesale electricity marketplace, and its Board of Directors and employees have no financial ties to market participants. The ISO serves Connecticut, portions of Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont.

The Federal Energy Regulatory Commission ("FERC") established the ISO as one of several regional independent system operators to aid in restructuring the wholesale electric power industry into a market system. As part of its mission, and pursuant to the federally-approved open access transmission tariff ("NEPOOL Tariff"),[105] the ISO conducts an annual regional system planning process, culminating in the annual publication of a regional transmission plan. This process is referred to the "Regional Transmission Expansion Plan" ("RTEP") process.

Pursuant to the NEPOOL Tariff, the regional planning process relies on market participants to provide resources (*e.g.*, generation, demand-side projects, and merchant or elective transmission) in response to system needs that have been identified by the ISO through the RTEP process. Under that process the ISO identifies transmission projects –

[105] New England Power Pool, Restated NEPOOL Open Access Transmission Tariff, FERC Electric Tariff, Fourth Revised Vol. No. 1, as amended and accepted by FERC, 102 FERC ¶ 61,112 (2003) ("NEPOOL Tariff").

either Reliability Upgrades or Economic Upgrades – in the event that market responses are insufficient to address needs identified by the ISO or are not otherwise forthcoming.

The RTEP process is designed to collect and reflect broad input from all stakeholders through the Transmission Expansion Advisory Committee ("TEAC"). The TEAC includes participation not only by the utility and market participant representatives, but also representatives from state regulators, public interest groups and retail customers. The ISO provides regular updates throughout the year of its system assessments to the TEAC, and receives the input of interested members of the public through TEAC, to assist it in completing its system assessment and identification of needed Reliability and Economic Upgrades.

Under the NEPOOL Tariff, Reliability Upgrades are those transmission upgrades that are:

> not required by the interconnection of a generator that are nonetheless necessary to ensure the continued reliability of the NEPOOL system, taking into account load growth and known resource changes, and include those upgrades necessary to provide acceptable stability response, short circuit capability and system voltage levels, and those facilities required to provide adequate thermal capability and local voltage levels that cannot otherwise be achieved with reasonable assumptions for certain amounts of generation being unavailable (due to maintenance or forced outages) for purposes of long-term planning studies. Good Utility Practice, applicable reliability principles, guidelines, criteria, rules, procedures and standards of NERC and NPCC and any of their successors, applicable publicly available local reliability criteria, and the NEPOOL System Rules, as they may be amended from time to time, will be used to define the system facilities required to maintain reliability in evaluating proposed Reliability Upgrades.[106]

In identifying such upgrades, the ISO seeks to ensure that uninterrupted electricity service can be provided throughout the entire New England region despite the occurrence

[106] NEPOOL Tariff § 1.106, 4th Rev. Sheet No. 37.

of contingency events, such as resource outages. The ISO accomplishes this through reference to national and regional reliability standards.[107]

The ISO also identifies in its annual plan Economic Upgrades, which provide net economic benefits to the region. The ISO identifies Economic Upgrades where the net present value of the net reduction in total cost to supply the system demand exceeds the net present value of the carrying cost of the identified transmission upgrade. To project whether there are likely to be net economic benefits to the region, the ISO analyzes among other things load projections both regionally and locally, generator availability, fuel costs and availability, proposed new generator projects and their likelihood of completion, energy costs, operating reserve charges, system losses, capacity costs, and other regional or location specific market costs.[108]

III. COMMENTS ON THE DEPARTMENT'S NOTICE OF INQUIRY

In its NOI, DOE states that to assist the Department in developing a procedure for identifying, designating, and addressing NIETBs, it requests comments on the three criteria for designation, and the following questions.

A. Are the Electricity Advisory Board's recommended criteria for designation of National Interest Electric Transmission Bottlenecks appropriate and sufficient? If not, what should they be? For example, should DOE also consider disaster recovery, economic development, and the enhancement of the ability to deal with market and system contingencies in designating NIETBs?

- ***The ISO supports the Board's recommendation of reliability and economic considerations as appropriate for use in designating***

[107] A full listing of the planning procedures used by the ISO may be found at: http://www.iso-ne.com/NEPOOL_Planning_Procedures/.
[108] *See ISO New England Inc.*, *et al.*, FERC Docket Nos. RTO4-2-002, *et al.*, Compliance Filing of the Filing Parties, at Attachment E (filed June 22, 2004).

NIETBs, but recommends modification of the criteria for economic concerns.

The ISO agrees with the Board's recommendation that criteria focusing on reliability and economic concerns are appropriate for use in designating NIETBs. Use of such criteria would appear appropriate, because such criteria seek to ensure that electricity will be provided to the country in a reliable and in an economically efficient fashion. The Department should be aware, as discussed in Section II above, that the ISO already identifies transmission upgrades to address regional reliability and economic concerns in its annual regional transmission plan (the "RTEP"). The ISO would also note that as part of its identification of such upgrades, it considers reasonably foreseeable contingencies that may occur on the system to ensure that the bulk power system is sufficiently robust to ensure the uninterrupted provision of electricity service throughout the region.

Utilizing criteria that focus on reliability and economic considerations also mirrors the judgment of the FERC that identification of transmission upgrades to address reliability and economic concerns is an appropriate aspect of providing open access transmission service.[109] In similar fashion, the Department should conclude that identifying transmission bottlenecks that adversely affect the reliable and efficient provision of service on the regional bulk power system is in the national interest.

In considering the Board's recommended criteria for economic considerations, the Department should take notice of the ISO's methodology for identifying Economic Upgrades. The ISO submits that identification of Upgrades that result in a net economic

[109] *See, e.g., New England Power Pool and ISO New England Inc.*, 105 FERC ¶ 61,300 at PP1 (2003) ("These revisions [to the open access tariff and NEPOOL Agreement] ensure that New England electricity customers receive reliable and efficient service, at just and reasonable rates, by promoting the construction of new transmission facilities").

benefit in terms of reduction of production costs – relative to the cost of the upgrade – as opposed to costs seen to load, represents a more accurate measure of economic benefit received in the region.

B. What should be the role of transmission grid operators, utilities, other market participants, regional entities, States, Federal agencies, Native American tribes and others in the process of identifying, designating, and addressing NIETBs? For example, should a NIETB be designated only if some entity applies to DOE for designation? Should DOE accept applications only from entities from regions that have an extant regional transmission (or resource) plan? Should DOE be able to designate a NIETB even if no entity asks DOE to do so?

- *In designating NIETBs, the Department should be able to rely on information already produced by independent entities that conduct a system planning process like ISO New England's, and in such circumstances, there is no need for the Department independently to produce data on system needs.*

As discussed above, the ISO conducts planning of the bulk power system in New England and therein identifies Reliability and Economic Upgrades. In this regard, the ISO is uniquely situated to identify needed Reliability and Economic upgrades, because its annual transmission plan (the "RTEP") is the result of a unique mix of *the ISO's technical expertise*, *the ISO's independence, and the ISO's receipt of input from interested stakeholders* (*e.g.*, utilities, other market participants, state regulatory bodies, etc.), which is exercised through a process approved by the Federal Energy Regulatory Commission.[110] In addition, the ISO's judgment about whether transmission upgrades are appropriate to address reliability and economic concerns is informed after the ISO gives consideration to whether market-based solutions (e.g., generation or demand response) that have been proposed address ISO-identified system needs.

[110] *See* NEPOOL Tariff at Part VII ("TRANSMISSION PLANNING, ADDITIONS AND MODIFICATIONS").

The robustness of the ISO's system assessment and identification of needed transmission upgrades has been confirmed in recent studies commissioned by the Department.[111] In a June 2004 Report, the ISO's transmission plan was found to be one of the few in the country described as "excellent." The June Report states:

> ISO New England. . . has a well-established planning process and has now published three annual plans. The latest one is well written, accessible to people with different interests and backgrounds (including nonspecialists), and comprehensive. The plan covers reliability and congestion (economics), analyzes local and regional transmission issues, and is open to market solutions (generation, demand management, and merchant transmission) as well as regulated transmission solutions.[112]

In short, while other entities may have insights into regional system needs, the characteristics of ISO's system plan (independently produced, technically proficient, and with the input of interested stakeholders) provides a reliable and robust basis for the Department to make conclusions about where NIETBs may exist in the New England region. For example, for the past several years, the ISO has highlighted the significant risks to reliable regional electric service that are presented by overstressed parts of the bulk power system in Southwest Connecticut, the Boston metropolitan area, and Northwest Vermont. In each instance, the ISO has identified appropriate transmission upgrades to address those system needs.

The ISO's identification of needed transmission upgrades should also provide the basis for the Department's NIETB designation, because with regard to Reliability

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[111] *See* Eric Hirst, Consulting in Electric Industry Restructuring, *U.S. Transmission Capacity Present Status and Future Prospects* (June 2004), prepared for Energy Delivery Group, Edison Electric Institute and Office of Electric Transmission and Distribution, U.S. Department of Energy; *see also, e.g.*, Jim Dyer, Electric Power Group, Consortium for Electric Reliability Technology Solutions (CERTS), *U.S. Department of Energy Transmission Bottleneck Project Report,* at § 4.5 (Mar. 19, 2003) ("ISO-NE has a detailed process for identifying transmission constraints by subarea and uses both reliability and economic criteria for evaluating transmission expansion/enhancement projects. The ISO has identified both critical reliability bottlenecks and economic bottlenecks; most have been in existence for 10 to 20 years.").

[112] *Id.* at 19.

Upgrades for example, the ISO identifies upgrades with due cognizance of national and regional reliability standards. As can be seen from the definition of Reliability Upgrades in the NEPOOL Tariff, the ISO is required to plan transmission upgrades to meet established National ("NERC") and supra-regional ("Northeast Power Coordinating Council"or "NPCC") standards, and also on regional reliability standards that may specific to the operating characteristics of the bulk power system in New England that, left unaddressed, could otherwise adversely impact the New England region. In this regard, the national and supra-regional standards represent a baseline that the ISO, pursuant to its federally-approved tariff, supplements with any regional-specific criteria as may be appropriate, and as may be approved after consultation with regional stakeholders. As a result, the ISO's annual identification in the RTEP of areas of the New England bulk power grid in dire need of major transmission upgrades should present a platform for the Department to designate NIETBs.

C. How might DOE identify bottlenecks in regions where much pertinent data are not available, in contrast to regions where transmission expansion plans have been developed and made public?

The ISO suggests that the reliability councils for those regions that do not have regional transmission expansion plans be tasked to summarize the pertinent data for their regions based on a simple compilation of the studies conducted by the regional council members. It is recognized that this is not a robust or comprehensive effort but it is a start.

D. What actions should DOE undertake to facilitate and monitor progress towards mitigation of designated NIETBs?

In order to monitor progress towards mitigation of designated NIETBs, the Department should consider following, and participating, in the ISO's Transmission

Expansion Advisory Committee ("TEAC"). In such fashion, the Department would receive regular updates on the bulk power system needs in New England and the status of permitting and construction of major transmission projects in the region.

In order to facilitate progress towards mitigation of designated NIETBs, the Department should take particular notice, consistent with the comprehensive energy legislation currently being considered by Congress, where 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. Based on the ISO's experience in intervening in siting proceedings to support construction of major transmission projects, those proceedings can often become delayed due to the Siting Board's or Council's consideration of alternative transmission designs that intervenors may identify on an *ad hoc* basis as alternatives to the design proposed by the Transmission Owner.

By way of example, since 2001, the ISO has identified Southwestern Connecticut as a critical area in need of a Reliability Upgrade. Early identification of this problem has allowed the ISO, as an independent entity, to advocate for construction of needed upgrades. ISO's advocacy of a Reliability Upgrade in Southwestern Connecticut was undertaken after considering nearly twenty different transmission alternatives.

Despite this robust review process, siting of the Southwestern Connecticut Reliability Project has been delayed. This delay is not only the result of moratoriums on new transmission siting issued by the State of Connecticut and the result of the State's passage of new standards for siting extra-high voltage (*i.e.*, 345-kV) transmission[113], but

[113] On April 12, 2002, the Governor of the State of Connecticut by Executive Order No. 26 placed a moratorium on the State Siting Council's consideration of the Southwest Connecticut Reliability Project until

also due to *ad hoc* proposals offered to the Siting Council for alternative transmission designs. Each of these designs may require its own technical review to determine its workability. *Ad hoc* proposals for alternative transmission designs – as distinct from what a Transmission Owner has proposed for siting approval – can result in substantial delay, as such a process requires consideration of relevant siting factors as well as re-review of the technical workability of the design, because alternative transmission designs may have different operating characteristics than that proposed by a Transmission Owner.

Following such proceedings closely will enable the Department to make informed judgments about the nature of the problems and assist the Department in formulating appropriate strategies to facilitate progress in relieving bottlenecks.

