A N N U A L R E P O R T

FEBRUARY 2003

FEDERAL PROGRAMS FOR THE MANAGEMENT OF HIGH-LEVEL RADIOACTIVE WASTE

MONITORING CONDUCTED UNDER
MINNESOTA STATUTES 116C.712

Environmental Quality Board
Minnesota Office of Strategic and
Long Range Planning

PLANNING

Prepared By:
Alan Mitchell
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TABLE OF CONTENTS

Acronyms

ASLB	The NRC's Atomic Safety and Licensing Board
BWR	Boiling Water Reactor
CFR	Code of Federal Regulations
DEIS	Draft Environmental Impact Statement
DOE	Department of Energy
DOT	United States Department of Transportation
EIA	Energy Information Agency
HLW	High Level Waste
ISFSI	Independent Spent Fuel Storage Installation
IRP	Integrated Resource Plan
MPC	Multi Purpose Canisters, designed and certified for transportation, storage, and disposal.
MRS	Monitored Retrievable Storage
NMC	Nuclear Management Company
NSP	Northern States Power Company
MTU	Throughout this report, the term "metric ton" of spent fuel is used as a short-hand for a more technical measurement called metric ton of heavy metal (MTHM), which is DOE's traditional measurement of spent fuel mass. MTHM refers only to the mass of plutonium, uranium, and thorium in the spent fuel. The actual mass of spent fuel is always larger than the mass of its heavy metals.
MWt	Megawatt Thermal
MWe	Megawatt Electric
NRC	Nuclear Regulatory Commission
NWPA	Nuclear Waste Policy Act
OCRWM	DOE: Office of Civilian Radioactive Waste Management
PBMR	Pebble Bed Modular Reactor
PFS	Private Fuel Storage
PWR	Pressurized Water Reactor
SNF	Spent Nuclear Fuel
Xcel	Northern States Power Company, d/b/a Xcel Energy

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I. Executive Summary

In January, 2002, Department of Energy Secretary Spencer Abraham informed President Bush that Yucca Mountain in Nevada was a suitable site for a permanent repository for high level radioactive waste. In February President Bush notified Congress that he, too, considered Yucca Mountain qualified for use as a repository. In early April Governor Kenny Guinn of Nevada exercised the state's authority under the Nuclear Waste Policy Act (NWPA) to disapprove of the President's recommendation. In July 2002, the U.S. Congress passed a Joint Resolution overriding Nevada's veto of the decision, and on July 23, 2002, President Bush signed the Joint Resolution.

The Yucca Mountain repository site now has the authorization required for the DOE to seek a license from the Nuclear Regulatory Commission. The DOE is hopeful that the repository can be licensed by early 2007 and in operation in the year 2010.

For the past several years, a group of eight utilities, including Xcel Energy, Inc., have been pursuing the option of constructing a private storage facility west of Salt Lake City, Utah, on land owned by the Skull Valley Band of Goshutes. In July, the day before the Senate voted to pass the Joint Resolution, six of the eight utilities announced their intention to withdraw from participation in the private facility as long as Yucca Mountain proceeded in a timely fashion. The only two utilities not to announce withdrawal were Xcel and Dairyland Power Cooperative.

On December 2, 2002, Northern States Power Company (dba Xcel Energy) filed its bi-annual Integrated Resource Plan with the Minnesota Public Utilities Commission. The Company indicated in the Plan its intention to ask the 2003 Minnesota Legislature to review the state-imposed limitation on the number of dry casks that can be stored at the Prairie Island Nuclear Power Plant. Depending on the timing of the availability of a national repository and on state government decisions regarding continued operation of the Prairie Island facility, spent nuclear fuel could remain in storage in the state until well past the year 2050.

II. Introduction

The Office of Strategic and Long-Range Planning is directed by statute to file an annual report with the Legislature, reporting on activities by the federal government to manage high-level radioactive wastes in the country. Minnesota Statutes § 116C.712, subdivision 5. The Office has prepared such reports since 1987.

The last report was prepared in January 2002. That report provided an overview of the Nuclear Waste Policy Act and the efforts by the federal government to site a national repository for high-level radioactive wastes. In an Appendix, the report provided a chronology of significant events regarding nuclear power beginning with the adoption of the Atomic Energy Act of 1954 and continuing through December 2001. There is

discussion in the report on Minnesota's two nuclear power plants – the Prairie Island Plant and the Monticello Plant – both owned by Xcel Energy.

