

ENERGY POLICY BACKGROUND – Nuclear Energy

Minnesota's goal of reducing CO2 emissions 80 percent by 2050 presents a major challenge, particularly to electric customers that rely on competitively priced, reliable power. The challenge is made even greater by state policies that hinder the development of a primary noncarbon-based technology, nuclear energy. A 2003 study by the Massachusetts Institute of Technology¹ concludes that a new global commitment to nuclear could represent a 25-percent reduction in carbon emissions compared with a business-as-usual scenario.

History of the Nuclear Ban

Minnesota's ban on new nuclear generation was enacted in 1994². The original law refers to "great uncertainty over the means and costs of disposing of radioactive wastes generated at nuclear-powered electric generating plants." According to the legislative findings section, "Current and future electric ratepayers are at risk to pay for these uncertain and potentially enormous costs...that could cause economic hardship for the citizens of this state and damage economic growth."

In 2007, several bills, including HF 2280 (Huntley)/SF 2081 (Murphy) were introduced that would remove the moratorium on new nuclear generation.

Nuclear Waste Storage

In 2003, Minnesota passed a law allowing dry-cask storage of spent fuel at a nuclear generating facility³. This law allowed the Public Utilities Commission to make decisions. The law included a "stay" of the PUC's decision until June 1 following the next regular legislative session.

According to the U.S. Department of Energy, in 2002, President Bush signed House Resolution 87, establishing Yucca Mountain as the official national repository of spent nuclear waste⁴. The license application for construction of the project will be submitted to the Nuclear Regulatory Commission in 2008, and according to two recent independent assessments⁵ released by the U.S. Department of Energy's Office of Civilian Radioactive Waste Management, the project is on track. The facility is projected to be open in 2017.

A key step needed to support the DOE's application is an appropriation by Congress of an estimated \$494.5 million to construct the facility. In 2007, SF 2237 (Murphy)/HF 2436 (Wollschlager) was introduced in the Minnesota Legislature to memorialize Congress to act on this issue.

In its testimony to the U.S. Senate Environment and Public Works Committee on Oct. 31, 2007, the Prairie Island Indian Community testified that nearly \$470 million already has been collected from Minnesota ratepayers to finance the Nuclear Waste Fund, which is financed a \$0.001/kwh addition to the electric bills of nuclear utility ratepayers.

However well intentioned, legislative oversight of spent-fuel storage amounts to statutory delays, leading to unnecessary expenses for customers and delays in efficiency improvements. The requirement is also unnecessary, since the Legislature always can overrule the Public Utilities Commission. These improvements can and do reduce the need for new base load power, reduce the state's reliance on greenhouse gas emitting fuels, and insulate customers from volatility of fuel prices.

¹ The Future of Nuclear Power. Massachusetts Institute of Technology, 2003. <http://web.mit.edu/nuclearpower/>

² Session Laws 1994, Chapter 641, Art. 2.

³ Session Laws 2003, 1st Special Session. Chapter 11, Art. 1, § 4.

⁴ http://ocrwm.doe.gov/ym_repository/index.shtml

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http://ocrwm.doe.gov/info_library/newsroom/documents/News_ReleasesIndependent_Assessment_PR_FINAL.pdf

Carbon Emissions

In 2007, The Minnesota Legislature passed a goal of reducing greenhouse gas emissions 15 percent over 2005 levels by 2015, 30 percent by 2025, and 80 percent by 2050⁶. The goals are relative to Minnesota's 2005 emissions. In the statute, if the Congress or the Legislature fails to enact a greenhouse gas reduction law, a moratorium on building or otherwise relying on new generation that contributes to statewide power sector carbon dioxide emissions takes effect in 2009.