IV. CONCLUSION

WHEREFORE, the ISO respectfully requests that the Department take the ISO's Comments into consideration in this proceeding, and adopt the ISO's recommendations provided herein.

Respectfully submitted,

February 1, 2003, and on June 3, 2002, the Connecticut General Assembly expanded the scope of the moratorium. The Siting Council completed siting of the first phase of the Southwestern Connecticut Reliability Project in July 2003 – almost two years after siting proceedings were commenced. Separately, the State of Connecticut on June 3, 2004, passed new legislation changing the standards for siting extra high-voltage transmission, and establishing a presumption against the use of 345-kV transmission lines adjacent to residential areas and certain specified facilities and land uses. The Siting Council's consideration of these new factors will likely delay a decision in that case. *See* An Act Concerning Electric Transmission Line Siting Criteria, 2004 Conn. Acts 246 (Reg. Sess.) at Section 7 (2004) (mandating that for transmission facilities "with a capacity of three hundred forty-five kilovolts or greater, there shall be a presumption that a proposal to place the overhead portions, if any, of such facility adjacent to residential areas, private or public schools, licensed child day care facilities, licensed youth camps or public playgrounds is inconsistent with the purposes of this chapter. An applicant may rebut this presumption by demonstrating to the council that it will be technologically infeasible to bury the facility. In determining such infeasibility, the council shall consider the effect of burying the facility on the reliability of the electric transmission system in the state.").

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September 20, 2004

40. Comments of Northeast Power Coordinating Council (NPCC), 9/20/2004 5:27pm

September 20, 2004
Comments of the
Northeast Power Coordinating Council
On the
U.S. Department of Energy's
Office of Electric Transmission and Distribution's
Notice of Inquiry and Opportunity to Comment
on
Designation of National Interest Electric Transmission Bottlenecks (NIETBs)
(Federal Register, Volume 69, No. 140, Thursday, July 22, 2004)

The Northeast Power Coordinating Council (NPCC) offers the following comments in response to the U.S. Department of Energy's (DOE) Office of Electric Transmission and Distribution's notice of inquiry and opportunity to comment on issues relating to the identification, designation, and possible mitigation of National Interest Electric Transmission Bottlenecks (NIETBs). NPCC, through the implementation of its *Membership Agreement*, promotes the reliable operation and design of the bulk power system within the Northeast United States and Eastern Canada. NPCC views the existence of transmission bottlenecks as potential serious reliability issues and is thus very interested in any efforts undertaken by the DOE in the identification of transmission bottlenecks. To assure that the work already undertaken by NPCC in the identification and mitigation of transmission bottlenecks on the bulk power system is consistent and coordinated with any efforts undertaken by the DOE in this area, NPCC is willing to work with the DOE in establishing sufficient criteria that will enable this reliability issue to be dealt with in an effective manner throughout North America.

A. Criteria for Designating NIETBs
The U.S. DOE Secretary's Electricity Advisory Board recommended that to be designated a NIETB; the transmission bottleneck must meet one of the three following criteria:
1. The bottleneck jeopardizes national security;
2. The bottleneck creates a risk of widespread grid reliability problems or the likelihood that major customer load centers will be without adequate electricity supplies; or
3. The bottleneck creates the risk of significant consumer cost increases in electricity markets that could have serious consequences on the national or a broad regional economy or risks significant consumer cost increases over an area or region.

B. Doe's Proposed Questions for Comment
1. Are the Electricity Advisory Board's recommended criteria for designation of National Interest Electric Transmission Bottlenecks appropriate and sufficient? If not, what should they be? For example, should DOE also consider disaster recovery, economic development, and the enhancement of the ability to deal with market and system contingencies in designating Niters?

Response:
The criteria presented needs clarification as does the intent of the designation of the NIETB. Is it to help resolve technical reliability concerns regarding the electric power system? Is it to aid in the implementation of economic markets? Is it to allow for DOE involvement in the process for getting additional transmission built? These questions along with a clear explanation of the purpose are necessary before the designation of these bottlenecks can be made. The term bottleneck should be thought of in a broader sense than simply a congested "corridor". For example, in the case of security it could be a non-congested, yet high capacity, critical transmission hub or substation. For economics and market efficiency, it could include underutilized interconnections that are artificially restricted or "bottled" by seams issues or established protocols between various RTO areas. This latter situation provides a real opportunity since its solution or mitigation would not require equipment or physical construction. The criteria suggests three "types" of bottlenecks –one related to national security, one related to grid reliability and a third related to economic impacts. If this is the objective of the criteria then it is important to clearly differentiate among the three. A bottleneck that jeopardizes national security would require further explanation as to what is meant by national security. Perhaps this criterion would be more meaningful if it read … bottlenecks whose security exposure could permit actions that would have a national impact. A reliability bottleneck should be one that either has an adverse impact on meeting reliability standards and criteria, or significantly compromises the systems ability to deal with or recover from an extreme event. An economic bottleneck should be one that meets standard reliability criteria but is constrained as a result of economic or market transactions. Each of these categories is different and would be dealt with differently and it would be difficult to designate all bottlenecks with a single process. If the DOE wishes to focus on bottlenecks that impact reliability then it needs to focus on bottlenecks that have a wide-spread impact on the bulk power system. Reliability bottlenecks are those that have the potential to cause cascading outages thus jeopardizing a significant portion of the bulk electric system within an interconnection. It must be emphasized that these bottlenecks are not limited to the United States grid system only but can extend beyond international borders into Canada (and Mexico) as well.

2. What should be the role of transmission grid operators, utilities, other market participants, regional entities, States, Federal agencies, Native American tribes and others in the process of identifying, designating, and addressing NIETBs? For example, should a NIETB be designated only if some entity applies to DOE for designation? Should DOE accept applications only from entities from regions that have an extant regional transmission (or resource) plan? Should DOE be able to designate a NIETB even if no entity asks DOE to do so?

Response:
Bottlenecks are regional in nature and as such, the Regional Reliability Council (or subregional entity) should be responsible for identifying bottlenecks. The identification must be based on established regionally specific criteria that are based on NERC industry-wide standards. Regional Councils regularly coordinate efforts with other entities (e.g. ISO, RTO, regulatory agencies, etc.) to assure that the accurate identification of bottlenecks is done in the most effective way. Bottlenecks identified between Regional

Reliability Councils would require additional coordination. This coordination can be effectively accomplished through multi-regional arrangements, such as the Joint Interregional Review Committee that is comprised of membership from MAAC, ECAR, NPCC and VACAR. Other similar arrangements exist throughout North America and could be used to facilitate the issues raised by bottlenecks affecting multiple Regions.

The DOE, in conjunction with state commissions and regional state committees, in the designation of NIETBs could, upon request by the transmission entities and other parties involved, facilitate and support the completion of proposed transmission projects that face significantly complex siting and permitting issues that could unreasonably delay such projects. Consideration must also be given to in-progress or planned mitigation measures before qualifying particular transmission assets as an NIETB.

3. How might DOE identify bottlenecks in regions where much pertinent data are not available, in contrast to regions where transmission expansion plans have been developed and made public?

Response:
DOE can look to the Regions and the regionally-specific criteria that these Regions have developed to meet existing NERC Standards. All Regions have transmission plans identified as they are required to meet current NERC and Regional Standards for assessing transmission adequacy within their respective Region or sub-region. It is the responsibility of the Region and sub-region to obtain the information to assure that all participants affected provide the necessary information. In addition, Regional and sub-regional agreements exist to assure that non-members provide necessary information. Where these agreements do not exist the DOE may encourage the development of such agreements. Distribution bottlenecks are local problems and should be dealt with at the local level.

4. What actions should DOE undertake to facilitate and monitor progress towards mitigation of designated NIETBs?

Response:
The Regional/sub-Regional transmission plans developed by regional or sub-regional entities and in some cases under requirements of existing tariffs, identify necessary assets and in the case of where bottlenecks are identified (according to acceptable criteria) plans to remove the bottlenecks. The DOE could work with state entities to aid in the siting process for new transmission projects where studies have demonstrated a need for new transmission to improve reliability. Those entities involved in the designation of bottlenecks may not be involved in the development of mitigation plans. Economic mitigation work should be initiated and funded by the competitive market. Barriers to market investment should be addressed by FERC and DOE, including governmental obstacles and market design deficiencies, e.g. lack of effective cost recovery mechanism for merchant transmission, artificial seams. In this category the competitive market should determine the appropriate mitigation measures, e.g. building transmission, adding generation, etc. Mitigation work that addresses situations beyond meeting standard reliability criteria or economic efficiency should be funded at the federal level and

administered locally (similar to the Interstate Highway projects). Contrary to some of the suggestions highlighted in the notice, this entire process of identifying and dealing with significant assets must be handled in a confidential manner. The information, including the selection process itself, is a blueprint for potential terrorist activities. Without a credible confidential process, involved parties will likely be unwilling to share sensitive system information.

41. Comments of ISO/RTO Council (IRC), 9/20/2004 5:36pm

Office of Electric Transmission and Distribution, TD-1
Attention: Transmission Bottleneck Comments
U.S. Department of Energy
Forrestal Building, Room 6H050
1000 Independence Avenue, SW
Washington, DC 20585
bottleneck.comments@hq.doe.gov
Via Email

Re: Comments of the ISO/RTO Council; Designation of National Interest Electric Transmission Bottlenecks (NIETB), 69 Fed. Reg. 43,833 (July 22, 2004)

The Alberta Electric System Operator ("AESO"), California Independent System Operator Corporation ("CAISO"), Electric Reliability Council of Texas ("ERCOT") The Independent Electricity Market Operator ("IMO"), ISO New England Inc. ("ISO-NE"), Midwest Independent Transmission System Operator, Inc. ("MISO"), New York Independent System Operator, Inc. ("NYISO), PJM Interconnection, L.L.C. ("PJM"), and Southwest Power Pool ("SPP") hereby jointly submit comments as the ISO/RTO Council ("IRC") in response to the Department of Energy's Notice of Inquiry regarding National Interest Electric Transmission Bottlenecks ("NIETB"). The nine functioning Independent System Operators ("ISOs") and Regional Transmission Organizations ("RTOs") in North America formed the ISO / RTO Council in April 2003. The Council's mission is to work collaboratively to develop effective processes, tools and standard methods for improving competitive electricity markets across North America. In fulfilling this mission it is the Council's goal to provide a perspective that balances reliability standards with market practices so that each complements the other, thereby resulting in efficient, robust markets that provide competitive and reliable service to customers.

In its NOI, the Department proposes that a NIETB meet at least one of three criteria:

1. The bottleneck jeopardizes national security.
2. The bottleneck creates a risk of widespread grid reliability problems or the likelihood that major customer load centers will be without adequate electricity supplies; or
3. The bottleneck creates the risk of significant consumer cost increases in electricity markets that could have serious consequences on the national or a broad regional economy or risks significant consumer cost increases over an area or region.

The IRC provides responses and views to the questions posed in the NOI below.

1. *Are the Electricity Advisory Board's recommended criteria for designation of National Interest Electric Transmission Bottlenecks appropriate and sufficient? If*

not, what should they be? For example, should DOE also consider disaster recovery, economic development, and the enhancement of the ability to deal with market and system contingencies in designating NIETBs?

Answer:

The IRC provides specific comment with regard to each of the three proposed criterion below. As an introduction, the IRC provides three general comments on use of these criteria.

Role of Reliability Standards

The IRC believes that NERC reliability standards, as well as additional regional criteria, used by ISOs/RTOs in exercising their system planning responsibilities represent appropriate means to identify those areas of the bulk power system where risks of widespread grid reliability problems exist. Within their system planning footprint, ISOs/RTOs with planning authority apply such standards to identify violations of reliability standards and identify transmission upgrades appropriate to avoid or remedy violations of those standards.

International Aspects

The Department should utilize the criteria in manner that would identify national interest bottlenecks in the US arising from or exacerbated by interties with Mexico and Canada. While the Department only has jurisdiction in the United States, the Department should investigate means to coordinate its efforts with Canadian and Mexican authorities to identify interconnections that may create or relieve bottlenecks. Given the nature of the North American transmission system and international electricity trade, it is expected that a combined multi-national approach should be applied towards addressing such bottlenecks. Such combined efforts would help ensure a reliable interconnected system and robust electricity markets.

Data Disclosure

Although the IRC supports the Department's need to obtain pertinent data for all regions, full disclosure of certain details of any identified NIETBs could raise national security concerns. Intimate knowledge of the details of an NIETB – *i.e.* the physical identification and location, degree of harm to the interconnected grid, economic impacts – could be used maliciously if in the wrong hands. The

Department needs to consider how such data could be protected. Such information should not be made public due to security-related concerns.