The background information and chronology provided in the January 2002 report are not repeated here. The reader is referred to that Report for additional information. The January 2002 report can be found on the web at
{ HYPERLINK "http://www.mnplan.state.mn.us/eqb/EnergyFacilities/nuclear.html" }

In this report, the Office of Strategic and Long-Range Planning has focused on the significant events that have occurred at the federal level during the course of 2002.

A list of resources is provided at the end of this report. Also, two other recently prepared government reports contain information about the status of Minnesota's two nuclear power plants. Both reports were consulted in the preparation of this report The one prepared by the House Research Department and dated January 2003, is entitled Nuclear Energy and Xcel Energy's 2002 Resource Plan. The House report is available at: { HYPERLINK "http://www.house.mn/hrd/pubs/nucxcel.pdf" }. The other report, prepared by the Department of Commerce, is entitled Background on Nuclear Power in Minnesota.
({ HYPERLINK "http://www.state.mn.us/mn/externalDocs/Nuclear_Power_121702090354_NuclearBackground.pdf" }).

III. The United States Nuclear Power Industry

A. Industry Status

1. Number of Facilities

There are still 103 operating reactors in this country, the same as a year ago. There are still 104 plants licensed to operate.

News of the potential for another reactor to become operational surfaced this past reporting period when the Tennessee Valley Authority filed a restart plan with the Nuclear Regulatory Commission in June 2002 for its Browns Ferry Unit #1. The North Alabama plant has been idle since 1985. In its fiscal 2003 budget adopted in September 2002, TVA allocated $353 million for the first year of a five year plan to repair Browns Ferry Unit #1. Total rehabilitation projections are that it will cost $1.8 billion to recondition the reactor and restart by 2007. The plan calls for reactor operation before May 2007.

In July 2001, the Tennessee Valley Authority began a study to evaluate the completion of two other reactors at the Bellefonte Nuclear Plant in Hollywood, Alabama. Construction

on one unit was 80 percent complete when halted in 1985. In August 2001, a Georgia businessman offered TVA financing for the remaining construction work.

2. Performance

a. Capacity Factor

The U.S. nuclear industry experienced a slight increase in performance in 2002, as measured by the capacity factor of the plants, over the previous year's performance. The Energy Information Agency data shows an industry capacity factor for the first ten months of 2002 at 91.5%, up a about a percentage point from an EIA industry average figure of 89.4% for all of 2001.

b. Incidents

Davis Besse Plant – Toledo, Ohio. In March 2002 plant workers at the Davis Besse Power plant located near Toledo, Ohio, discovered a cavity in the head or top of the reactor vessel while repairing control rod tubes which pass through the head. Cracks in the tubes had allowed leakage of boric acid and subsequent corrosion to the reactor vessel head. The corrosion created an irregular cavity about 4 inches by 5 inches and approximately 6 inches deep. The cavity penetrated the carbon steel portion of the vessel head, leaving only the stainless steel lining. The liner thickness varies somewhat, with a thickness of 3/8 inch in the corrosion area.

The plant has been shut down since the discovery. The operator of the plant, First Energy, is replacing the entire head of the reactor vessel. The NRC created a special oversight panel for the Davis Besse plant. That panel will make sure that all corrective actions required to ensure that Davis Besse can operate safely are taken before the plant is permitted to restart, and that Davis Besse maintains high safety and security standards if it resumes operations.

The total cost of the repair project is expected to be $400 million. The exact restart schedule is uncertain. The NRC oversight panel expects that its review of the plant will take at least through March of 2003.

Prior to the discovery, the NRC had previously requested inspections of similar Pressurized Water Reactors to examine the extent of the leakage issue. Following the Davis Besse discovery, the NRC initiated a series of measures directed to all the PWR reactors of this type in the country and towards the Davis Besse plant in particular.

