



WISCONSIN LEGISLATIVE COUNCIL

NUCLEAR POWER

411 South, State Capitol
Madison, Wisconsin

September 14, 2006

9:00 a.m. - 4:30 p.m.

[The following is a summary of the September 14, 2006 meeting of the Special Committee on Nuclear Power. The file copy of this summary has appended to it a copy of each document prepared for or submitted to the committee during the meeting. A digital recording of the meeting is available on our Web site at <http://www.legis.state.wi.us/lc>.]

Call to Order and Roll Call

Chair Montgomery called the meeting to order. The roll was called and it was determined that a quorum was present.

COMMITTEE MEMBERS PRESENT: Rep. Phil Montgomery, Chair; Sen. Dave Hansen; Reps. Chuck Benedict, Mark Honadel, and Robin Vos; and Public Members Michael Corradini, Charles Higley, Katie Nekola, John Orth, Terry Pickens, Brian Rude, Pat Schillinger, Richard Shaten, Susan Stratton, Bill Ward, and Jack Weissgerber.

COMMITTEE MEMBER EXCUSED: Forrest Ceel.

COUNCIL STAFF PRESENT: David Lovell, Senior Analyst, and John Stolzenberg, Chief of Research Services.

APPEARANCES: Laura Rose, Deputy Director, Legislative Council Staff; Eric Callisto, Executive Assistant to the Chairperson, Public Service Commission; Jonathon Foley, Professor, Atmospheric and Oceanic Science and the Gaylord Nelson Institute for Environmental Studies, University of Wisconsin (UW)-Madison; Paul Meier, Director, UW Energy Institute, UW-Madison; and John Rowe, Chairman, President, and CEO, Exelon Corporation.

Opening Remarks

Representative Phil Montgomery, Chair, welcomed the committee members and thanked them for agreeing to serve on this committee. He said that he sees the committee's charge as looking at the future energy supply and the role of nuclear power in that supply. He noted that nuclear sources now supply approximately 20% of Wisconsin's electric power and challenged committee members to consider how that portion of the supply will be met after retirement of the existing nuclear power plants in the state.

Laura Rose, Deputy Director of the Legislative Council Staff, welcomed the committee and introduced the Legislative Council staff members assigned to work with the committee, David Lovell, Senior Analyst, John Stolzenberg, Chief of Research Services, and Kelly Mautz, Administrative Assistant. She discussed rules for voting and described the process of reimbursement of expenses. She noted that the committee's meetings will be recorded and available on the Internet. Mr. Stolzenberg demonstrated how to access the committee's web page, on which will be posted all materials distributed to the committee, plus meeting notices, agendas, and complete sound recordings of meetings.

Introduction of Committee Members

The committee members introduced themselves and gave brief statements regarding their backgrounds and expectations for the committee. Following the introductions, Chair Montgomery noted that he had heard a number of themes in the concerns and issues mentioned by the members, including environmental protection, public safety, and economic viability. He also endorsed the comments of several members regarding the need to approach the study topic with open minds, and encouraged members to share articles and other material pertinent to the topic.

Staff Remarks

Mr. Stolzenberg described the materials previously distributed to the committee, consisting of two reports by the Congressional Research Service (CRS). He noted that the CRS is very much like the Wisconsin Legislative Council staff, in that it works on a nonpartisan basis for Congress, providing technical information on all topics addressed by Congress. Since it has a reputation for high quality work, he said that the committee staff will provide copies to the committee of CRS reports on pertinent topics.

Mr. Lovell noted that a work plan for the committee was at members' places. He said the plan outlines four meetings that include presentations by experts in their respective fields regarding topics such as factors driving the current reconsideration of nuclear power, nuclear technology, nuclear safety, alternative sources of electricity and, environmental considerations regarding nuclear and alternative sources of electricity. It also includes two tours, one to the Point Beach Nuclear Generating Station and one to the U.S. Department of Energy's proposed spent fuel disposal facility at Yucca Mountain, Nevada. Mr. Lovell said the plan is designed to give all committee members basic information on a range of topics pertinent to the consideration of nuclear power as an energy source. He invited committee members to comment if they see any gaps in the subject matter covered in the plan. Mr. Shaten said that the committee should receive information regarding the liability risks of nuclear power plants and the treatment of that risk under the Price-Anderson Act and by the private insurance industry.

Mr. Stolzenberg then discussed logistical matters relating to the two committee tours.