Comment on Criterion One (National Security)

It is unclear as to whether the first criterion defines the entire electric infrastructure as vital for national security, or specific electric infrastructure facilities. While the Department might identify certain facilities as dedicated to serving national security functions and thus vital in that regard, going beyond that limited application to identify some subset of the interconnected grid as uniquely impacting national security could be complex, and a highly subjective exercise, which may raise national security concerns in its own right. The regional transmission planning performed by the ISOs/RTOs is structured to ensure the safe and reliable operation of the entire electrical infrastructure. As a result, without more precise definition by the Department as to what the national security criterion entails, the IRC is concerned that this criterion could confuse the application of any rule emanating from this process. Absent a precise and targeted definition focused on certain unique facilities, the Department may find that focusing on ensuring a reliable bulk power system is sufficient to serve the purposes behind designating NIETBs.

Comment on Criterion Two (Reliability Risk and Loss of Adequate Supplies)

This criterion is well documented in both the NERC planning standards and regional standards utilized by ISOs/RTOs when conducting system planning. These standards also include disaster recovery of the electrical infrastructure. These criteria are developed in open and inclusive processes where all stakeholders participate. Additional needed criteria can be proposed in these processes by any entity. In this regard, the Department should avoid creating new definitions and processes outside of the existing standards development process where an independent entity administers such standards absent compelling evidence that that process has failed to properly identify such reliability risks.

Comment on Criterion Three (Cost Increases and Economic Effects)

It is unclear from the Notice whether the Department intends to identify as "NIETB" those transmission constraints that are short term in nature (*e.g.,* causing cost increases within a one year period), or of a more recurring nature (*e.g.*, projected to cause recurring economic impacts beyond a single year). In short, not every area of the bulk power system that may experience high prices needs immediate response through new transmission. Absent careful analysis, costly solutions could be implemented for mere transitory problems caused by unique system conditions. In short, a holistic analysis that takes into account the nature of congestion on the system and its likelihood of recurrence

is appropriate. RTOs/ISOs undertake this type of process through independent planning with stakeholder input.

In this regard, the Department should be aware that congestion management mechanisms have been employed by RTOs and ISOs to incent feasible market-based, non-transmission solutions to short term system bottlenecks. The Department should respect the distinction between investments in the transmission system for short term versus long term commitments. Economic prices may not justify the addition of new transmission in every instance, and high economic prices may be more efficiently mitigated through the installation of new generation or by demand-side response mechanisms.

However, like their administration of national and regional reliability standards, ISOs/RTOs in certain regions identify areas where the bulk power system requires upgrades to address economic-based concerns. These analyses can be highly case-specific. However, where an independent entity is examining such factors, pursuant to an approved regulatory process, the Department would be well-situated to rely on such analyses, because such identifications are made with due regard for approved market mechanisms, rules and tariffs.[114]

In conclusion, the criterion may inadvertently be interpreted as precluding consideration of non-transmission solutions in favor of transmission solutions. At the very least, some limiting language should be included to Criterion Three that makes clear that such economic impacts are long-term in nature and are not being addressed through market-based resources (such as new generation or demand response mechanisms). In this regard, we recommend the Department take due notice of those Economic Upgrades identified by ISOs/RTOs, which are typically identified after consideration of such non-transmission resources has taken place.

2. *What should be the role of transmission grid operators, utilities, other market participants, regional entities, States, Federal agencies, Native American tribes and others in the process of identifying, designating, and addressing NIETBs? For example, should a NIETB be designated only if some entity applies to DOE for designation? Should DOE accept applications only from entities from regions that*

[114] A national designation along with an independent means to resolve cost allocation issues in regions where one does not presently exist, could however help resolve difficult siting issues where the economic benefits of a given facility may accrue to an area different than the area where the transmission upgrade is to be sited. Where an independent regional entity with planning authority and cost responsibility does not presently exist, the Department's designation could be helpful to further drive efforts at regional collaboration among state siting authorities and to help fairly resolve interstate or inter-regional cost allocation issues. Any criterion developed would need to cover not just the economic benefits of lower electric costs but may need to include any government imposed economic development plans or mandates.

have an extant regional transmission (or resource) plan? Should DOE be able to designate a NIETB even if no entity asks DOE to do so?

Answer:

The Department should defer to independent regional planning processes undertaken by RTOs and ISOs with open stakeholder processes. Regional planning processes administered by RTOs and ISOs are conducted with a high degree of technical proficiency, pursuant to established standards. These processes rely on input from representatives of both the industry and the public. Moreover, State regulatory authorities, who play an important role in the siting of transmission and recovery of transmission upgrade costs at the retail customer level, are important participants in the process. Relying on the ISO/RTO planning processes ensures that the vital role played by these participants is not lost.[115]

By relying on such processes, the Department is also assured of allowing market mechanisms, rules and tariffs to work to their full extent to incent market-based resources to respond to bulk power system needs. The industry is in a process of change and many regions have formed RTOs and/or ISOs that should serve as the platform for the Department to target its designation of bottlenecks. In such fashion, ISO/RTO-administered regions ensure that a balance is reached between market-based and regulated-based responses to identified system needs. There are many recent examples of the effectiveness of independent regional reliability planning processes and existing market processes that have addressed significant transmission bottlenecks. (See Attachment A).

In conclusion, while ISOs/RTOs function to identify areas of the bulk power system at risk, federal or regional entities may be needed to resolve disputes associated with the siting and cost allocation for transmission facilities that have regional or even inter-regional impacts and which are not already addressed under jurisdiction of the Federal Energy Regulatory Commission.. And, while it is appropriate that existing tariff and stakeholder processes, as well as state siting processes, be relied upon to both identify and move forward on the siting and construction of such projects in instances where there is excessive delay or unique federal land use issues, a federal backstop should be utilized to ensure that needed projects are built.

3. *How might DOE identify bottlenecks in regions where much pertinent data are not available, in contrast to regions where transmission expansion plans have been developed and made public?*

Answer.

The IRC agrees that this is an issue on which the Department needs to focus. In some instances, ISO/RTO regions abut areas of the country where there is not an independent

[115] By the same token, the Department might offer more limited deference where such plans do not receive such review. Such plans may instead be challenged as merely promoting the interests of one market participant over another in order to advance a competitive position.

or open planning process, and as a result, can be impacted by bottlenecks in these regions. The Department should be aware, however, that certain ISO/RTOs are taking steps to address such matters.

For instance, on April 16, 2003, MISO, PJM and the Tennessee Valley Authority (TVA) signed a memorandum of understanding (MOU) which provides for data exchange to pursue the development of a multi-regional approach that will strengthen coordination of their respective systems' electric transmission, operations and related transactions. The MOU establishes protocols and procedures to allow the three organizations to exchange grid operational data on an ongoing basis. The organizations will exchange data relating to interregional congestion management, operations, real-time communications, emergency protocols, system planning, among other areas. The ultimate goal of the MISO, PJM and TVA is to improve the reliability, congestion management and adequacy of the transmission grid while providing broad, seamless, non-discriminatory transmission service and energy markets across a large portion of the Eastern Interconnection.

4. *What actions should DOE undertake to facilitate and monitor progress towards mitigation of designated NIETBs?*

Answer:

As noted previously, any mitigation of NIETBs should only occur after an independent planning process has determined that a regulated transmission solution is appropriate, after due consideration of proposed market-based solutions (such as generation and demand response). That being said, DOE can play a helpful role in a number of areas.

Department-sponsored research into better forecasting of key inputs into the planning process including forecasting fuel prices and load growth, would help enhance the work underway in applying Criterion Three concerning economic planning. Although such a process will always require a degree of judgment, the extent to which such tools are identified and gain widespread acceptance will impact the overall sustainability of given decisions. Department-sponsored research into advanced transmission equipment could lead to new ways to resolve transmission bottlenecks.

In addition to the above, commenters are encouraged to discuss, comment on, and make suggestions on other transmission bottleneck issues that may be relevant to the development of procedures to designate and address NIETBs. To the greatest extent consistent with law, comments submitted pursuant to this Notice of Inquiry will be deemed public and will not be treated as confidential.

Answer:

The diversity of participants in the electric system provides a challenge to the Federal Government to make a one-size fits all solution to these issues. The RTOs/ISOs are actively seeking and/or implementing solutions to bottlenecks and other issues for

enhancing the electric system. Although introduction of competitive wholesale markets has met with significant skepticism in some parts of the nation, the value of regional planning has been widely acknowledged.. The DOE effort can help begin the dialogue on establishing independent regional and inter-regional planning processes in all regions that work with state siting and regulatory authorities to ensure that grid improvements are timely made and their costs fairly allocated.

Attachment A - Regional System Planning Activities

1. *The CAISO has facilitated a coordinated grid planning process since 1998. During that time the CAISO has approved over three-hundred transmission projects proposed by its Participating Transmission Owners, valued at more than $2.7 billion. While the bulk of those projects were reliability-driven projects, i.e., projects necessary to satisfy the established NERC and Western Electricity Coordinating Council standards, the CAISO has also approved other economically-driven projects. In particular, the CAISO was successful in increasing the capacity of the interties between Northern and Southern California (Path15) via their regional planning process that resulted in a new financial arrangement between a federal agency, an investor owned utility and a for-profit transmission company. This project had been recommended by the CAISO for several years and came together with the inclusion of the Western Area Power Administration to assist in siting. The new 500 kV line should be operational before the end of 2004.*

   The CAISO is in the process of finalizing, and seeking state regulatory authority approval of, a "Transmission Economic Assessment Methodology" or "TEAM". The purpose of TEAM is to establish a standardized approach to identifying and valuing economic transmission projects. The ISO is seeking state approval in order to streamline and thus expedite the siting of needed transmission projects in California.

   Finally, the CAISO is also working with other regional entities to establish a regional (i.e., West-wide) planning process to identify economic transmission projects needed to support the larger regional market. Through the Seams Steering Group – Western Interconnection ("SSG-WI") and in coordination with the Western Governors' Association, the ISO participated in the successful completion of a 2003 report entitled, "Western Interconnection – Transmission Path Flow Study". This and future studies will assist regional policymakers in establishing a process for effective expansion of the regional bulk transmission system.

2. *The Electric Reliability Council of Texas (ERCOT) has an active transmission acquisition program and has added over 900 miles of new transmission lines and made numerous line and substation upgrades since 1999. These additions addressed substantial bottlenecks between South and North Texas and between West and North Texas. ERCOT has an additional 500 miles of new transmission in the implementation process at this time. Included are projects to integrate a significant amount of new wind generation into the ERCOT grid.*

3. *ISO New England, a member of NERC and of the Northeast Power Coordinating Council and a conditional RTO, in on the cusp of producing its fourth annual regional system plan that identifies regulated transmission upgrades necessary to address regional reliability and economic concerns in New England. The plan covers reliability and congestion (economics), analyzes local and regional transmission issues, and is open to market solutions (generation, demand management, and*

merchant transmission) as well as regulated transmission solutions. This plan covers ten years, and presently identifies nearly 250 regulated transmission projects that would cost between $1.5 and $3 billion.

4. *Southwest Power Pool, a NERC member Regional Reliability Council and conditional RTO has upgraded 45 transmission facilities through the regional Tariff in the four years this process has been in place. A prime example of the effectiveness was SPP's ability to upgrade the LaCygne to Stilwell 345 kV line. This line was identified as one of the key constraints in the Eastern Interconnection in the FERC 2001: Electric Transmission Constraint Study, Division of Market Development. It was the only SPP facility identified as a limit in the study. SPP Transmission Owners, through the regional planning process, reached agreement on benefit and cost support to upgrade this key limitation [Docket ER03-547-000]. An innovative transmission upgrade approach was used and construction was completed ahead of schedule, providing for increased SPP reliability and transmission system capacity in 2003. This key upgrade could not have occurred without a functioning regional planning process. SPP's Regional Tariff also provides a mechanism for allocating the costs of these upgrades to its members*

5. The PJM RTO has a FERC-approved Regional Transmission Expansion Protocol which provides a mechanism for assessment of future transmission grid requirements, defines cost-efficient solutions and assigns cost responsibility for these projects. Enhancements may be dictated by reliability concerns, new generation interconnections, or economic bottlenecks. The current plan approved by the PJM Board represents approximately $785 million of new transmission construction and upgrades to existing transmission equipment. Of this amount, approximately one-third is the responsibility of transmission owners for facilities related to baseline grid improvements. The remaining amount is related to the interconnection of new generation resources and includes both the direct connection and network upgrades required to accommodate these projects. Responsibility for these facility costs has been assigned to the developing generation projects.

6. The Midwest ISO, along with its members and stakeholders, develops the Midwest ISO Transmission Expansion Plan ("MTEP"). The MTEP (2003) identified key system bottlenecks that align well with the DOE initiative and outlined $1.8 B in planned and proposed upgrades for the Midwest. The MTEP process is public and the DOE is welcome to participate.