3. Security Issues

Security at the nation's civilian nuclear reactor and waste storage facilities was the focus of attention in a number of ways this reporting period. On February 25, 2002, the NRC formalized in an order to reactor operators the enhanced security measures that had been

previously directed as prudent interim measures in the aftermath of September 11, 2001. On January 7, 2003, the NRC issued a second order related to operating plant security measures. The details of the safeguard measures specified in the orders have not been released to the public.
The NRC also issued orders related to security at spent fuel storage facilities this reporting period. A specific order was issued on May 23, 2002, to the General Electric Morris, Illinois, facility requiring prudent interim safeguard measures. On October 16, 2002, the NRC issued a specific order regarding prudent interim safeguard measures to nine specific licensees that operate spent fuel storage facilities, including Xcel Energy with regard to operation of the Prairie Island facility. That same day it issued a general safeguards order for all 22 spent fuel storage facilities around the country.

The State of Nevada focused on security risk issues related to the transportation of spent fuel in its declaration of objection to the DOE's and the President's selection of the Yucca Mountain site for licensing.

B. Minnesota Nuclear Facilities

Minnesota has three operating commercial power reactors – two at Prairie Island and one near Monticello. Northern States Power, dba Xcel Energy, owns all three reactors.

1. Prairie Island

The Prairie Island facility houses two reactors, totaling 1,076 megawatts of capacity. Unit #1 had a 2001 average capacity factor of 72.9%. Unit #2 experienced a 2001 average capacity factor of 99.4% In 2002 the Prairie Island plant generated the second highest energy production in its history, 8.67 million megawatt hours, a 92% annual capacity factor.

Prairie Island Unit 1 began commercial operation in December 1973; Unit 2 in December 1974. The present NRC operating licenses expire in 2013 for Unit 1 and 2014 for Unit 2. Xcel Energy has not made a decision about whether to seek a license extension for the Prairie Island facility.

Prairie Island was originally designed to handle up to 198 fuel assemblies in the spent fuel pool. The initial idea was that the federal government would establish reprocessing facilities so spent nuclear fuel could be shipped from the nuclear power plants to the reprocessing facility to make room for more storage in the pools. However, with the absence of reprocessing facilities in the country, the pool at Prairie Island quickly began to fill up. On several occasions, the state authorized NSP to expand the pool capacity, and today NSP has been authorized to store up to 1386 fuel assemblies in the pool.

In 1994, the Minnesota Legislature authorized NSP to store spent nuclear fuel in casks installed at a storage site constructed next to the Prairie Island power plant. Although NSP initially requested authorization for up to 48 casks, the Legislature authorized NSP to install only 17 casks at the site. In July 2002, Xcel Energy installed the last of the 17

casks and today there are 680 fuel assemblies stored in the casks at Prairie Island. Xcel projects that it can operate the plant until 2007 with the combination of the existing pool storage and currently authorized dry cask storage.

Xcel estimates that a potential third reracking would create storage space in the pool for a total of 1920 storage spaces. The company projects that additional storage to provide a total of 2623 on-site fuel assembly storage spaces, in the form of a combination of reracking and dry casks, is necessary to allow operation until the end of the license period and through decommissioning.

In August, 2001, the Public Utilities Commission directed Xcel Energy to secure contingent arrangements for additional generating capacity to replace the capacity at Prairie Island in 2007. (PUC Order Approving Xcel Energy's 2000-2014 Resource Plan, as modified, Issue Date: August 29, 2001, Docket No. E-002/RP-00-787). A Contingency Request for Proposals was made public in November 2001.

On October 1, 2002, Xcel announced the preliminary results of the contingency bid process in the form of a short list of finalists. The finalists are:

- 585 MW gas project by Aquila in Cass County, MO
- 998 MW gas project by Calpine near Red Wing, MN
- 565 MW gas project by Calpine near Mankato, MN
- 550 MW coal project by LS Power Associates near Rosemount, MN
- 1,100 MW coal project by Nordic Energy near Rosemount, MN

Xcel Energy was expected to release a final recommendation on a selection by mid November 2002. As of this writing no final recommendation has been issued.

On December 2, 2002, Xcel Energy filed its Integrated Resource Plan (IRP) with the PUC for the 2003-2017 time frame. In its filing Xcel indicated that Minnesota is "at a crossroads" regarding the future of nuclear generation. Xcel indicated that it intends to ask the Legislature to address resource planning issues related to nuclear operations and alternatives in the 2003 legislative session. (Xcel IRP at nuclear section, p. 58).