Invited Presentation: Electric Power Supply as a Driver of the Current Consideration of Nuclear Power

Eric Callisto, Executive Assistant to the Chair of the Public Service Commission, addressed the committee regarding current and projected electric power supply and demand in Wisconsin, including information in the current draft Strategic Energy Assessment (SEA). He said the PSC projects a 2% growth rate in electric power demand which, over time, will require the construction of new base load generation. Mr. Callisto described the process by which a utility or developer applies for and obtains a certificate of public convenience and necessity (CPCN), essentially, a permit to construct a power plant or transmission line, and current proposed or approved generation projects. Mr. Callisto then discussed nuclear power. He described state and federal regulatory jurisdiction, noting the current statutory moratorium on approval of new nuclear facilities pending solution of waste disposal concerns. He described the nuclear power plants in Wisconsin and provided information regarding such plants in the United States and abroad.

Mr. Callisto concluded by describing proposals for disposal for spent nuclear fuel. In light of the federal government's continuing difficulty opening a permanent disposal facility, he said that the current administration has proposed a Consolidation and Preparation (CAP) program to address the accumulating amounts of spent fuel being stored at nuclear power plants around the country. Under this proposal, states would establish sites for the temporary storage of spent fuel generated in their borders, or compact with other states to establish regional storage sites. He noted that the National Association of Utility Regulatory Commissioners (NARUC) opposes this proposal.

Mr. Orth noted recent news reports regarding the manufacturing of batteries for electric cars and asked how the PSC's demand projections account for large increases in demand that could come from this new technology. Mr. Callisto said that it is not possible to anticipate technological advances that could produce large increases or decreases in demand. He noted that it is difficult to forecast demand beyond 2025 due to these and other factors.

Invited Presentation: Global Climate Change as a Driver of the Current Consideration of Nuclear Power

Jonathan Foley, Professor of Atmospheric and Oceanic Science and the Gaylord Nelson Institute for Environmental Studies and Director of the Center for Sustainability and the Global Environment, UW-Madison, discussed the subject of global climate change. He stated that there is now a unanimous consensus within the scientific community, based on extensive empirical evidence, that human activities are causing a marked increase in atmospheric levels of carbon dioxide (CO₂) and methane, which is causing a significant increase in the average global temperature. He summarized some observable global changes that have resulted from this, including recession of glaciers and sea ice and localized seasonal changes, and refuted several common myths regarding climate change. He described likely human impacts of global climate change, including changes in agricultural productivity and direct human health impacts.

Mr. Foley, discussed projections of future CO₂ emissions under various scenarios. He asserted that human society, globally, has a limited window of opportunity to contain and reduce such emissions, if it is to avoid a “dangerous” level of climate change. He said there is a growing consensus that, to do this, the atmospheric CO₂ level must be stabilized holding CO₂ emissions constant for the next 10 to 20 years and then further reducing these emissions within 50 to 70 years. He also indicated that there is a huge inertia in global systems and, as a result, the climate changes presently being observed are due to emissions in the 1960’s; current emissions will have effects decades from now.

Dr. Foley concluded by presenting a conceptual approach to stabilizing CO₂ emissions, developed by Robert Sokolov, at Princeton University, and associates. In essence, it is a graphical representation of the cumulative effect of multiple strategies to reduce CO₂ emissions. He identified a number of currently available and proven strategies, including energy conservation and efficiency, wind power, nuclear power, and carbon capture and storage. While no one of these strategies is sufficient in itself to stabilize CO₂ emissions, he said, there are more than sufficient means currently available that can, collectively, accomplish the needed emissions reductions.

In response to a question from Mr. Rude, Mr. Foley said that the focus is on CO₂ because it creates 60-65% of the problem. Methane, from natural and anthropogenic sources, creates about 20% of the problem. He said that emissions of methane and other greenhouse gasses should be controlled, as well as CO₂.

Interactive Presentation: Simulation of Wisconsin’s Electric Power Supply System

Paul Meier, Director of the UW Energy Institute, UW-Madison, presented a computer simulation of a hypothetical electric utility in Wisconsin, focusing on the utility’s generation facilities needed to meet its future electric demand with a 2% growth per year in peak electric demand over a 15-year period. As part of the introduction to the model, he provided a detailed description of a utility’s typical annual load duration curve, indicating the portions of the annual electricity production provided by peak, intermediate, and baseload generating facilities. He also showed the relation of the load duration curve with the market price of the electricity generated by the utility.