7. On August 20, 2004 the NYISO filed its proposal for a Comprehensive Reliability Planning Process for New York with FERC. This process initially seeks market-based solutions to identified reliability needs which shall include all resource options (i.e. transmission generation and demand response). In order to ensure reliability the New York Transmission Owners ("TO") have assumed the obligation to provide a regulated backstop solution. The TO's may consider alternative resources in their selection of an appropriate backstop solution. The NYISO will determine whether

proposed solutions will, in fact, meet the identified reliability needs in a timely manner.

42. Comments of the Canadian Electricity Association, 9/21/2004 2:21pm

UNITED STATES OF AMERICA
BEFORE THE
DEPARTMENT OF ENERGY

Notice of Inquiry Regarding Designation	**)**
Of National Interest Electric	**)**
Transmission Bottlenecks	**)**

COMMENTS OF THE CANADIAN ELECTRICITY ASSOCIATION

Pursuant to the Notice of Inquiry ("Notice") issued by the U.S. Department of Energy ("DOE" or "Department") on July 16, 2004, the Canadian Electricity Association ("CEA") submits the following comments addressing issues relating to the designation of national interest electric transmission bottlenecks.[116]

Background

The Department's Notice seeks comments on issues relating to the identification, designation, and possible mitigation of National Interest Electric Transmission Bottlenecks ("NIETBs"). DOE had recommended that the Department initiate a process to determine how to identify and designate transmission bottlenecks of national interest in the Department's "National Transmission Grid Study." In the Notice, DOE recognized that "bottlenecks in the transmission system impede economically efficient electricity transactions and potentially threaten the safe and reliable operation of the transmission system." The Department now seeks comments on specific criteria for identifying, designating, and addressing NIETBs.

[116] The Canadian Electricity Association is the national forum and voice of the electricity business in Canada. Its membership accounts for 95% of Canada's installed generating capacity and nearly all of its transmission capacity.

As explained in the Notice, DOE had stated in its Transmission Grid Study that it "will work in partnership with FERC, States, regions, and local communities to designate significant bottlenecks and take actions to ensure that they are addressed." The Notice also cited a recommendation from a report of the DOE Electricity Advisory Board that "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 focus of the Notice is on the identification of "national" bottlenecks. However, the transmission grid in the United States does not stop at the Canadian border. As the comments below demonstrate, the grid is North American in scope. Constraints along the border can result in national or regional bottlenecks, and therefore require international solutions. DOE's notice asks for criteria for the identification of NIETBs. However, many bottlenecks on the transmission grid are well known to both the utility industry and regulators.[117] CEA recommends instead that DOE's inquiry focus more on approaches that can be taken to address such bottlenecks and, given the international nature of the grid, that this focus be North American-based.

The Transmission Grid is North American in Scope

The U.S. and Canadian electricity markets are interconnected through a range of points across the Canada-U.S. border. This integration reflects the largely north-south nature of the Canadian grid, as it is integrated with the more complicated web of transmission infrastructure in the U.S. What began with small tie-lines and the development of boundary waters for hydroelectricity has evolved into extensive cooperative arrangements for managing transmission system reliability, with major

[117] In fact, FERC is currently examining the factors that contribute to the Lake Erie loop flow problem.

interties across the Canada-U.S. border coast-to-coast, and growing exports and imports. Robust trade exists through major interties in 5 geographic regions across the continent – British Columbia with the Pacific Northwest through Washington; Manitoba with the Midwest through Minnesota; Ontario with the Great Lakes through Michigan and New York; Quebec with the Northeast through New York and New England; and New Brunswick with New England through Maine.

There is no better example of the interconnected nature of the transmission system than the extent of the August 14th outage. Electricity consumers in Ontario were among the estimated 50 million people that experienced the outage. In fact, in its final report on the causes of the blackout, the U.S.-Canada Power System Outage Task Force referred to the North American power grid as "one large, interconnected machine."

Such integration of U.S. and Canadian transmission systems often serves to emphasize the complementary nature of the respective generation portfolios. For example, Canadian hydro rich regions are well-integrated with U.S. thermal rich regions and these portfolios complement one another to achieve efficiencies in fuel use that translate into both economic and environmental benefits on both sides of the border. This complementarity has contributed to a level of trade that benefits electricity consumers across the continent. The extent of this trading relationship can be seen in the volume of exports and imports between Canada and the United States. And as markets continue to open, the importance of cross-border trade has increased. In recent years, that trade has trended to higher U.S. imports into Canada, although the trend swings back and forth depending on a range of factors in either market. Whatever factors are present in any

single year, the fact of an integrated grid permits a remarkably open market place to operate, to the benefit of consumers on both sides of the border.

DOE's Notice of Inquiry Should Focus on Measures to Address Bottlenecks and Such Measures Should be North American in Scope

The Notice of Inquiry seeks comments on criteria to identify national interest transmission bottlenecks. Specifically, DOE requests comments on whether the following three alternative criteria for identifying NIETBs are appropriate and sufficient: (1) that the bottleneck affects national security; (2) that the bottleneck creates a risk of widespread grid reliability problems; or (3) that the bottleneck creates a risk of significant cost increases.

Numerous studies over the last few years have identified bottlenecks throughout the North American grid. Moreover, both individual utilities, as well as the regions in which those utilities are located, are well aware of the constraints that either present reliability concerns or have or may result in increases in costs to electricity consumers. Further study of the constraints on the grid is not likely to yield any new information regarding grid bottlenecks. CEA believes that a more useful exercise would be the consideration of approaches to mitigate the bottlenecks on the North American grid.[118]

Constraints along the Canada/U.S. border and within large regional markets will continue to inhibit further cross-border trading. Several examples exist of supply potentially available to constrained regions that cannot move because of transmission congestion. For example, the constraints in the Pacific Northwest coupled with the lack

[118] CEA recognizes that NIETBs may need to be identified to the extent the transmission siting language in the U.S. energy bill is passed. In such a case, CEA requests that criteria adopted to identify NIETBs recognize that the transmission grid is international in scope, and that the identification of bottlenecks should include bottlenecks across the U.S./Canadian border. Cross-border constraints must be included because transmission constraints along the border affect scheduled transactions in the U.S. and impede cross-border trade between the U.S. and Canada. In fact, in its National Transmission Grid Study, DOE recognized that addressing the constraints in the United States necessarily requires consideration of the constraints along the border.

of direct interties between energy-rich Alberta and the United States limit the opportunities for cross-border trade in the Western interconnection. Constraints within the Northwest and Northeast regions constrain economic flows beyond the border. Enhanced transmission capacity between Manitoba and its bordering states would allow for increased trade between Manitoba and the very large mid-Western markets. Nevertheless, as discussed above, constraints remain in these critical areas along the border. Identifying measures to address such constraints will therefore help to ensure a reliable and efficient North American transmission grid.

Evidence of such constraints can also be found in the interties between Hydro-Quebec and U.S. markets. The Québec-NY and Québec-NE interconnections are limited by constraints in New York and the PJM region to less than their nominal capacity. The Québec-NY interconnection (Châteauguay Facility) was designed for an export capacity of 2370 MW and could be operated at 1800 MW under the actual operating procedures. However, because of the Central-East constraint in New York State, a fixed transmission limit of 1500 MW has been imposed on export capability from the Châteauguay Facility. As a result of this permanent limit, this interconnection often operates at nearly 35% less than its design capacity. Likewise, the HQ-NE Interconnection was designed and built to carry 2000 MW. However, it is usually limited to 1500-1800 MW due to PJM and NY limits and constraints. This prevents economic energy to flow from low cost areas to high cost areas, thereby reducing overall energy costs to customers. It also prevents air emission reductions (NOx, SO_2, CO_2).in the United States by limiting the import of electricity generated by hydroelectric facilities.

CEA members are currently pursuing measures to address such constraints. For example, New Brunswick Power and its U.S. development partner, Bangor Hydro, have been attempting to address a transmission constraint between the Maritimes and New England by proposing to build a second high voltage transmission interconnection between Keswick, New Brunswick and Orrington, Maine. Currently, there is a single 345kV transmission line between these points. The Canadian side has received its Certificate of Public Convenience and Necessity from the National Energy Board, and Bangor has started the permitting process on the U.S. side. However, there will remain just the single 345kV line from Orrington to Maine Yankee, and congestion will remain further south across the Maine/New Hampshire border. Until transmission is built further south, congestion in the east will continue to be an impediment to the free flow of energy between the Maritimes and the U.S.

Convening a proceeding to examine the appropriate measures to address transmission bottlenecks on a bi-national basis, as well as the related policy issues, will help to remedy the transmission constraints along the border. In fact, such an inquiry may assist regulators in the development of policies to effectively remedy constraints on both sides of the border. And this inquiry may further allow for consideration of regional solutions that are also bi-national.

Finally, in pursuing solutions to the constraints on the North American transmission grid, CEA recommends that U.S. and Canadian federal/provincial government officials explore the establishment of a cooperative process for the identification of possible options for addressing such constraints. Recently, CEA released a paper addressing issues of concern with regard to the establishment of an

Electric Reliability Organization. Among the recommendations was a recommendation that U.S. and Canadian federal/provincial government officials establish cooperative processes for addressing reliability concerns. In that paper, CEA explained:

> To achieve the objectives of mandatory uniform North American standards and respect for national sovereignty, CEA believes that international agreements between appropriate authorities will be necessary to create the framework for an international ERO. These agreements must ensure that a single regulatory agency or group of agencies from one country should not take unilateral action, where such action would have cross-border implications.

Similarly, cooperation among appropriate U.S. and Canadian federal/provincial government officials could help to address the bottlenecks that affect the North American transmission grid. However, as with CEA's recommendations with respect to reliability, CEA cautions that this cooperative effort must respect the sovereignty of each country. In other words, any determinations made in the United States cannot have cross-border application, nor can a U.S. agency exercise any authority in Canada as a result of this inquiry.

Conclusion

As DOE recognized in its Notice, increased use of the transmission grid -- resulting from increases in regional electricity trade and steady growth in demand-- has resulted in bottlenecks on the grid. The integration between Canada and the United States will only increase as energy demand and trade continue to grow, thereby further taxing the North American grid. Therefore, the reliability of the transmission grid and the efficiency of electricity markets cannot be properly addressed without examining the constraints along the Canadian/U.S. border, and considering bi-national measures that can be implemented to address such constraints.

September 21, 2004.

43. Comments of Peabody Energy Corp, 9/21/2004 4:59pm

September 19, 2004

Office of Electric Transmission & Distribution, TD-1
Attn: Bottleneck Comments
U.S. Department of Energy
1000 Independence Ave, SW
Washington, DC 20585

Re: **PEABODY ENERGY CORP. COMMENTS ON DESIGNATION OF NATIONAL INTEREST ELECTRIC TRANSMISSION BOTTLENECKS**

To Whom It May Concern:

Peabody Energy Corp. appreciates the opportunity to comment on the issue of electric transmission bottlenecks within the United States. Peabody Energy (NYSE: BTU) is the world's largest coal company. In 2003, coal accounted for over 51% of all the electricity produced within the United States and is the reason the United States has low-cost electricity. The products of Peabody Energy fuel more than 10% of all U.S. electricity generation and more than 2.5% of electricity generation worldwide.

The element of transmission is just as critical to our national energy market. Electric High Voltage (EHV) transmission lines are market enablers, promoting wholesale competition amongst generators which maybe outside of a given supply territory. The presence of EHV transmission mitigates market power and the potential for market abuse. However, the concerns of our nation's transmission system are not only paramount to the U.S. power industry, but to every residential, commercial and industrial consumer who requires low-cost electricity.

The limitations of the current transmission system are one of the main reasons for the many energy crises we have experienced in this country over the past four years. A robust transmission system is excellent insurance against catastrophic events. It is the key to allowing electric utilities nationwide to provide their customers with affordable electricity. Transmission lines allow delivery of abundant, low-cost electricity to customers who reside in areas where the price of regional generation is significantly more expensive. Moreover, they allow the most cost effective fuel to be utilized rather than subjecting end users to higher cost generation.

Again, the reason why we have low cost power in the US is because of coal. It is our must abundant, most reliable and most cost effective fossil fuel domestically. Over the last several years, we have seen even greater volatility in the both the US natural gas and crude oil markets, but coal pricing has remained stable. Please refer to Figure 1, which is a comparison of natural gas, crude oil and coal prices since 1998. While the average price of natural gas and oil are currently hovering around $6.00 per mmbtu, coal remains below $1.35 per mmbtu. This is due to a higher demand for natural gas and oil to act as both household heating purposes and a fuel for electricity generation.

Fuel is a key indicator of the cost of electricity generation. The regions of the country that have the benefit of access to coal-based electricity are the ones that will sustain the lowest cost for electricity. The Midwest and North regions are home to our most abundant and low-cost coal

reserves. However, the East and South rely heavily on natural gas. Figure 2 was created by Cambridge Energy Research Associates (CERA) and shows how often natural gas and oil are on the margin by NERC regions in the US. Notice that the most reliant natural gas and oil regions include the East and South.