The rate at which waste can be shipped to Yucca Mountain from all locations in the U.S. is known as the waste acceptance rate. Xcel also assumes that acceptance rates for fuel shipments to Yucca Mountain will be at a rate of 3000 MTU/year, as most recently published by the DOE. The acceptance rate influences how long it will take to ship all the waste from a particular location to Yucca Mountain.

There are many factors that influence the calculation of a date when all the waste stored at Prairie Island will be removed. Availability of a shipping destination and the operating life period of the Prairie Island facility are major factors in any estimation of a date by which all waste will leave the plant site. Xcel now assumes for planning purposes that the Yucca Mountain site will most likely not be available until 2015.

For this report two scenarios for final waste removal are examined. One that may represent the least time to remove all waste from the plant site, and one that represents a longer timeframe for removal, based on extended operations and Yucca Mountain becoming available in 2015. See Appendix C and the discussion under Transportation Issues (p. 22) for more information.

2. Monticello

The Monticello facility began commercial operation on June 30, 1971. Xcel's operating license for Monticello expires in 2010.

The plant has a single reactor, rated at 597 megawatt capacity. The average capacity factor for the plant in 2001 was 74.1%. In the year 2002 the Monticello facility set a new energy production record, producing 5 million megawatt hours of electricity. This translates to an annual capacity factor of about 97%.

Between 1984 and 1987, a total of 1058 spent fuel assemblies were shipped from Monticello to a General Electric storage facility in Morris, Illinois. The fact that NSP was able to ship these spent fuel assemblies to Illinois is the reason why there is more storage capacity available at Monticello and storage is not the crucial issue that it is at the Prairie Island plant.

As of July 31, 2002, there were 1342 spent fuel assemblies stored in the pool at Monticello. The remaining pool storage capacity was 383 additional assemblies. Xcel estimates that, using temporary racks, it can operate Monticello through its licensed life in 2010.

Xcel has not made a decision about whether or not to seek relicensing of the Monticello facility. The status of waste disposal issues will be a factor in the decision. In its 2002 Integrated Resource Plan filing, Xcel indicated that for Monticello it will need to make capital investments in either relicensing efforts or decommissioning activities starting in 2003. The company now expects that it would have to file a license extension request at the NRC no later than early 2005 to meet the 2010 expiration date.

C. Reactor Relicensing Activities

In 2002, we reported that eight companies had applied to the Nuclear Regulatory Commission for relicensing of 20 of the nation's 103 operating commercial reactors. In the past year, the Nuclear Regulatory Commission issued several decisions extending the operating life of a nuclear power plant by issuing a license extension. As of January 10, 2003, the NRC had approved 20 year license extensions for ten reactors across the country. The reactors that now have license extensions include:

Calvert Cliffs Units #1and #2 (Maryland)
Oconee Units #1, #2, and #3 (South Carolina)
Arkansas Nuclear One Unit #1 (Arkansas)

Edwin Hatch Units #1 and #2 (Georgia)
Turkey Point Units #3 and #4 (Florida)

The NRC is currently reviewing license extension requests for 20 more reactors.

As of July, 2002, the NRC was aware of 17 more pending applications, covering at least 27 reactors, to be filed on or before mid-2005. The location identity of four of these potential applications have not been publicly announced. On January 10, 2003, the NRC announced receipt of an application to extend the operating licenses for four Illinois reactors, Dresden Units #2 and #3, and Quad Cities Units #1 and #2.
(See { HYPERLINK "http://www.nrc.gov/reactors/operating/licensing/renewal/applications.html" })

Also during this reporting period, the NRC received the first request for license renewal for a dry cask spent fuel storage facility. Virginia Electric & Power Co., the owner of the nation's first Independent Spent Fuel Storage Facility, located in Surry County Virginia, filed an operating license renewal request for the dry cask storage facility located at the Surry Nuclear Plant in Surry County. The plant's existing license expires on July 31, 2006. The application for a license extension was filed on April 29, 2002. On January 10, 2003, the NRC determined the application was sufficiently complete to accept the matter for hearing. Interestingly, in its license extension application, Virginia Electric & Power Co. requested a variance from NRC rules that generally call for 20 year license periods for dry cask storage facilities, and requested that the NRC issue a license for continued storage in dry casks for an additional 40 year operating period, until 2046.