After explaining the model and its outputs, he used three scenarios to explore how public policies regarding carbon emissions reductions and nuclear power might affect decisions regarding construction of new generation facilities. The major features of these scenarios were as follows:

- Red plan - similar to Wisconsin’s current impending construction through 2012; beyond 2012 no carbon constraints.
- Green plan - similar to Wisconsin’s current impending construction through 2012; beyond 2012 carbon constraints comparable to requirements under the Kyoto Treaty and new nuclear power plants excluded.
- Blue plan - similar to Wisconsin’s current and pending construction through 2012; beyond 2012 carbon constraints comparable to requirements under the Kyoto Treaty and new nuclear power plants not precluded.

Mr. Meier stated that these simulations show the following:

- Meeting significant carbon constraints with continued growth in energy consumption requires a major shift toward low carbon emitting technologies.
- Four important alternatives for meeting significant carbon constraints are: (1) energy efficiency; (2) wind and biomass; (3) integrated gasification combined cycle (IGCC) with carbon sequestration; and (4) nuclear power.
- Each option includes areas of significant uncertainty, including their total economic resource availability.
- Fundamentally, limiting any option increases both financial risk and environmental risk.

Following these demonstrations, he entered additional scenarios suggested by committee members.

Invited Presentation: Electric Power Industry Views on Nuclear Power

John Rowe, Chairman, President, and CEO of Exelon Corp., described the 1983 decision of Wisconsin to adopt a moratorium on construction of nuclear power plants as very well advised, and largely responsible for a period of electric rates in Wisconsin below the national average. He said, though, that much has changed since then, including an improved safety record and improved operational and economic performance of nuclear power plants, the skyrocketing price and dwindling domestic supply of fossil fuels, and the growing concern regarding global climate change. He described the work of the bipartisan National Commission on Energy Policy (NCEP), which he co-chaired. He said NCEP concluded that the control of greenhouse gas emissions must be controlled and, in particular, that low-carbon energy options must be pursued. He said that there is no one solution, and that nuclear power must be considered as an option.

Mr. Rowe said that, while he would favor repeal of the Wisconsin moratorium on approval of new nuclear power plants, he would not expect to see such a plant built in Wisconsin or in the Midwest in the near future, for three reasons: there is little near-term need for new base load power plants beyond what is now approved or under construction; the problem of permanent disposal of spent fuel and other by-products has not been solved; and there is not a bipartisan consensus to build new nuclear power plants. He said he believes new nuclear plants will be built in the near future in other regions of the country where there is greater need for baseload generation and greater public acceptance of nuclear power. He said that Exelon would be very reluctant to build new nuclear plants until the waste issue is addressed and the bipartisan consensus is achieved, recalling that its predecessor companies lost between \$5 and \$10 billion on nuclear plants built in the 1970s and 1980s.

In conclusion, Mr. Rowe stated that it is necessary to begin building a consensus in favor of nuclear power, and commended the committee for taking on the subject.

Representative Honadel asked how far we are from being able to reprocess and reuse spent nuclear fuel. Mr. Rowe said that current technologies could be put in place in perhaps 10 years, but these technologies would produce weapons-grade nuclear materials. Technologies that do not produce

such materials are at least 25 years from implementation. He offered the opinion that weapons-grade material could not be adequately secured without military guard.

Mr. Shaten asked, if there were an incident at a nuclear power plant in the United States, how Exelon would raise the up to \$2.3 billion in liability exposure it could incur under the Price-Andersen Act? Mr. Rowe indicated that presently, if needed, the company can raise this amount of cash. He also noted that as a result of the incident at the Three Mile Island plant, the parent utility, GPU, came "close to distress," but a combination of the company's and industry resources prevented this. He also observed that in dealing with these liability exposures, companies such as his make the best of imperfect choices.

In response to a question from Mr. Orth, Mr. Rowe said that onsite waste storage presents a risk from terrorist attack, and offered the opinion that Yucca Mountain would be a safer place to have such material.

Chair Montgomery asked how, with so many long-term uncertainties, Exelon makes long-term investment decisions. Mr. Higley asked whether there should be some required coordinated planning. In response, Mr. Rowe said that Exelon does *not* try to make 10-20 year least-cost generation plans, noting that long-term projections are unreliable and long-term plans can lead to inflexible decision making. He said, however, that some amount of mid-range planning would be good for public utilities and the public.

In response to a question from Ms. Nekola on why Wisconsin utilities are selling their nuclear power plants if we are in a growth period for electricity, Mr. Rowe stated that experience says there is better operation of nuclear power plants if there are experienced people operating many of them.

[Note: PowerPoint presentations and other documents referred to by the speakers are posted on the committee's Web site.]

Other Business and Plans for Future Meetings

The next meeting is scheduled for Friday, September 29, 2006, at 9:00 a.m., at the Point Beach Energy Center.

Adjournment

The meeting was adjourned at 4:30 p.m.

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