

New England States Committee on Electricity

To: Planning Advisory Committee
From: New England States Committee on Electricity
RE: Preliminary Observations on the Eastern Wind Integration and Transmission Study (EWITS)
Date: February 10, 2010

The New England States Committee on Electricity (NESCOE) has done a preliminary review and drawn some initial observations concerning the National Renewable Energy Laboratory's (NREL) Eastern Wind Integration and Transmission Study (EWITS), which was released on January 20, 2010.¹

EWITS examined a range of technical issues related to a hypothetical twenty (20) percent wind development scenario and associated transmission to serve electric load in the Eastern Interconnection. As you know, the Eastern Interconnection extends from the Atlantic coast, including New England, to the western borders of the plains states. Accordingly, NESCOE is interested in the EWITS analysis and in assessing it relative to the work New England has done over the past year to analyze development of wind resources in and around New England and associated transmission.

In New England, competitive markets and/or processes rather than planners will identify those renewable resources able to serve our customers most cost-effectively. In furtherance of the New England Governors' direction², work is now underway on means to facilitate development of renewable resources in the northeast, including mechanisms for coordinated procurement of renewable power. Coordinated procurement, and associated contracts, could provide revenue streams and facilitate renewable project development.

Nevertheless, conceptual "what if" studies, such as EWITS and ISO-NE's Renewable Development Scenario Analysis (RDSA), which looked at wind development in New England and Canada, provide useful data to policy makers and to the market about renewable resource development.³ For example, the RDSA showed that New England has ample renewable resources to meet its clean energy objectives and, if developed aggressively, to export renewable power to its neighbors. In this respect, NESCOE shares NREL's interest in renewable resource development data and commends NREL for its contribution to the discussion.

NESCOE offers below some preliminary observations on EWITS, including areas that warrant further analysis.

- **Production Prices:** Perhaps the most interesting result of the EWITS analysis is the finding that to the extent there is a major build-out of high-voltage transmission across the Eastern Interconnection as postulated in the study, (1) it would result in massive increases in generation from existing (and new) power plants in the middle of the country and decreases in generation from existing (and new) gas-fired power plants along the coast, and (2) the resulting flow of

¹ EWITS material is at this link: <http://www.nrel.gov/wind/systemsintegration/ewits.html>

² Material related to the Blueprint is at this link: <http://www.nescoe.com/Blueprint.html>

³ ISO-NE's RDSA: http://www.iso-ne.com/committees/comm_wkgrps/prtcpnts_comm/pac/reports/2009/eco_study_report_draft.pdf

electricity market revenues from the East Coast to power plant owners in the middle of the country would vastly exceed the revenues needed to construct the associated transmission. Consequently, *there would be no need to charge electricity consumers for the transmission*, since it could be paid for by those who benefit the most – namely, generation owners with increased profits from generation sales to the East Coast.

- **Canadian Power:** EWITS did not assume wind plants were available in Canada.⁴ New England is fortunate to have just over the border to our north significant amounts of low or no carbon power. New England also has a strong working relationship with the Canadians on energy trade and environmental stewardship.

To illustrate, in September, 2009, the New England Governors and Eastern Canadian Premiers adopted a *Resolution* concerning opportunities in the New England and Canadian renewable energy marketplaces as well as the development of a sample *Request for Proposal* for the cross-border procurement of renewable power. Work in furtherance of this *Resolution* is underway.

In addition, a challenge associated with integrating wind is its intermittent nature. Transmission ties to Canada could allow Canada's vast hydroelectric resources to serve as a balancing resource for wind, i.e., when the wind is blowing, water would be stored; when the wind is not blowing, water would be released.

New England's assessment of renewable power options, and ways to provide consumers clean power most cost-effectively, must include Canadian resources.

- **Regional Transmission:** EWITS' transmission overlays – or conceptual transmission assumed to be required to move wind power to population centers – does not appear to penetrate far into the regions, notably New England. In fact, one of the EWITS scenarios assumes no transmission in New England, even though a large amount of additional transmission would be required to reach load centers within the region. A meaningful cost assessment must factor in the costs of transmission within regions where power is assumed to be delivered.

That data limitation means that the study's cost estimates do not reflect the costs consumers would need to pay for all infrastructure needed to deliver wind power to consumers.

- **Coal by Wire:** The mid-western United States has considerable coal-fired generating resources including significant existing incremental coal capacity. Because transmission systems do not distinguish between generation fueled by wind or coal, a cross-country transmission system could serve as a pathway to deliver increased coal-fired generation to East Coast consumers, which could undermine the goal of wind development and integration within the Eastern Interconnection. This outcome appears to be supported by the EWITS modeling results.

⁴ NREL indicates the exclusion of Canadian resources was due to limitations on the scope of work for its wind modeling.

- **Off-Shore Wind Exclusion:** EWITS is limited to wind resources located no more than six (6) miles off shore and assumes no deep water wind resources.

EWITS' consideration of wind located within six miles of shore is a practical weakness. An example best illustrates the point. Delaware's proposed Offshore Wind Park, which will provide clean energy to power 100,000 households, will be located thirteen (13) miles offshore. Some New England states are seeking aggressive expansion of offshore wind in waters beyond six miles. At that distance, the turbines are difficult to see. Wind developers looking to satisfy local aesthetic concerns may lean toward offshore wind at a distance of about twelve (12) miles off shore. EWITS apparently does not account for these wind facilities, which are well established in Europe.

Additionally, if deep offshore wind technology becomes competitive in the next fifteen (15) years or so, it would significantly increase the amount of wind energy available in New England, and could dramatically alter the necessary additions to the transmission grid.

- **Modeling Issues:** NESCOE has only a preliminary understanding of the EWITS modeling approach, but based on an initial analysis it appears to use a creative but troubling approach to modeling wind integration. Namely, it uses a "top-down" method that appears to be focused more on leading to transmission construction to accommodate power flows from *all generation* in the middle of the country, rather than one focused only on integrating wind. Consequently, the results of the analysis may overstate – perhaps in a major way – the actual transmission cost of reaching a twenty (20) or thirty (30) percent wind power standard.
- **National Context:** The way the EWITS study has been presented is also of concern. It has been described in national policy forums as an indication that (1) we can build a lot of wind *provided* there is a massive transmission build out, and (2) there would be substantial benefits *to consumers*, so that the cost of transmission should be charged to customers. This messaging builds on efforts of many for federal legislation to transfer resource planning and siting authority from the states to the Federal Energy Regulatory Commission (FERC), which is counter to the New England states' opposition to expansion of federal planning and siting authority.

NESCOE will continue to assess EWITS in greater detail, discuss it in various regional forums and share further observations that we may have.