

OFFICE OF THE SECRETARY  
CORRESPONDENCE CONTROL TICKET

Date Printed: Mar 01, 2011 10:50

PAPER NUMBER: LTR-11-0089  
ACTION OFFICE: EDO  
  
AUTHOR: T.A. Miller  
AFFILIATION: WI  
ADDRESSEE: CHRM Gregory Jaczko  
SUBJECT: Comments on Strategic Energy Planning  
  
ACTION: Appropriate  
DISTRIBUTION: RF  
  
LETTER DATE: 02/20/2011  
ACKNOWLEDGED: No  
SPECIAL HANDLING:  
NOTES:  
FILE LOCATION: ADAMS  
DATE DUE:

LOGGING DATE: 03/01/2011

To: Haney, NMSS

CYS: EDO  
DEDMRT  
DEDR  
DEDCM  
AO  
NSIR  
NRR  
FSME  
RES  
Fraser, OEDD

DATE SIGNED:

Template: SECY-017

E-RIDS: SECY-01

February 20, 2011

Re: Comments on Strategic Energy Planning

<p>To: Department Of Energy (DOE) Federal Energy Regulatory Commission (FERC) Nuclear Regulatory Commission (NRC) Wisconsin Public Service Commission (WPSC)</p> <p>Governor Scott Walker – Wisconsin Congresswoman Tammy Baldwin – Wisconsin Senator Herb Kohl – Wisconsin Senator Ron Johnson - Wisconsin</p> <p>Copy: President Barack Obama Vice President Joe Biden</p>
--

In Wisconsin, the Strategic Energy Assessment (SEA) looks at the past and future electric energy needs and sources of supply. **Nationally**, we are also looking at these same issues and with the various state and federal organizations are pursuing synergistic opportunities to identify real solutions. All available resources should be on the table with the objective of achieving reliable energy independence with responsible environmental focus to meet our national and international needs. This will require significant attention to security considerations both domestically and internationally. The requirements for future security will increasingly include cyber security.

**Generation/Energy:**

In Wisconsin coal represents 43% of our Mega Watt (MW) capacity and 67% of the Mega Watt Hour (MWH) energy generated. Natural gas is 37% of our MW capacity but only 8% of our MWH energy generated. Nuclear on the other hand is 8% of our MW capacity but is 19% of our MWH energy generated. The Wisconsin picture is generally a template of what the nation is facing in every State of the Union to some extent. This paper is one view of the Wisconsin example and extrapolated to the broader implications on a regional/national basis.

With respect to renewables, hydro is 3% of the capacity and 3% of the energy. Wind is 2% of the capacity and 1% of the energy. Biomass is 2% of the capacity and 2% of the energy. There are a number of alternative plant based sources of fuels, such as algae for example, that are in various stages of development that will impact fuel supplies of oil, diesel, and jet fuel. The current focus on wind is good, especially, given that wind itself is free. The current state of wind deployments are evolving such that the spatial requirements for adjacent wind turbines are increasing to avoid wind speed reductions from shadow effects. Additionally, the location of wind resources are often sited independent of state boundaries, which will require investment, in general, in additional

transmission resources. Finally, wind needs a storage capability to secure its position in the capacity mix. Research and Development (R&D) in batteries and other storage technology will improve wind, solar, and photovoltaic utilization in the mix of resources. Absent storage improvements, there are some geographic and time-of-day applications that can also improve renewable utilization, especially with solar and photovoltaic.

Natural gas, is expected to have increasing demand from transportation, heating and other applications. Again, natural gas is 37% of capacity and only 8% of the energy generated in the Wisconsin example. However, natural gas nationally is, and will continue to be a vital part of the capacity mix in managing the peak demand response. Natural gas may also be a key component in the transportation arena.

Nuclear has some significant environmental positives, but some spent fuel storage negatives at this time. The economics of spent fuel reprocessing may reduce the storage negatives. There is also a historical bias in some states against nuclear. Nuclear is only 8% of the capacity, but it is 19% of the energy in Wisconsin. The current focus in the nuclear industry on safety, standardized design, reprocessing potential and increased innovations all point to the need for a fresh unbiased review of the nuclear option. Nuclear is a base load resource that can contribute to mitigating emissions while providing base load capacity and energy. Nuclear is the single largest displacer of greenhouse gases compared to other energy sources. The approval process at the state and federal levels need to be streamlined with an emphasis on process improvements that include safety, security and reliability.

### **Delivery System:**

The transmission delivery system is part of the electric grid (generation, transmission, distribution, and customers). One item in vogue these days is the smart grid approach, which will certainly improve utilization when properly implemented. Flexible AC is another related approach that is an integral part of improved utilization of the grid. Another related and critical part is a review of the protective relay/stability of the system and its ability to respond real time to system disturbances.

Transmission improvements are necessary and are expected to be forward looking to prepare for a future that includes electric transportation dynamics that will include not only electric cars but also high speed rail. There will also be a continuing need for distributed generation to improve, more fully, the utilization of the electric grid across the country and the individual states.

With the Nation's interconnected network and all the co-dependencies for improved reliability that are shared across state and regional lines, the roles of FERC and DOE are critical to achieve the kind of efficiencies that are possible. FERC through its Notice of Proposed Rulemaking (NOPR) to require public utility transmission providers to offer all customers the option to schedule transmission service at 15-minute intervals instead of the current hourly scheduling procedure will increase the volume of data at least four-fold. This will increase the impact significantly of computing and internet resources and their associated vulnerabilities. (Note, the transmission providers would need to provide

variable energy resources on their systems including power production forecasting data.) There are significant impacts on transmission capability with locations of generation. Power injection points can relieve transmission congestion or alternatively overload unintended resources. Suffice it to say, it would be an increasingly complex system that is susceptible to interruptions of all types, including cyber security considerations. The path forward will escalate the use of shared technologies like cloud computing, and require a more holistic view of how these facilities are integrated.

Cyber security is a growing issue facing the nation. Our military has been aggressively pursuing an informed response. The non-military response appears to be much less aggressive. The cyber threat is more than identity and credit card theft. Data breaches, which are a key part of the cyber threat, can impact not only financial systems but control systems of all elements of our infrastructure. Data minimization and response protocols are part of a creditable reaction and should be implemented and practiced. In the martial arts, what you practice is what you do in response to real time challenges. An example of excessive data, are the mountains of data presented in the boardroom, which could be easily reduced to the actual decision point data, that is typically small. However, the marketers will take issue with any reduction in data. Yet, there is a rising threat to our national security with cyber attacks as a clear and present danger. The computer controlled grid is a prime target that requires significant attention. The importance of this cyber threat issue was demonstrated in how the Iranian nuclear efforts were recently adversely affected with cyber tools. This has been a brief overview of the current and potential future states of energy sources and delivery systems. These are complex issues fraught with security considerations that are national in scope, touching all segments of our infrastructure.

  
T.A. Miller

806 Tamarack Way

Verona, Wisconsin 53593