D. New Reactor Technologies

The Pebble Bed Modular Reactor project that was discussed in the last annual report experienced a major shift this reporting period when the U. S. partner, Exelon Generation Company, announced its withdrawal from any PBMR U.S. licensing efforts. On December 5, 2000, Exelon had requested a pre-application review by the NRC of the PBMR technology for possible licensing in the United States. On April 16, 2002, Exelon announced that it will not be proceeding with the PBMR project beyond the completion of the current feasibility study phase. On May 16, 2002, the NRC staff held a public meeting with Exelon to discuss plans for "wrap-up" of PBMR pre-application review. By an NRC letter to Exelon dated September 9, 2002, the PBMR pre-application review was closed.

1. Early Site Permit Activity

Other activity this reporting period relating to new reactor technologies was the emergence of new efforts to obtain from the NRC an early site permit for a potential new nuclear plant.

The NRC can issue an early site permit for approval of one or more sites separate from an application for a construction permit or combined construction and operating license. An

ESP is effectively a partial construction permit, and is subject to all procedural licensing requirements applicable to construction permits. Early site permits are good for 10 to 20 years and can be renewed for an additional 10 to 20 years. The NRC review of an early site permit application will address site safety issues, environmental protection issues, and plans for coping with emergencies, independent of the review of a specific nuclear plant design. (See NRC website at: { HYPERLINK "http://www.nrc.gov/reactors/new-licensing/license-reviews/esp.html" })

Three U.S. utilities have announced plans to seek early site approval from the NRC for new reactor locations. Entergy Nuclear said in April 2002 that it will prepare an early site permit application for a possible new nuclear reactor at its existing Grand Gulf site in Mississippi. Entergy plans to file an application with the NRC in June 2003.

Dominion Resources Inc,. of Richmond, Virginia, has also said it plans to apply for an early site permit at its two-unit North Anna nuclear power plant in Virginia in the autumn of 2003.

On April 30, 2002, Exelon Generation Company announced that it intended to seek an early site permit from the NRC for a new facility that would be located next to the existing reactor location in Clinton, Illinois. An early site permit would allow Exelon to reserve the site for up to 20 years as an approved location for a future plant. The expected application filing date with the NRC is summer of 2003. The application review process at the NRC is expected to take 18 to 30 months. Exelon would still have to seek an additional license - a Combined Operating License - for the construction and operation of any future facility.

In July 2002 the DOE announced that as part of its program to encourage new nuclear plants, it would provide at least 50 percent of the permitting costs to Exelon for the new reactor.

2. New Reactor Design Certification Activity

New reactor designs must be licensed by the Nuclear Regulatory Commission. The manufacturer of a nuclear reactor can submit an application to the NRC for approval of the design. After the submittal of the application, the design certification process involves completion of an acceptance review by the NRC, then a more comprehensive technical review, and finally a formal rulemaking proceeding by the NRC to certify the design.

On March 22, 2001, General Atomics requested exploratory discussions with NRC on how to proceed with the licensing of its Gas Turbine-Modular Helium Reactor design. The GT-MHR design is a 300-MWt helium reactor design based on High-Temperature Gas-Cooled Reactor technology. Similar to the PBMR, the GT-MHR design uses helium as the coolant and employs refractory fuel. The principal difference is that the ceramic-coated particles in the GT-MHR design are contained in fuel compacts that are inserted in graphite fuel elements instead of in pebbles.

On February 18, 2002, General Atomics submitted to the NRC a pre-application licensing plan for the GT-MHR. The objective of the plan is to ensure that GA identify, plan, and execute the pre-application licensing activities. On August 16, 2002, GA sent a letter to the NRC presenting an outline of the company's pre-application plan. This effort would consist of developing a licensing plan, completing a safety analysis and risk assessment, and preparing a safety analysis report.

The NRC is reviewing Westinghouse Electric Company's March 28, 2002, request for final design approval and standard design certification for the AP1000 reactor. The AP1000 standard plan design is based closely on the AP600 design that NRC certified on December 16, 1999. The NRC staff issued its design certification review schedule on July 12, 2002, informing Westinghouse of plans to complete a draft safety evaluation in June 2003, a final safety evaluation in September 2004, and design certification rulemaking in December 2005.

On April 18, 2002, General Electric requested from the NRC a pre-application review of GE's simplified boiling water reactor, ESBWR, a design based on the certified advanced boiling water reactor and the simplified BWR designs. GE's simplified boiling water reactor is a 4000 MWt reactor that uses natural circulation for normal operation and has passive safety features. NRC held a public meeting on June 20 and 21, 2002, about this pre-application review.

