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## National Capital Area Chapter

United States Association for  
Energy Economics

April 2002

[www.ncac-usaee.org](http://www.ncac-usaee.org)

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# news

## ***Transmission Reliability Limits: The Unseen Effect on Costs and Competition***

**Our Next Luncheon at Library of Congress**

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**WHEN:** Noon, Friday, April 26

**WHERE:** 6<sup>th</sup> Floor, Madison Building—Montpelier Dining Room  
Library of Congress (enter from Independence Avenue)  
1<sup>st</sup> Street & Independence Avenue, SE, Washington, DC

**SPEAKER:** Tom Leckey, Energy Information Administration (EIA)

Utilities, Independent System Operators (ISOs) and National Electric Reliability Council (NERC) areas rely on excess generator capacity and redundant line capability to ensure electricity demand (including losses) does not exceed generation. System managers have traditionally required that generation capacity exceed expected peak demand. This "safety margin" varies by region: in the Northeast Power Coordinating Council (NPCC) the margin is 15%, while suppliers (load serving entities) in the PJM Interconnect are required to have a 17% excess of generation over peak demand.

The other tool of system managers is to restrict power flows between areas to levels below the physical capability of the lines. These line limits are imposed to ensure that the system continues to operate after a failure. However, these line limits are static once established, and can thus preclude profitable electricity trades and protect local markets from outside competition. These effects can have a negative impact on the savings and efficiencies projected to arise in competitive power markets.

Our speaker this month, Tom Leckey, is an industry specialist in the Energy Information Administration (EIA). He has worked extensively on electric restructuring issues, including the effect of competitive power markets on emission trends. Together with his colleagues, Doug Hale at EIA and Thomas Overbye at the University of Illinois at Urbana-Champaign, Tom co-authored *Some Costs of Reliability Limits* [a copy is at [www.ncac-usaee.org](http://www.ncac-usaee.org)]. The paper quantifies some of the costs, or lost benefits, arising from area interchange limits constraining power flows between areas in the Eastern Interconnect based on conditions that prevailed in the summer of 2000.

Among other findings, the authors determined that operating costs could be reduced on the order of 4-7% if the Eastern Interconnect were used to its physical potential. Tom will discuss how they arrived at this result, and discuss how area interchange constraints can shield noncompetitive pricing and inefficient operations.

Join us on **Friday, April 26** at 12:00 PM for networking, with the lunch-line forming promptly at 12:30 and the presentation beginning at 1 PM so we are done by 2 PM. **COST:** \$15.00 for members and \$20.00 for non-members—guests are always welcome. Make checks payable to NCAC-USAAEE.

**RSVP:** By noon, TUESDAY, April 23, by phone to Pam Tomski on 202-861-2841. Cancellations after noon Thursday will be billed.

### *March Meeting Highlights*

**SPEAKER: Anne Smith, Charles River Associates**

#### *Multi-Pollutant Control Legislation - At What Cost?*

Anne Smith, a Vice President with Charles River Associates, explored the costs of multi-pollutant control legislation with the NCAC at its February meeting. She noted that utilities, which are the entities that will shoulder most of the burden, are not as opposed to some form of new legislation as some might assume. [A copy of her presentation can be found at [www.ncac-usaee.org](http://www.ncac-usaee.org).]

First, existing regulations present a confusing morass. Utilities now must contend with sulfur dioxide (SO<sub>2</sub>) trading, NO<sub>x</sub> caps beginning in 2004, and new regulations on Mercury (Hg). Meeting the legal requirements for these overlapping regulations is enormously expensive and creates uncertainties that render capital investment planning difficult. In many respects, multi-pollutant legislation holds the promise of creating clarity and reducing regulatory risk.

Dr. Smith discussed two approaches now under discussion on Capitol Hill: President Bush's "Clear Skies Initiative," and Senator Jeffords' Bill (S 556). Both of them focus on three pollutants—SO<sub>2</sub>, NO<sub>x</sub> and Hg (referred to as the 3Ps). Jeffords' bill, however, would include an additional cap on carbon output, for which there is no available retrofit control technology that can currently compete with switching to lower carbon fuels.

The other basic difference between them, is that Jeffords' proposal (one among many on the Hill) wants deeper reductions sooner, with 2007 as the key date for changes.