Dependence on natural gas and oil gives way to higher electricity prices. However, more generation from coal will yield lower prices for electricity. Figure 3 is a comparison of a state's coal use for electricity versus its average retail price of electricity for YTD May 2004. This demonstrates a direct relationship between coal generation and lower electricity prices. Moreover, comparing Exhibits B and C relieves that the same areas, which most frequently have natural gas and oil on the margin, also yield the highest prices for electricity.

Within the Eastern Interconnect, the major regional transmission bottlenecks are accentuated by the excess of low-cost coal generation from Midwest attempting to displace higher cost natural gas generation in the East and South. There is a true economic value to solving these bottlenecks as the spread between the costs of coal and natural gas / oil increase. There is additional or greater economic value displacing natural gas use for electricity, which reduces natural gas demand. Enhancing the transmission system to allow increased access to coal generation from the Midwest could reduce natural gas demand by 0.5 – 1.5 TCF per year over a 5-year period. This decrease will result in lower prices of both natural gas for residential heating and electricity generated from natural gas.

Please refer to Figure 4. As we examine the transmission lines connecting the coal rich Midwest to the East and South, we can identify 10 key links. This limited number of high voltage tie lines connecting these regions imposes a physical barrier to electricity commerce. Were it not for these limitations, a far greater number of economically feasible transactions would occur in the market place, ultimately resulting in cost savings to consumers.

Numerous studies performed by RTOs and independent companies have documented the potential savings to consumers that can be realized by investing in our transmission network. Modest investments in the transmission system of this nation can be easily cost justified and will result in significant long-term savings to consumers. The DOE needs to be an enabler of getting major transmission built in the US. To that end, Peabody Energy offers the following recommendations for the DOE's consideration:

1. The Department of Energy (DOE) must identify all National Interest Electric Transmission Bottlenecks (NIETBs). Identifying bottlenecks will shed light on where opportunities exist. Pinpointing opportunities in the public domain will bring pressure to bear which will likely result in activity.
2. A method of financing should be made available. Having funds specifically designated for these projects may generate interest amongst firms to accept the responsibility of a particular bottleneck. To raise the funds necessary, the DOE could work in conjunction with the Federal Energy Regulatory Commission (FERC) and/or state public utility commission (PUCs) in order to either:
    a. Provide the financing necessary to relieve these bottlenecks directly
    b. Provide financial incentives for interested third parties to accept the project
    c. Mandate a "tax" to the users of a particular state or regional transmission system
3. Make the obligation of solving regional transmission bottlenecks a responsibility of Regional Transmission Organizations (RTOs). Regional transmission bottlenecks may be better addressed by RTO who oversee the operation of the regional system. RTOs could potentially be sanctioned to design and plan their own transmission upgrades. However, the FERC, with the aid of the DOE, would have ultimate authority over the RTOs.

4. The federal government must supervise the completion of the siting process for necessary transmission improvements nationwide. Currently, state governments manage separate siting processes. Potential conflicts could arise from the siting of EHV transmission lines that cross multiple states coupled with a difference in incentives to construct within a given state. There must be federal intervention for siting transmission lines to ensure these projects are fulfilled.

Exhibit A

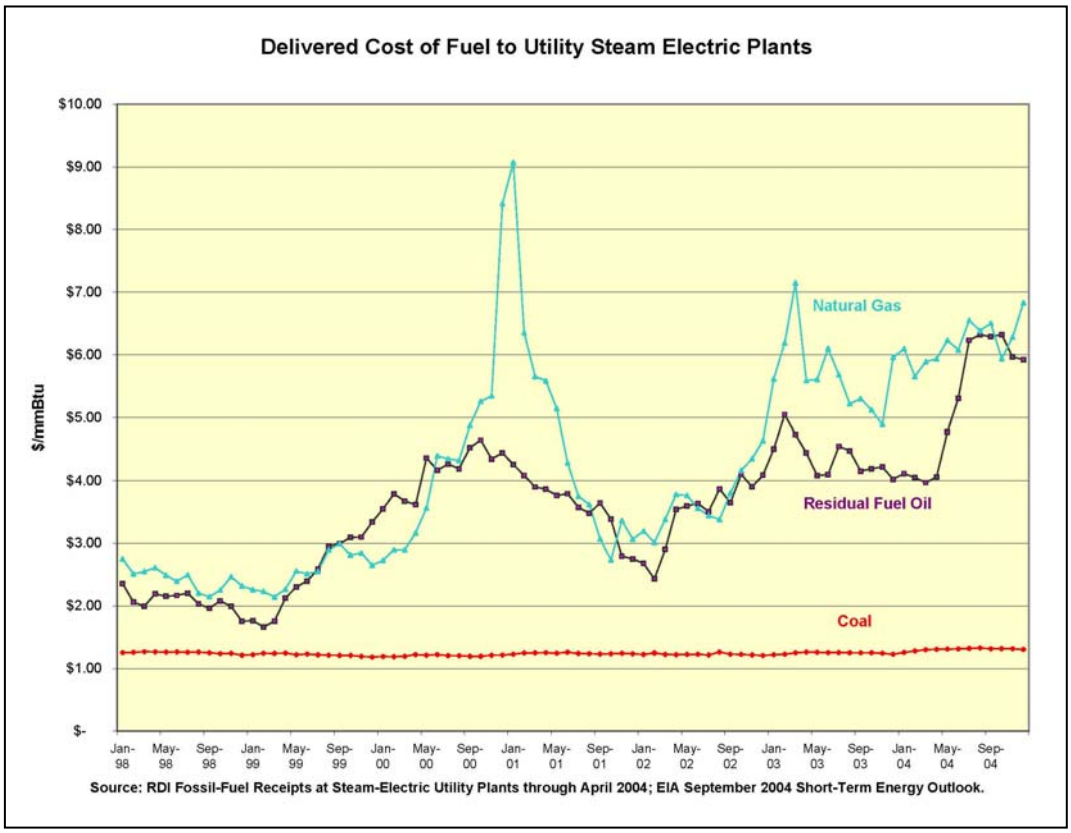


Exhibit B

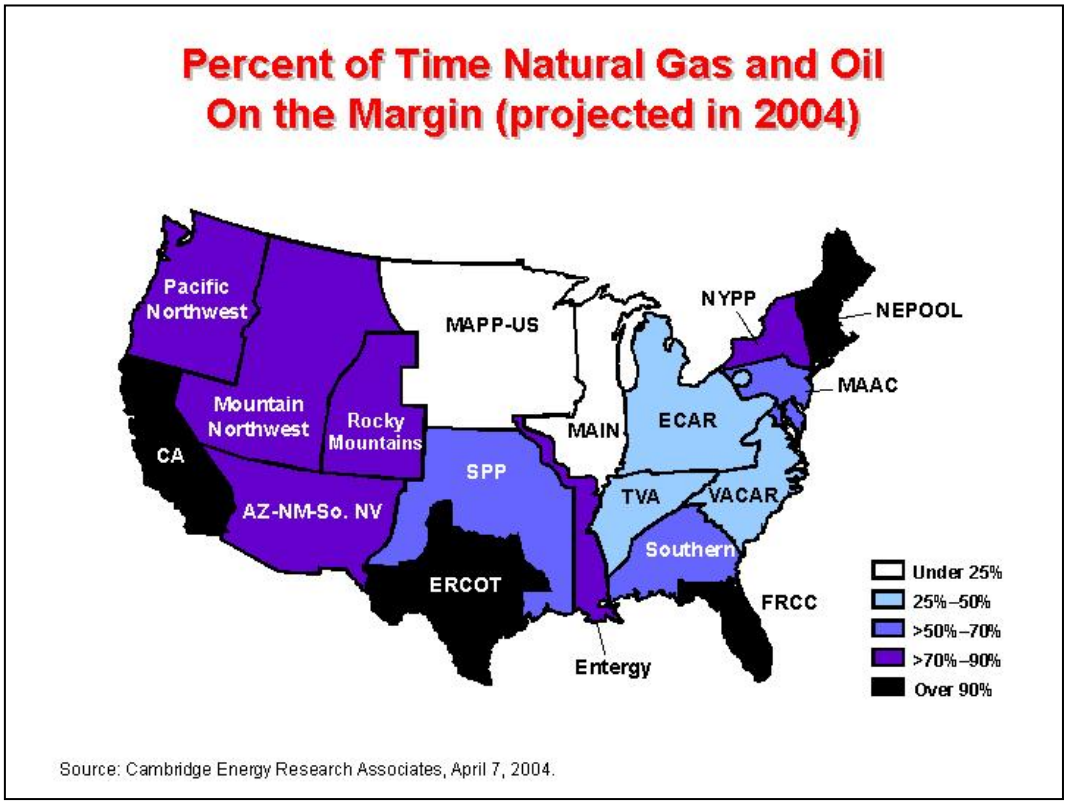


Exhibit C

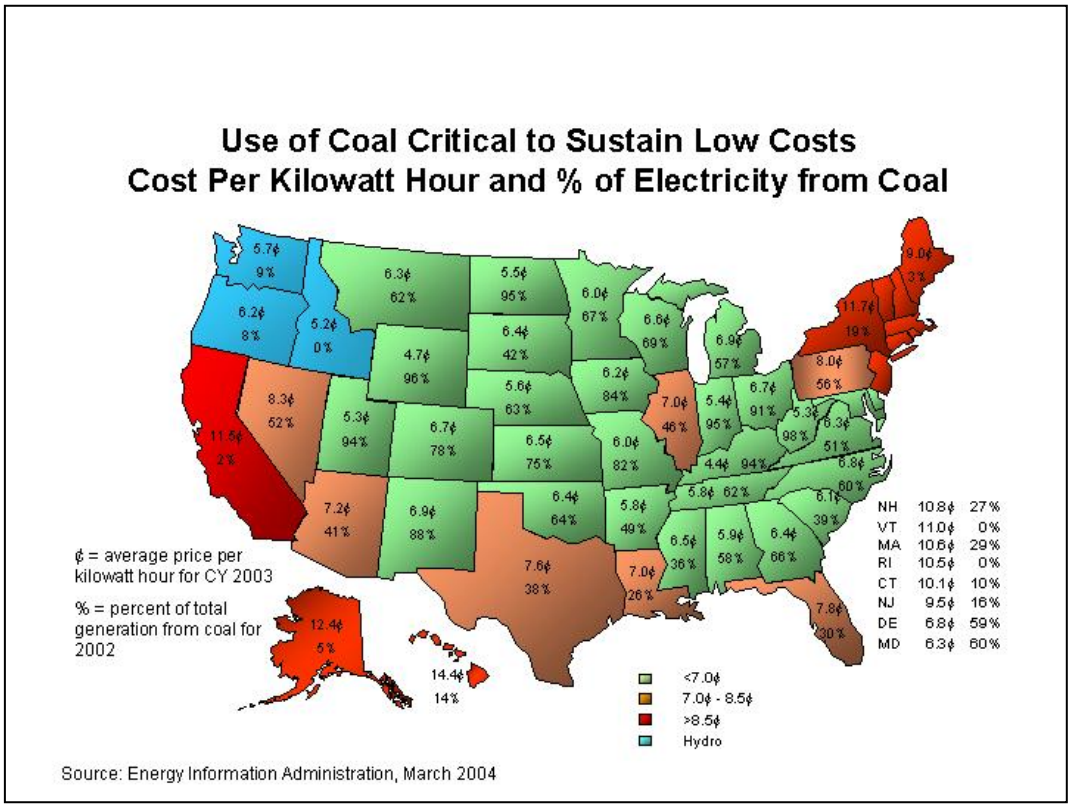
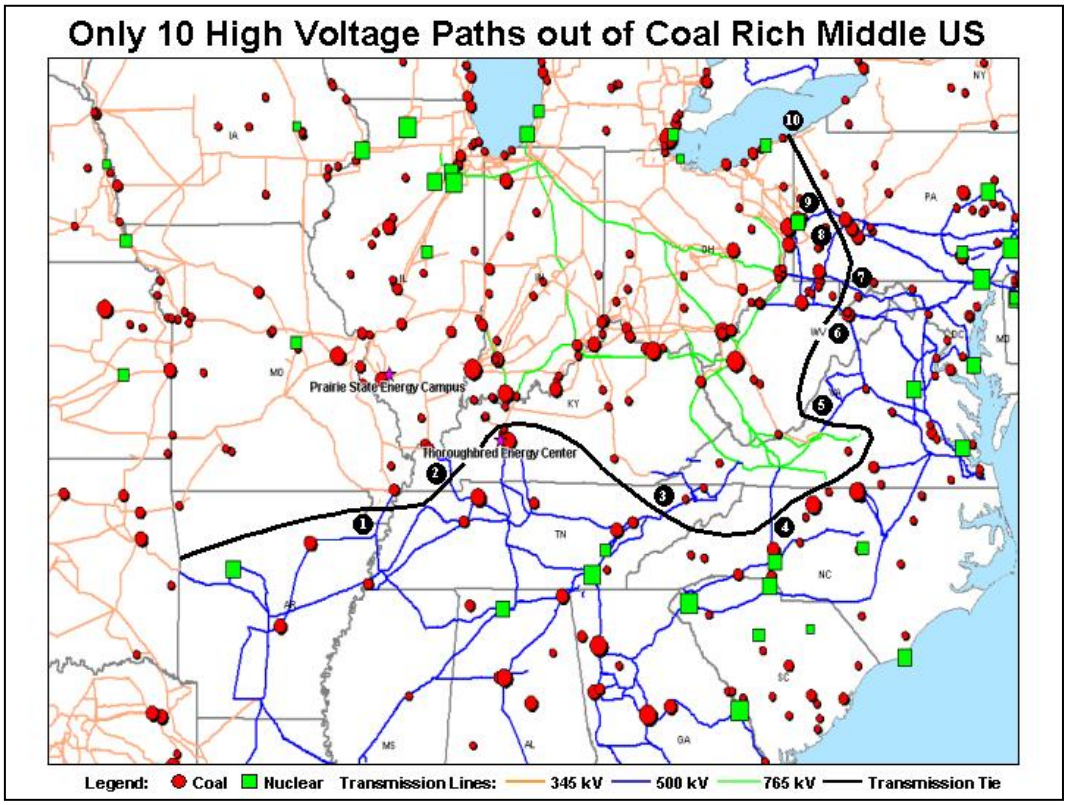