In its report to the Legislative Electric Energy Task Force on October 31, 2007, Xcel Energy reports that continuing the operation of its two existing nuclear plants is good for customers and the environment. Its Monticello plant is licensed to operate until 2030, and its Prairie Island reactors are licensed and approved by state and federal processes to operate through 2013 and 2014. In its report to the Legislature, Xcel states that retiring Prairie Island would result in an increase of 87 million tons of CO2 between 2007 and 2033, and would require an additional \$1 billion in revenue requirements from its customers to replace the power.

This is consistent with other reports. According to Dr. Patrick Moore, co-founder of Greenpeace, the use of nuclear energy helped the United States avoid the release of 189.5 million tons of carbon dioxide in 2002⁷. Moore says that the electric sector's carbon emissions would have been 29 percent higher without nuclear power.

Renewable Development Fund

Part of Minnesota's current Nuclear energy policy addresses the financing of renewable energy research and development. Xcel Energy's Renewable Development Fund is currently financed at \$16 million/year as an additional charge paid by Xcel customers. The RDF was created in 1994, and required the utility that owns the Prairie Island generating plant to pay \$500,000 each year for each dry cask containing spent fuel to be spent on development of renewable energy resources⁸. In 2007, the law was amended⁹ to include the planned dry-cask storage at the Monticello plant. The Legislature required Xcel Energy to pay \$350,000 per dry cask into the RDF.

In 2007, the Legislature also passed Minnesota's Renewable Energy Mandate, which requires utilities to generate or procure 25 percent of their retail energy sales from renewable resources by 2025; with the exception of Xcel Energy (which owns and will soon operate both nuclear facilities in Minnesota), which must generate or procure 30 percent of its retail energy sales from renewable resources by 2025.¹⁰

Safety

According to a 2003 Report on the Future of Nuclear Energy by the Massachusetts Institute of Technology,¹¹ more than 100 light water reactor (LWR) nuclear plants were built and operated in the United States between 1957 and 2002, with only one reactor core damage accident, at Three Mile Island (MIT, Page 48.) The study also suggests that new technologies including passive and active systems could significantly reduce the statistical likelihood of future accidents. However, the study also notes that a skilled, well-trained workforce is essential, and requires rejuvenation of the entire nuclear management (human) infrastructure, due to the decline of industrial activity (MIT, footnote 11, pg. 51).

⁶ Session Laws 2007, Chapter 136, Article 5, Section 1.

⁷ Dr. Patrick Moore, statement to the U.S. House Committee on Energy and Natural Resources. April 28, 2005. <http://www.greenspirit.com/logbook.cfm?msid=70>

⁸ Session Laws 1994, Chapter 641, Article 1, Section 10

⁹ Session Laws 2007, Chapter 57, Article 2, Section 9

¹⁰ Session Laws 2007, Chapter 3

¹¹ The Future of Nuclear Power. Massachusetts Institute of Technology, 2003. <http://web.mit.edu/nuclearpower/> Chapter Six – Safety.

Global Reliance on Nuclear energy

The United States gets approximately 20 percent of its electricity from nuclear energy, which ranks relatively low compared with other countries, according to the World Nuclear Association.¹² According to its figures, other industrialized nations rely on nuclear to fill a similar or greater share of their electric energy, relative to the United States. According to the WNA, compared to other G8 countries, the United States uses more nuclear power as a percentage of its total portfolio than Canada (15.8 percent), Russia (15.9 percent), and the United Kingdom (18.4 percent) but uses less than France (78.1 percent), Germany (31.8 percent), and Japan (30.0 percent),. Italy is currently the only G8 nation without nuclear power. Other nations such as South Korea (38.6 percent) and Sweden (48.0 percent) are also reliant on nuclear energy.

According to the WNA, Chinese electricity demand has been growing at more than 8 percent per year, and is meeting the demand with a mixture of coal energy as well as new nuclear. China has 11 existing nuclear plants, with five more under construction and several more planned.¹³

¹² <http://www.world-nuclear.org/info/nshare.html>

¹³ <http://world-nuclear.org/info/inf63.html>