Framatome Advanced Nuclear Power is considering applying for design certification of its SWR-1000, a boiling water reactor incorporating passive safety features. The SWR-1000 design was developed in Germany by Siemens. Details of Framatome ANP's plans regarding the SWR-1000 are outlined in a May 31, 2002, letter from ANP to the NRC.

On June 19, 2002, Atomic Energy of Canada Limited requested pre-application review from the NRC of its ACR-700 design for licensing in the United States. The ACR-700 reactor is a 700 MWe light-water-cooled reactor with two steam generators and four heat transport pumps. Similar to previous Canada Deuterium Uranium (CANDU) designs, the ACR-700 utilizes a heavy water moderator.

E. Nuclear Facilities Ownership and Management

In August of 2000, Xcel Energy entered into an agreement with Nuclear Management Company of Hudson, Wisconsin, that provided for NMC to assume operating responsibility for operation of Minnesota's Prairie Island and Monticello plants. Under the agreement Xcel remains the plant owner and continues to market the power produced by the nuclear units. Xcel is financially responsible for the units' operating and maintenance costs, as well as the decommissioning costs.

Currently NMC operates eight reactors at six plant sites in Iowa, Wisconsin, Minnesota, and Michigan. NMC announced in July 2002, that it is in discussions with the owners

(Nebraska Public Power District) of the Cooper nuclear plant in Nebraska regarding the potential for NMC to take over operations at that facility.

The Nuclear Management Company came under scrutiny by the NRC this reporting period when the NRC staff proposed a $60,000 fine against NMC for failing to provide the NRC with complete and accurate information in April 2001 regarding a problem with diesel generators at the Prairie Island facility. The plant was subsequently shut down by NMC to make repairs to the diesel generators.

In the NRC December 17, 2002, notice of the proposed fine, the NRC staff indicated that the fine was proposed "because of the company's poor performance leading up to and during the diesel generator degradation, during the request for a Notice of Enforcement Discretion (NOED), and during the time period the NOED was in effect." The same day the NRC issued its notice, NMC announced that it had decided not to contest the proposed fine.

Nationwide, according to the Nuclear Energy Institute, there have been changes to ownership of twenty licensed reactors since 1999. These include sales of the following reactors; Pilgrim, Three Mile Island #1, Clinton, Oyster Creek, Indian Point #3, Fitzpatrick, Nine Mile Point #1 & #2, Peach Bottom #2 & #3, Hope Creek, Salem #1 & #2, Millstone #1, #2, & #3, Indian Point #1 & #2, and in this reporting period, Vermont Yankee and Seabrook.

The list of buyers for these various plants include Entergy, Constellation Energy Group, Exelon, Public Service Enterprise Group Inc., AmerGen, Dominion Resources, and the FPL Group.

IV. Nuclear Waste Activities This Reporting Period

A. Yucca Mountain

The federal government has been attempting to site and construct a national repository for spent nuclear fuel and other highly radioactive wastes since the Nuclear Waste Policy Act was passed in 1982. Under 1987 amendments to the Act, the Department of Energy is limited to studying only the suitability of the Yucca Mountain site in Nevada for housing a deep underground repository. Yucca Mountain is located about 100 miles northwest of Las Vegas, Nevada.

The project calls for the construction of tunnels 1000 feet into the earth, where up to 70,000 tons of high level radioactive wastes would be stored. The amount of waste that is expected to be generated by the fleet of operating nuclear power plants during their operating lives, considering relicensing efforts, is 105,000 MTU. Yucca Mountain as presently authorized cannot hold all the waste that is expected to be generated. The wastes would be shipped by truck and rail to Yucca Mountain from locations around the country. A map of potential transportation corridors is shown on page 21 of this report.

The State of Nevada and others have fought DOE's efforts on the grounds that the site is unsafe, pointing to potential volcanic activity, earthquakes, underground flooding, nuclear chain reactions, and fossil fuel and mineral deposits that could be mined in the future.

Significant decisions were made during the year 2002 by the federal government regarding the future of the Yucca Mountain repository project. These actions are summarized below.