Exhibit D



44. Comments of the Electric Power Supply Association on Department of Energy's NOI Regarding "National Interest Electric Transmission Bottlenecks"

The Electric Power Supply Association [119]appreciates the opportunity to comment on the Department of Energy's (DOE) Notice of Inquiry (NOI) issued on July 22, 2004, relating to the identification, designation and possible mitigation of "National Interest Electric Transmission Bottlenecks" (NIETB). In its NOI, the department observed that "[t]he increase in regional electricity trade saves electricity consumers billions of dollars, but it places significant additional loads on the transmission facilities over which this trade is conducted." Competitive power suppliers are committed to continuing to provide the lowest cost, most reliable power to consumers. Toward that end, we share the vital interest of all stakeholders in a transmission system that is maintained and operated in the most economically efficient, and reliable, manner.

Therefore, EPSA welcomes DOE's efforts to help address this critical matter, and responds to the questions posed in the NOI as follows:

1. **Are the Electricity Advisory Board's recommended criteria for designation of National Interest Electric Transmission Bottlenecks appropriate and sufficient?**

As a practical matter, bottlenecks that rise to the "national interest" level have the following minimum, fundamental characteristics: (1) the absence of viable redispatch options; (2) interfering with non-discriminatory access to the grid; and (3) abetting market power. We believe that the department can play an important role in identifying and addressing NIETBs by building upon the ongoing work of the regional transmission organizations (RTO), regional state committees (RSC) and regional reliability councils (Councils) [120], as suggested in DOE's 2002 National Transmission Grid Study. Some ISOs/RTOs have already identified constraints, and utilize mathematical models, simulation methods and other tools to anticipate the effects of system contingencies and identify solutions.

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[119] EPSA is the national trade association representing competitive power suppliers, including independent power producers, merchant generators and power marketers. These suppliers, who account for more than a third of the nation's installed generating capacity, provide reliable and competitively priced electricity from environmentally responsible facilities serving global power markets. EPSA seeks to bring the benefits of competition to all power customers. The comments contained in this filing represent the position of EPSA as an organization, but not necessarily the views of any particular member with respect to any issue.

[120] As explained in the report and recommendations issued by NERC's Resource and Transmission Adequacy Task Force (RTATF) on June 15, 2004, all ten Councils and six ISO/RTOs surveyed apply NERC's Transmission Adequacy planning standards to ensure that adequate transmission levels are maintained. Further, seven Councils and all of the ISO/RTOs and their member systems must satisfy more stringent regional criteria. Additionally, regional and interregional assessments are conducted for both NERC compliance purposes, as well as by ISO/RTOs to fulfill the planning and expansion function outlined in Order No. 2000.

2. **What should be the role of transmission grid operators, utilities, other market participants, regional entities, States, Federal agencies, Native American tribes and others in the process of identifying, designating, and addressing NIETBs?**

By acknowledging the ongoing regional efforts, DOE would ensure that stakeholders currently engaged in regional collaborative processes continue to have a meaningful opportunity to participate, especially where economic interests are involved. Accordingly, EPSA recommends that, wherever possible, DOE incorporate in its analyses and deliberations the work being done by ISO/RTOs, particularly regarding measures that would affect the economic value of transactions impacted by bottlenecks. Distinguishing "reliability" from "economic" bottlenecks can be problematic, and the two are often intertwined. Indeed, resolving bottlenecks that create reliability concerns typically results in disparate economic impacts on market participants. Failing to properly assess this linkage could result in unwanted consequences for both types of bottlenecks, and result in inefficient outcomes.

Investments by native load in grid enhancements have been especially controversial in regions where the achievement of greater interface capability is not viewed as serving their interests. Therefore, it is particularly important for DOE to focus on NIETBs whose economic and security value straddles individual systems and, consequently, cannot be easily assigned to particular groups of customers.

3. **How might DOE identify bottlenecks in regions where much pertinent data are not available, in contrast to regions where transmission expansion plans have been developed and made public?**

ISOs/RTOs do not yet exist in all areas of the country, nor have established ISOs/RTOs achieved optimal seams coordination with neighboring entities. The DOE could be especially instrumental in situations where identified solutions to problems are not being implemented because the needs of larger regions are subordinated, and held captive to, local interests. In this regard, DOE's role will be especially important in non-ISO/RTO areas. We believe that the department should set up a process and framework for all interested parties to directly engage in the effort to eliminate NIETBs. On balance, DOE should coordinate with FERC, NERC, the RSCs and the Councils to ensure that the distinctions between reliability and economic constraints, and the solutions adopted to resolve them, promote both economic and operational efficiencies.

4. **What actions should DOE undertake to facilitate and monitor progress towards mitigation of designated NIETBs?**

In this connection, it will be critical for the department to avoid putting itself in a position to be picking "winners and losers". With respect to economic bottlenecks, market solutions developed by stakeholder collaboratives within ISO/RTOs should be utilized to the fullest extent possible. The key aspect of the DOE's role should be to provide an overarching framework to facilitate and coordinate the resolution of transmission

bottlenecks across regional systems, and individual utilities outside ISOs/RTOs who fail to address constraints.

It's worth noting that solutions to transmission bottlenecks are not necessarily limited to recommendations that a particular utility invest in its transmission system. The DOE should utilize the NEITB process to explore innovative market solutions, including financial instruments by which the necessary investments will be made. As an intervenor in FERC proceedings, the DOE could recommend innovative public and private equity investment incentives and cost recovery methods. Thus, the DOE's engagement could accelerate the usually lengthy and costly process by which transmission projects are authorized and built.

Next Steps

Finally, EPSA recommends that following the conclusion of the initial information gathering phase on NIETBs, DOE consider scheduling a series of regional and national technical conferences, in which to discuss the findings and determine the subsequent course of action. These technical conferences should include Federal and State regulatory authorities, as well as the stakeholders associated with regional power markets and ISOs/RTOs, and other regional planning and reliability organizations.

45. Comments of Mirant Corporation

Mirant Corporation
1155 Perimeter Center West, Atlanta, Georgia 30338-5416
T 678 579 5000 F 678 579 5001

September 20, 2004 **ELECTRONICALLY FILED**

Mr. Bill Parks
Acting Director, Office of Electric Transmission and Distribution
U.S. Dept. of Energy
Forrestal Building, Room 6H050
Independence Avenue, SW
Washington, DC 20585

RE: Transmission Bottleneck Comments

Dear Mr. Parks:

Mirant Corporation is writing to express its general support for the comments filed by the Edison Electric Institute in response to the designation of National Interest Electric Transmission Bottlenecks (NIETB) notice of inquiry (NOI).

Mirant is a competitive energy company that produces and sells electricity in the United States, the Caribbean, and the Philippines. Mirant owns or controls more than 17,000 megawatts of electric generating capacity globally.

Mirant Chief Executive Officer and President, S. Marce Fuller, currently chairs the DOE Electricity Advisory Board (EAB). In that capacity, she was an active participant in the EAB Transmission Grid Subcommittee that thoroughly reviewed the Department's National Transmission Grid Study, and issued a report to the Secretary that contained recommendations for criteria to the Secretary of Energy, as outlined for comment in this proposal.

Mirant would like to take this opportunity to emphasize the follow points:

- DOE should define its goals, priorities and activities in such a way so as to ensure that industry participants clearly understand how future DOE activities will support and enhance existing transmission planning practices.

- DOE should rely on existing planning tools and databases in the NIETB designation process.
- DOE should strive to develop an efficient NIETB designation process, limiting duplication of effort.

Although Mirant is generally supportive of the EEI comments, our positions do diverge in one key area. We believe that DOE should have the authority to designate NIETBs not only by specific request of industry participants, but also through its own analysis or review of studies performed by RTOs, or regional planning organizations such as regional reliability councils or regional state committees. In either case, although Mirant believes that the DOE should have final authority in the designation of a NIETB, it should only be allowed to make such designation after an opportunity for public comment.

Mirant supports the EAB's proposed criteria for designating a bottleneck as a NIETB. However we must emphasize that it is our belief that the DOE should be limited to only the designation of NIETBs. It should not have the authority to unilaterally solve or eliminate any NIETB. Mirant believes that the resolution responsibility appropriately lies with the RTOs and the Federal Energy Regulatory Commission.

Thank you for the opportunity to comment.

Sincerely,

Alan Johnson
Manager Business & Reliability Standards

46. Comments of International Transmission Company

UNITED STATES OF AMERICA
BEFORE THE
DEPARTMENT OF ENERGY
OFFICE OF ELECTRIC TRANSMISSION AND DISTRIBUTION

Designation of National Interest Electric Transmission Bottlenecks	)))	69 Fed. Reg. 43833 (July 22, 2004)

Comments of
International Transmission Company

The International Transmission Company ("International Transmission") hereby comments on the Notice of Inquiry ("NOI") published on July 16, 2004, by the Department of Energy, Office of Electric Transmission and Distribution ("DOE"), 69 Fed. Reg. 43833 (July 22, 2004).

EXECUTIVE SUMMARY

Transmission bottlenecks pose a threat to the transmission grid. These bottlenecks decrease the reliability of the grid and are detrimental to national security. International Transmission believes that there are four types of projects and three policy goals that DOE must consider as being critical initiatives to further the national interest. The following four projects are vital to the national interest: (1) encouraging increased investment in large scale, inter-regional transmission projects; (2) increased investment in international border transmission facilities; (3) increased investment in control devices on interstate transmission facilities; and (4) DOE intervention in regions of the country that have not yet organized an RTO to supervise the grid. In addition, DOE should further the policy goals of (1) encouraging increased investment in transmission enhancement

projects that increase the capacity and/or the reliability of the electrical transmission grid; (2) encouraging the divestiture of the transmission business from integrated utilities under certain circumstances where necessary utility investments are not being made; and (3) allowing transmission owners to recover the costs of transmission improvements in regional – rather than zonal or local – rates. DOE must pursue these projects and policy goals to ensure a secure and reliable electric transmission infrastructure.

International Transmission also urges DOE to support the development of a model that would quantify reliability benefits. The model would place a dollar amount on the value of local and regional electric service reliability to consumers. Application of this model would help justify increased investment in transmission, especially in areas where new projects are shown to be beneficial for the maintenance of a reliable electrical grid. In addition, quantifying reliability would provide support for regional cost recovery. Regional cost recovery would increase investment in transmission because transmission owners could spread the portion of the project's cost that is related to reliability over the area proven to receive the reliability benefit. A model quantifying reliability in dollar terms will result in increased reliability because it will encourage beneficial investment in the transmission grid.

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BACKGROUND

In response to recommendations made in the *National Energy Policy* (May 2001), the *National Transmission Grid Study* (May 2002), and the *Transmission Grid Solutions Report* (September 2002), the DOE has initiated "a process to determine how to identify and designate transmission bottlenecks of national interest, as a first step towards mitigating them."[121] The NOI requests comments on the criteria that should be used for designating National Interest Electric Transmission Bottlenecks or NIETBs, as well as on various other matters the parties deem pertinent. International Transmission is submitting these comments in response to the NOI.