Dr. Smith pointed out, however, that both proposals depend on assumptions about the effectiveness of control technology, which demonstrates the importance of having good analytical models. Models have been developed by the Environmental Protection Agency (EPA), the Energy Information Administration (EIA), EPMM and Charles River Associates. Differences between the models can be attributed primarily to their assumptions about technology and fuel market conditions.

The EPA, for example, assumes that control technology (SCR) that was designed to reduce NO<sub>x</sub> will also result in substantial reductions in Mercury. However, this assumption may be flawed. The technical basis for this assumption was based on testing of just two units with SCR, which showed a 95% reduction in emitted mercury rates relative to mercury in the coal being burned. However, these units

were both burning a type of coal that tends to have high mercury removal even without SCR. Also, stack monitoring samples were not taken on the same day as the samples of mercury in the coal, and this could make a difference, as Hg levels can vary significantly among batches of coal. Thus, there is no hard data to support the assumption that SCR reduces mercury levels to the degree assumed by EPA for all important types of coal in use.

Another complication is that Hg is regulated as an air toxic and there is a widespread concern that "hot spots" of risk would be allowed if one allowed emissions trading of a toxic substance. However, the risk from mercury is accumulation of Hg in fish that may be eaten. This risk is less subject to potential development of hot spots of risk near any specific emissions source. Bush's proposal would allow trading, and Jeffords would not.

The key to achieving carbon reduction, which is a feature of Jeffords' bill, will lie in fuel switching, according to Smith, because efficiencies have already been achieved at most plants. Therefore, as you drive CO<sub>2</sub> down, other pollutant levels will drop as well. However, this is a costly approach for reducing the 3Ps.

One question is how these new regulations would affect electricity prices. Dr. Smith points to feedbacks in the wholesale market. Natural gas primarily sets the wholesale price of power. Since natural gas will not bear much control cost under a 3P bill, controlling the 3Ps without carbon constraints would result coal-fired units having to almost fully absorb their control expenditures, because utilities would not be able to pass retrofit costs on to customers in a deregulated market. Thus coal-fired units in deregulated markets will bear a large loss in value under a 3P bill.

Models are very literal. If a model is run assuming there will be no carbon constraint, then decisions to invest in retrofits for coal units will appear quite viable in the model results. The EPA model, for example, shows that one third of electric plants in the U.S. will require FGD for SO<sub>2</sub>, while more than one half will require retrofits (e.g., SCR) for NO<sub>x</sub> control. Because it assumes the Hg will be "co-controlled" by scrubbers, the EPA model finds that the Hg cap will be "free," at least for the first phase of the program.

While the EPA's model is proprietary, Smith believes that it should publish its assumptions for public review. She believes that if EPA's co-control assumptions are incorrect, there could be up to a 50% increase in estimated costs of a 3P policy.

Another complication is volatility in the natural gas market. Smith believes that there could be a tripling of gas demand for electricity within 5 years under the Jeffords bill. If the infrastructure for gas supply cannot support fuel switching that rapid, then natural gas prices could become quite volatile, and costs of the program could be much higher than model estimates.

Who would pay for all these changes? Smith believes a major portion of the costs would be borne by utility investors, which would lose half or more of the current value of the coal plants. But coal producers and consumers could also take enormous hits, if a policy causes many coal plants to shut down and new plants--primarily fired by natural gas--take their place.

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- **Immediate Past President**

## NCAC Monthly Lunches—Set your Calendar for the Year!

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To help you plan for the coming year, the following dates have been reserved for the NCAC monthly lunch: May 17, June 21, September 20, October 18, November 15

## Please Renew for 2002 now!

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If you have not already renewed your membership in NCAC, please fill out the form below and either mail it or bring it to the next luncheon.

### National Capital Area Chapter United States Association for Energy Economics

#### 2002 MEMBERSHIP RENEWAL/REGISTRATION FORM

\_\_\_\_\_ Please check here for membership renewal.

\_\_\_\_\_ Please check here for new membership registration.

- Membership registration/renewal for the NCAC/USAEE are expected by the end of the preceding calendar year.
- Please return your registration form and check to Pamela Tomski-NCAC/USAEE 2001 Treasurer at Wampler Associates, 1130 17<sup>th</sup> Street, Suite 312, Washington, DC 20036 or e-mail the information below to [ptomski@erols.com](mailto:ptomski@erols.com).
- Dues for 2002 are \$20.00. Please make checks payable to NCAC/USAEE.

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