1. Administration Actions

On January 10, 2002, in accordance with the Nuclear Waste Policy Act, DOE Secretary Abraham notified the Governor of the State of Nevada that he intended to make a positive recommendation to the President about the suitability of Yucca Mountain as a permanent repository in not less than 30 days.

On February 14, 2002, Secretary Abraham recommended to the President that Yucca Mountain is a suitable site for a permanent repository for high level nuclear waste. This historic step triggered a series of activities at the federal level.

The next day, February 15, 2002, President Bush determined that he also considers the Yucca Mountain location qualified for construction authorization. Per the NWPA requirements, he notified Congress of his decision in a letter dated that day.

The NWPA contains a procedure to be followed should a notice of disapproval be filed by a state. Under the language of the Act, the recommended site shall be deemed approved if:

> "During the first period of 90 calendar days of continuous session of the Congress after the date of the receipt by the Congress of such notice of disapproval, the Congress passes a resolution of repository siting approval in accordance with this subsection approving such site, and such resolution thereafter becomes law." [42 U.S.C. 10134 Sec. 115. (c)]

On April 8, 2002, the Governor of the State of Nevada, Governor Kenny Guinn filed a "notice of disapproval" of the recommendation made by the President. Governor Guinn issued an eleven-page document citing reasons for disapproval including the state of the science of repository design, the legal status, four existing and two pending lawsuits by the State of Nevada, national security issues associated with transportation of the waste in the wake of 9/11, the existence of an alternative to Yucca Mountain, and waste ownership and storage by DOE at the reactor site.

Upon filing of disapproval of the President's decision by the Governor, it became necessary for Congress to consider passing a resolution approving the Yucca Mountain site.

2. Congressional actions

The House of Representatives voted on May 8, 2002, to support a resolution authorizing the Yucca mountain site. The vote on House Joint Resolution 87 was 306-117 to approve the Yucca Mountain site for licensing.

The Senate took up consideration of the issue on July 9, 2002. The Senate vote to override Nevada's veto and authorize the site was 60-39 (S.J.R. 34).

The Joint Resolution reads in its entirety:

> Approving the site at Yucca Mountain, Nevada, for the development of a repository for the disposal of high-level radioactive waste and spent nuclear fuel, pursuant to the Nuclear Waste Policy Act of 1982.
>
> Resolved by the Senate and House of Representatives of the United States of America in Congress assembled, That there hereby is approved the site at Yucca Mountain, Nevada, for a repository, with respect to which a notice of disapproval was submitted by the Governor of the State of Nevada on April 8, 2002.

On July 23, 2002, President Bush completed the process of overriding the veto of the State of Nevada by signing House Joint Resolution 87. This action moved the issue of a permanent repository from the political arena to the regulatory arena and set the stage for a license application by DOE to the NRC.

3. Federal Agency Activities

a. Department of Energy

According to the NWPA (Section 114), the DOE Secretary is required to submit to the Nuclear Regulatory Commission an application for construction authorization for the repository not later than 90 days after the date on which the recommendation of the site designation is effective. The effective date of the Joint Resolution authorizing Yucca Mountain was July 23, 2002. The DOE missed the 90 day deadline for application to the NRC required by the NWPA. The DOE has indicated it interprets the 90 day period as a guideline, and announced that it will not file an application for a license with the NRC until December 2004.

The DOE expects that a construction authorization license will need to be issued by the NRC in early 2007 in order to meet the 2010 target date for facility operation. The DOE schedule is more than a decade later than the 1998 goal for DOE to begin accepting waste as specified by NWPA amendments in 1987. Many believe the repository may not be ready before 2015.

b. Nuclear Regulatory Commission

Through the NWPA, Congress directed the U.S. Department of Energy (DOE) to interact with the NRC in pre-licensing consultation on site characterization activities at Yucca Mountain, Nevada. The purpose of this pre-licensing consultation process is to allow the complex technical health and safety issues present at the potential repository site to be addressed early on in the review process.

The NRC has structured its pre-licensing program about site characterization around "key technical issues" such as volcanoes, earthquakes, and radioactivity transport. As of August 2002 all of the nine key technical issues identified by the NRC have been assigned a "closed-pending" status by NRC staff, which means that DOE has agreed to provide information that, in the NRC staff's view, should close the issue, but, at the same time, this characterization does not imply that the staff has prejudged the outcome of the review of that information. ({ HYPERLINK "http://www.nrc.gov/waste/hlw-disposal/reg-initiatives/list-status-kti.html" }).