DESCRIPTION OF INTERNATIONAL TRANSMISSION

International Transmission, a Michigan corporation that is a public utility under § 201(e) of the Federal Power Act, is engaged exclusively in the electric transmission business. It owns and maintains, but does not functionally control, approximately 2,500

[121] 69 Fed. Reg. 43833 (July 22, 2004).

circuit miles of transmission facilities in Michigan used for the transmission of electric energy in interstate commerce. International Transmission's facilities are under the operational control of the Midwest Independent Transmission System Operator, Inc. ("Midwest ISO"). International Transmission is a stand-alone company, independent of market participants. It indirectly serves a population of approximately 4.9 million in the State of Michigan.

COMMENTS

Competitive electricity markets and growing demands have expanded use of the transmission grid. Transmission bottlenecks at various sections of the grid result from increased use of the grid. These bottlenecks decrease reliability and are detrimental to national security. It is projected that by 2010 electricity consumption will increase by 20 percent and by 2025 will increase by 54 percent.[122] Transmission grid expansions are not expected to keep pace.

DOE, in its agenda, must give priority to reliability and national security. DOE is integral in ensuring that the nation's transmission network is reliable and that it can respond to the demand of new markets and national security threats. It is essential that DOE engages in working with transmission owners and regional transmission organizations ("RTOs") to remove unnecessary transmission bottlenecks. A reliable and secure transmission network is essential to the United States' economy and will help prevent another blackout like August 14, 2003.

Bottlenecks in the United States' electrical grid lead to increased costs to consumers and decreased reliability. It is estimated that transmission bottlenecks cost

[122] Energy Information Administration, *Annual Energy Outlook 2003*, DOE/EIA-0383 (2003)

consumers more than $1 billion during the summers of 2000 and 2001 by reducing power supply options to consumers.[123] Bottlenecks increase the probability that transmission providers will breach stability and thermal limits that can lead to voltage collapse and unanticipated (and potentially harmful) loop flow.[124] In addition, the financial and inconvenience losses that result from power system failures are felt by everyone from the individual to the corporate consumer. All sectors of the local and regional economy and potentially the entire country are affected by widespread outages.

While 10,100 miles of transmission facility additions are planned over the next ten years, this represents only a five percent increase in total installed circuit miles -- far less than the 20% growth in electricity consumption expected by as early as 2010.[125] Moreover, many of the planned transmission additions are intended to address local transmission concerns or to connect new generators.[126] These kind of additions are unlikely to have a significant impact on either bottlenecks or the grid's inter-regional transfer capability.[127]

In the first section of these comments we will address four types of projects and three policy goals that DOE should regard as being the most critical initiative that it can take to further the national interest today. The second section elaborates on one of these policy initiatives by arguing that DOE should assist in helping to create a model to measure the value of reliability improvements to the grid.

I. NATIONAL INTEREST

[123] FERC, *Electric Transmission Constraint Study*, December 19, 2001.
[124] CERTS, *U.S. Department of Energy Transmission Bottleneck Project Report*, March 19, 2003.
[125] NERC, *Reliability Assessment 2002-2011*, October 2002.
[126] *Id.*
[127] NERC, *Reliability Assessment 2002-2011*, October 2002.

The NOI proposes that in order to designate a bottleneck as a NIETB, it must meet one of three criteria: (1) the bottleneck jeopardizes national security, (2) the bottleneck creates a risk of widespread grid reliability problems or the likelihood that major customer load centers will be without adequate electricity supplies, or (3) the bottleneck creates a risk of significant consumer cost increases in electricity markets that could have serious consequences on the national or a broad regional economy or risks significant consumer cost increases over an area or region.[128] Essentially, DOE defines national interest, in the context of transmission bottlenecks, as meeting any one of the criteria outlined in the NOI.

The criteria proposed by DOE are fine and appropriate as a general matter. However, in conjunction with these criteria, DOE should also outline certain types of projects and policy goals that are most critical and most clearly within the national interest. Projects most critical to the national interest would best be described as (1) projects large in scale and inter-regional in scope, or those involving (2) international border facilities, (3) control devices, or (4) regions that do not have an RTO. Each of these is discussed below. The most critical policy goals that DOE should embrace and further develop are to (1) promote investment in transmission enhancement projects that increase the capacity of the electrical transmission grid (2) encourage the divestiture of the transmission business from integrated utilities under certain circumstances where necessary utility investments are not being made, and (3) allow transmission owners to recover the costs of transmission improvements in regional rates.

A. PROJECTS IN THE NATIONAL INTEREST

(1) Large in scale and inter-regional

[128] 69 Fed. Reg. 43833 (July 22, 2004).

Although it is a somewhat arbitrary point of demarcation, and reasonable people may differ, DOE generally should consider additional investment in interconnected high voltage (e.g. 345 kV or more), long line (e.g. 50 miles or more) facilities as being critical to the national interest. Lines of this size invariably carry power in interstate commerce, that is, they facilitate regional commerce. They inevitably would affect the transmission of electricity within each region of the United States and most would affect the inter-regional transmission of electricity. As a result, the reliability of these lines affects the broader national economy. Local utilities are unlikely to sponsor projects of this type without cost sharing arrangements involving other utilities or market participants in a broader region. Increased investment in these large-capacity, long-line transmission facilities will increase national security, reliability, and have potential to decrease costs of generation to a large footprint, thereby lowering the overall cost of delivered power to a multi-state region. Therefore, DOE can reasonably find that encouraging increased investment in large scale, inter-regional transmission projects serves the national interest.

(2) International Border Facilities

Additionally, DOE should consider investments in border transmission facilities, no matter the scale, as being in the national interest. Border facilities have an effect on international commerce and international relations. They have national, not simply local or regional, implications. In an ever-increasing global society, it is vital that international commerce flows smoothly across borders. DOE should utilize its export authority to promote investment in international boarder facilities.[129] Ensuring reliable border

[129] *See* Federal Power Act, § 202(e) (regulates the export of electricity from the United States); *see also* Executive Order 12038 (Feb. 3, 1978), amending Executive Order 10485 (Sept. 3, 1953) (Utilities that wish to import or export power must obtain a permit for the construction, operation, maintenance, or connection, at the borders of the United States, of facilities for the transmission of electricity between the United States and a foreign

facilities will help prevent disruptions to international commerce, and the U.S.'s interconnections with its neighbors are a recognized source of increased domestic energy security.

(3) Control Devices

DOE should consider investments in control devices on interstate transmission facilities of any scale being as in the national interest. These projects improve grid reliability by helping to prevent wide-ranging cascading blackouts.[130] Investments in certain control devices (e.g. back-to-back high voltage direct current ("DC") stations) also help isolate sections of the grid and further enhance the transparency by which the electric grid is scheduled to facilitate energy commerce.[131] Key investments in certain control devices can actually improve seams coordination between RTOs and other broad trading areas. Due to the large economic losses and social disruptions experienced during a blackout, DOE would be acting in the national interest to the extent that it supports and encourages the installation of control devices at key points on the national electric transmission grid.

(4) Regions lacking an RTO

Finally, it is in the national interest that DOE be prepared to intervene in any region of the country that does not yet have an RTO to supervise the grid. In these

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country. The permit is to be issued if it is consistent with the public interest, and conditions may be added to the permit as the public interest may require.).

[130] *See* Kiah Harris presentation "On Blackouts and More Transmission Lines", Preventing the Next Blackout Conference, Washington D.C., April 15, 2004; Antonio Sammut presentation "Regional Loop Flow Solutions Possible Solution", DOE Bottleneck Workshop, Salt Lake City, Utah, July 14, 2004.

[131] *See* U.S.-Canada Power System Outage Task Force, *Final Report on the August 14, 2003 Blackout in the United States and Canada: Causes and Recommendations*, page 15, endnote 1, April 2004 (The province of Québec is connected to the Eastern Interconnection only by DC ties. On August 14, 2003, the DC ties acted as buffers between portions of the Eastern Interconnection. Therefore, the electricity system in Québec was not affected by the outage, except for a small portion of the province's load that is directly connected to Ontario by AC transmission lines.).

regions, DOE should facilitate regional planning. For example, the Federal Power Act empowers the Federal Energy Regulatory Commission to

> divide the country into regional districts for the voluntary interconnection and coordination of facilities for the generation, transmission, and sale of electric energy, and it may at any time thereafter, upon its own motion or upon application, make such modifications thereof as in its judgment will promote the national interest.[132]

DOE can help resolve transmission bottlenecks by providing a formal structure for transmission owners to collaborate in the planning process. In this way they could optimize future investments in the transmission grid in regions where RTOs are not currently taking on that role.

In regions that do not now have RTOs in place or in eliminating seams between these non-covered areas and adjacent RTOs, DOE can also take alternative actions. If, for example, DOE finds after initiating regional planning studies, that not enough investment capital is being committed by utilities located in the region, independent transmission companies, such as International Transmission, could be given an opportunity to invest their capital and apply their expertise to build necessary infrastructure in the region. It is no longer necessary that only local utilities be considered qualified to make infrastructure investments. Independent transmission companies (that is, companies that are not part of vertically integrated utility systems and are not affiliated with any market participant) are fully qualified, able and willing to invest in regions outside their historical footprints provided that reasonable cost recovery terms can be established.

B. POLICY GOALS IN THE NATIONAL INTEREST

[132] Federal Power Act, § 202(a).

1. DOE should encourage increased investment in transmission

"The interstate delivery system for electricity has not kept pace with the needs of the market…it is well known that very little new transmission has been built over the last decade and current plans will not keep pace with electricity demand."[133] Transmission is the highway that facilitates the electric energy market in the United States. By analogy, transmission is similar to the United States' interstate highway system. Like the interstate highway system, which allows vehicles to travel from one end of the country to the other on an uninterrupted path, transmission lines keep electricity flowing from one part of the country to the other. However, when a bottleneck occurs on the transmission grid the effects are wholly different then when a bottleneck forms on the highways. On the highways, local congestion may result in stop-and-go driving or a slowdown in traffic flow. In the highway example, the effects of bottlenecks may be annoying, but they are localized. In contrast, on the transmission grid, bottlenecks not only decrease the potential for electricity to flow but also, if not properly managed or controlled, can lead to cascading blackouts across large regions of the United States. Given the difference in consequences, it is essential that DOE stimulate investment to fund transmission improvements that provide adequate capacity on all parts of the grid.

Increased investment in transmission to relieve bottlenecks would not only improve reliability, it would also have the beneficial effect of lowering the wholesale cost of power. For example, CERA estimates that power customers in the eastern United

[133] Remarks of Commissioner William L. Massey, Federal Energy Regulatory Commission, The McGraw-Hill Companies 2001 Symposium "Federal Rule in Evolving Energy Markets", Washington, D.C., May 23, 2001.

States could save $135 million a year by the end of the decade if regulators and investors clear obstacles to funding transmission improvements in the Eastern Interconnection.[134]

Recent infrastructure investments have not been adequate to keep the grid at the historical level of reliability. From 1975 to 2000, transmission investments declined at an average rate of $115 million per year.[135] In fact, CERA believes that on top of investment already made to improve the Eastern Interconnection, another $400 million a year for the next five years is needed to clear away costly bottlenecks.[136]

One problem in some of these statistics is that they actually over-estimate the true extent of transmission investment. Much of the recent investment in transmission facilities are for the principal purpose of connecting new generation to the existing grid, rather than in strengthening the grid or removing bottlenecks. For example, PJM (which is comprised of vertically integrated utilities), recently approved new investments in transmission. On the surface, this announcement is very good news: PJM will add $87 million in transmission upgrades to the regional electric transmission system. In reality, the news says more about supply adequacy than transmission adequacy because the added investments will do little to eliminate bottlenecks or improve inter-regional transmission capability because much of the proposed investment is earmarked for generation interconnection.[137]

Some might argue that investing in generation is a better choice than investing in transmission. This argument is not always correct. In many cases under current conditions, upgrading and expanding transmission is more effective than adding

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[134] Beattie, "CERA: Grid Upgrades Could Save Consumers $135 Million a Year", *Energy Daily*, Sept. 16, 2004, citing CERA, *Grounded in Reality: Eastern Interconnection*, Sept. 9, 2004.
[135] E. Hirst, "Transmission Crisis Looming?" *Public Utilities Fortnightly*, September 15, 2000.
[136] CERA, *Grounded in Reality: Eastern Interconnection*, Sept. 9, 2004.
[137] "PJM Approves $87 Million in Transmission System Improvements", *Energy Central*, July 16, 2004.

generation. For example, to satisfy peak power demands, New York City has had to build additional high-cost generation in or near the city because of transmission constraints.[138] However, relatively cheap surplus power is ready to be imported into New York City but for the fact that transmission bottlenecks prevent that power from being imported.[139] Investment in removing bottlenecks is often superior to investment in generation, because decreasing bottlenecks allows the grid to handle already-installed cheap generation more efficiently. Moreover, the addition of transmission capacity is a permanent addition to the nation's energy infrastructure, and is priced at regulated rates, with regulated rates of return. However, generation investment is increasingly added at market prices set to generate unregulated rates of return.

Due to increased generation and power consumption and the change in wholesale power markets brought about by the Federal Energy Regulatory Commission ("FERC") Order No. 888, the transmission grid is being used in a way not originally intended by its designers and at points is stressed in a way that increases the risk of local and cascading blackouts. Increased transmission capacity would decrease these stress points and increase reliability. In addition, more transmission capacity would give electricity additional physical paths to travel from one point in the country to another. This kind of redundancy is particularly important to the viability of the transmission grid during a failure of a major power plant or a direct terrorist attack on the electric or energy infrastructure.

Even if generation adequacy remains a primary focus of policy makers, additional investments in transmission facilities are essential in order to ensure that the industry's

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[138] *See* Gee, *Expanding Our Electric Transmission Network: Consumers Have an Interest at Stake*, prepared for Edison Electric Institute, September 2001.
[139] *See Id.*

recent over-reliance on natural gas-fired generation is not made permanent. Increased transmission investments are a prerequisite for the successful installation of power plants fueled by renewable sources of energy, coal, and other alternative sources of generation. Renewable energy likely will become more important in the near future as domestic fossil fuel resources decline and prices increase. Often, generation plants with renewable energy prime movers are cleaner and less controversial than building a large fossil-fuel or nuclear power plant.

The constant is that if alternative or renewable energy is to succeed on a meaningful scale, a strong transmission infrastructure must exist. Many such investments, such as "wind farms," are located far from consumer load. Without an efficient and reliable transmission system, power produced by renewable energy programs will not get to market economically and the initiatives will not succeed. Also, alternative fuel options critical to the United States' energy independence, such as the use of clean coal technologies, may often be most economically located far from consumption centers and require large transmission investments to become and remain viable.

DOE must outline a policy and promote increased investment in the broader health of the transmission grid. While increased generation plant investment and fuel diversity are important goals, transmission facilities are critical in efficiently moving power – no matter how generated – from one area of the country to another, regardless of its source or location. The first step in focusing the country's attention on important grid enhancing projects would be to require utilities to detail the purpose of their various transmission investments (in existing regular reports filed with the U.S. government) so

that policy makers can distinguish between projects that merely connect new plants to the grid and others that potentially improve the overall health of the grid. At this time, in many instances, the benefits from increased investment in transmission outweigh increased investment in generation.

2. In areas of inadequate new transmission investment, DOE must look at the corporate structure of utilities in the region.

If DOE finds that in parts of the country there is an inadequate level of new transmission investment in a market that is served by vertically integrated utilities, with no RTO in place, DOE should analyze the market power of the market participants and transmission companies in the region and determine whether the utilities should be encouraged to separate the transmission business from the other parts of the integrated system. Although FERC has promulgated strict rules to keep a utility's transmission business from sharing critical market and customer information with its affiliated market participants, it could be that corporate cultures are so ingrained that the only way to bring about a change in investment strategy is to encourage vertically integrated utilities to divest themselves of their regulated transmission assets so that that business can function independently. A vertically integrated utility has a powerful incentive in many cases to minimize its transmission investments because every megawatt ("MW") of additional transmission capacity may become another MW of increased competition for that utility's generation business from outside utilities and non-utility generators. With divestiture, the transmission-only entity can be set free to improve the transmission infrastructure while remaining neutral with respect to the winners and losers among the market participants.

3. DOE must support regional cost recovery in order to pay for transmission investment to improve reliability and alleviate bottlenecks

Investment in the transmission grid will only occur if the transmission companies can recover their costs. A clear model for cost recovery is needed for transmission owners to go forward to the capital markets for reasonable financing. Regional cost recovery is an efficient way to recover the costs of transmission investments that enhance reliability. It appropriately apportions the costs of upgrading the transmission grid to all customers in the region not simply to those consumers that happen to take service in the same rate zone as the new facilities are located. In addition, as discussed Section II, below, quantifying reliability improvements in dollar terms will make the benefits received by each market more visible and lend additional support to regional cost recovery.

A suggested mechanism for enacting regional cost recovery would be to establish a transmission surcharge on every transmission customer in the region benefited by the upgrades to the transmission grid. This process may require the involvement of and agreement between state regulatory commissions and the FERC.[140] It is necessary that DOE help support this effort in order to provide the necessary policy guidance for the funding mechanism and the determination of appropriate transmission upgrades.

In addition, as discussed later, developing a model that quantifies reliability will assist in identifying how the costs of improving reliability should be apportioned. Once the reliability value of a given project can be quantified and the costs allocated, those amounts can be added to economic value determined for each region to derive an overall cost responsibility by region.

DOE must support regional cost recovery. Without it, transmission companies cannot attain the financing necessary to add regional reliability upgrades, eliminate

[140] Federal Power Act § 201.

bottlenecks, and build projects with inter-regional economic impacts to the transmission grid. If substantial upgrades in the transmission system are not made, then the risks of grid failure, grid inefficiency and the stranding of generation investment increase.

Transmission bottlenecks are a serious problem. To the extent they increase the risk of grid failure, they threaten the United States' national security and pose a threat to the overall economy. As DOE's criteria for a NIETB states, it is in the United States' national interest to reduce transmission bottlenecks so that there is a decrease in the national security risk, an increase in reliability, and a decrease in costs. However, DOE should also concentrate its efforts on identifying projects and policy goals that would most quickly serve critical national interest, as outlined above. These projects and goals, once completed, will help fix existing bottlenecks that DOE designates as NIETBs and prevent future transmission bottlenecks from occurring.

II. DOE SHOULD HELP DEVELOP A MODEL TO QUANTIFY THE RELIABILITY IMPROVEMENTS THAT RESULT FROM TRANSMISSION INVESTMENTS.

The continued reliability of the electricity transmission grid is important to the national interest. However, currently, there is no way to quantify the value of this reliability. The planning criteria used by the utility industry is basically a pass/fail test. Either a given design meets appropriate "reliability standards" (usually based upon an analysis of the N-1 or N-2 failure criteria that the transmission owner and regional planning authority have adopted) or it does not. A better measure of reliability would assist the industry in making its investment decisions. These comments urge DOE to assist the industry in developing a better way to measure the value of reliability investments.

DOE should help develop a computer model that would put a dollar amount on the value of local and regional electric service reliability to consumers and would measure how various transmission investment alternatives would impact that value. The model would quantify the reliability aspects of proposed transmission projects. A model of this kind would improve decision making by adding a key variable – the dollar value of a project in improving grid reliability. Application of the model would help focus investment on areas where the consumer would benefit from increased grid reliability.

Currently, for transmission systems that are operated by an RTO, the decision to construct new transmission facilities for reliability purposes remains with the transmission owners. They are responsible for conducting transmission studies to determine what projects are needed to meet applicable reliability criteria. They then submit their plans to the RTO. The RTO then "rolls-up" all transmission owner reliability proposals in its overall RTO-wide plan. The transmission owner then designs and constructs the project, and it is allowed to recover project costs from the customers located in the transmission owner's footprint. There is a very limited opportunity for the transmission owner to spread reliability project costs beyond its footprint even in cases where the project will have regional benefits.

For projects proposed to meet a market need ("economic projects") the only benefit that can be quantified in current models is the energy market savings. To quantify energy market savings, different systems have considered using different metrics. These metrics include change in "Unhedgable Congestion Costs,[141]" change in Load Locational

[141] *See* PJM Presentation "PJM Economic Planning Implementation Stakeholder Process Meeting", August 29, 2003.

Marginal Price[142], change in Generation Locational Marginal Price[143], and change in the total regional Production Costs.

While these various metrics and several models have been developed to quantify energy market savings, the same has not yet been done to quantify the value of improved reliability. Measuring reliability in dollar terms means that regional projects – whether primarily proposed as reliability or economic projects – could be simultaneously evaluated for energy market savings and reliability value. Since both quantities would be in dollar terms, the total value of all proposed transmission projects could be compared on a common base. Energy market economic benefits and reliability benefits from proposed regional projects would both be considered when determining whether or not to proceed with a proposed project. Projects proposed for reliability purposes often provide some incidental economic benefits and projects designed to meet primarily market demands often have reliability implications.

Currently, reliability benefits and economic benefits are often viewed as being independent. Quantifying reliability in dollar terms would result in the construction of more transmission projects because the total benefits – both economic and reliability – would be considered together when determining the cost/benefit of the project. For example, assume a large regional project cost $100 million and that economic savings from the energy market totaled $80 million. If economic benefit alone is being measured, the project would not be done. However, if it could be determined that in addition to the $80 million in energy market savings that improved reliability would result from the

[142] Load Locational Marginal Price is a metric that is representative of what the load would pay if not for financial transmission rights that hedge congestion costs.
[143] Generation Locational Marginal Price metric is the revenue the generators derive from the LMP market; however, the output of the generation must be normalized for changes from the base case to the change case.

project and that improvement was also valued at $80 million, the project would be deemed a net benefit and construction should proceed.

Quantifying reliability would provide additional support for regional cost recovery. The energy market savings and the reliability value of the project for various markets within the transmission network, as measured by the model, would not only lend support to regional cost recovery but they could also become the basis for the allocation of costs among the various markets in the region. The goal would be to allocate the portion of the project's costs that is related to reliability over the geographic area that is proven (under the model's assumptions) to receive the reliability benefit.

DOE has a role in the development of a useful model to measure the "reliability value" of a transmission project. Depending on the availability of its resources, DOE may choose to lend its technical expertise to private parties that would create a "reliability" model, provide access to existing and future data sources for use in the model, make financial contributions or investments in private-sector projects to develop the model, or possibly even establish an independent DOE initiative to create such a model. We urge DOE, however, to take one or more of these actions to help build a model to measure the reliability value of transmission projects.

CONCLUSION

International Transmission urges the DOE to take into consideration these comments in support of its initiatives to reduce transmission bottlenecks on the national grid.

Respectfully submitted,
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47. Comments of Western Electricity Coordinating Council

Identification of NIETB

Comments per FR Doc 04-16724 Filed 7-21-04
Comments by Western Electricity Coordinating Council (WECC) Staff

Comments on Issues Relating to the Identification, Designation and Possible mitigation of National Interest Electric Transmission Bottlenecks (NIETB).

Send comments to bottleneck.comments@hq.doe.gov by September 20, 2004 at 2:00 p.m. MDT.

Comments on Identification of Transmission Bottlenecks

Transmission bottlenecks that hinder or preclude the reliable transmission of power to resource deficient areas are of interest to WECC in accordance with WECC's reliability mission.

1. The identity of potential useful projects to relieve current and predicted future transmission bottlenecks is generally already well known at the regional level. The electric utility organizations know which transmission systems need to be upgraded to provide for transfer of the needed low-priced power.

2. Bottlenecks that hinder or preclude the reliable transmission of power to resource deficient areas could be created quickly through damage or destruction of existing transmission facilities either maliciously or through natural causes. Any transmission system that feeds the load in a major metropolitan area, even if not currently congested, would immediately become congested if significant parts of the existing transmission facilities were damaged or destroyed. In other words, identifying transmission bottlenecks for the intact electrical system only addresses a small part of the potential problem.

Comments on Mitigation of Transmission Bottlenecks

1. Generally there are two alternatives to mitigate any transmission bottleneck, one is to build more generation on the same side of the bottleneck as the loads being served, and the other is to increase the capacity of the bottlenecked transmission.

2. Transmission bottlenecks can be managed for reliable operation if their operating limits are known. For example, the policy in the WECC Region requires that the system not be operated under conditions that have not been studied. Transfer capabilities and operating nomograms have been developed and are strictly observed. Contingencies are communicated and operational adjustments made as needed.

Specific comments regarding the four questions:

Question 1: Q – Are the recommended criteria appropriate and sufficient?

A - The three criteria only address identification of existing bottlenecks. Bottlenecks could quickly occur on any path due to natural disaster or malicious act and could continue for long periods of time.

Question 2: Q - The role of in identifying, designating, and addressing NIETBs?

A - DOE should turn to the regional reliability councils (for example, WECC attempts to obtain input from all stakeholders) to identify national interest bottlenecks. Extensive additional study work and additional layers of bureaucracy will only divert resources from efficient implementation of solutions to bottlenecks.

Question 3: Q - How identify bottlenecks in regions where data are not available ?

A - See the answer to Question 2. Addressing bottlenecks that hinder or preclude the reliable transmission of power to resource deficient areas are part of the mission of the regional reliability councils.

Question 4: Q - .What actions should DOE undertake to facilitate and monitor progress towards mitigation of designated NIETBs?

A-DOE should encourage industry and the regulators to identify and overcome impediments to transmission planning.