On February 4, 2002, the NRC provided written comments regarding the Final Environmental Impact Statement to the DOE. The two-page letter indicated the NRC believes that the FEIS contains sufficient information regarding the environmental impacts of the proposed action to provide a foundation for a site recommendation. The NRC indicated that the analyses provided in the FEIS appears to bound the range of impacts. The letter also states that NRC staff expects "DOE's commitment to refine the repository design and to define transportation modes and routes will allow for more precise estimates of impacts, which of course could result in revisions to the National Environmental Policy Act analyses."

The NRC continued development of its Yucca Mountain license application review plan this past year when it issued Revision #2 to its Draft Review Plan in March of 2002 (NUREG -1804), regarding NRC Rules 10 C.F.R. Part 63. The NRC established a comment period for the revision #2 draft document. The comment period closed August 12, 2002. This new draft is intended to comply with EPA and other NRC final rules regarding Yucca Mountain.

4. Federal Budget

DOE estimated in May 2001 that expenditures on the Yucca Mountain waste management program were approximately $8.3 billion dollars for the years 1983 to 2000. In the September, 2002 "Fiscal Year 2002 Year End Report", the DOE projected total system life cycle costs for the Yucca Mountain Project of $57 billion dollars (Year 2000 dollars). Funds for DOE expenses associated with Yucca Mountain have come out of the Nuclear Waste Fund and from Department of Defense appropriations.

Congressional appropriations for the Fiscal Year 2002 DOE nuclear waste disposal program were $375 million. In February 2002, the DOE announced its budget request for

Fiscal Year 2003 in the amount of $527 million, a significantly higher amount than the previous year appropriations. At that time, the DOE indicated that if the Yucca Mountain site was designated by Congress that DOE would seek additional funds for transportation related activities. On August 2, 2002, the Administration submitted an amended budget request for an additional $66 million, for a total of $593 million.

Only two of thirteen budget bills had been acted on by Congress by the time Congress adjourned in December 2002. The House Committee report issued September 5, 2002, recommended funding of $524 million for the nuclear waste program. The report did not include anything additional in response to the amended request. The Senate Committee report, dated July 24, 2002, recommended appropriations of $336 million for Fiscal 2003.

5. Litigation

The State of Nevada has mounted a significant legal challenge on a number of different fronts against the federal government's efforts to construct a repository at Yucca Mountain. Summaries of the various lawsuits are available on the State of Nevada's web pages. One webpage that contains an up-to-date summary is:

{ HYPERLINK "http://ag.state.nv.us/agpress/2003/03_0109b.pdf" }

The following is a list of some of the lawsuits involving the State of Nevada:

- *State of Nevada v. Environmental Protection Agency*, Court File No. 01-1268 (U.S. Court of Appeals for the District of Columbia Circuit, filed 2001)
  This case challenges the radiation protection standard set by EPA for the repository. Nevada claims that the primary radiological protections standards are based on a 10,000 year regulatory time period, which is contrary to the one million year recommendation of the National Academy of Sciences.

- *State of Nevada v. Department of Energy*, Court File No. 01-1516 (D.C. Circuit, filed December 2001)
  This case challenges the "General Guidelines for the Recommendation of Sites for Nuclear Waste Repositories; Yucca Mountain Site Suitability Guidelines"; 10 C.F.R. Parts 960 and 963," published at 66 Fed. Reg. 57,298 (Nov. 14, 2001). Nevada argues that the guidelines focus on engineered barriers not geologic primary barriers. Nevada also argues that the DOE should have declared the Yucca Mountain site unsuitable in 1998-1999 when it discovered the location was geologically unfit. The National Association of Regulatory Utility Commissioners has been granted leave to participate as amicus curiae in this proceeding.

- *State of Nevada v. Department of Energy*, Court File No. 02-1036, (D.C. Circuit, filed January 2002)
  This case also challenges DOE regulations. The Court has combined this matter

with docket 01-1516.

- *State of Nevada v. President Bush and Secretary Abraham*, Court File No. 02-1077 (D.C. Circuit, filed Feb. 2002)
  This case challenges the recommendations by the President and the Energy Secretary that Yucca Mountain was acceptable. Nevada claims that the decisions were based on unlawful rules of the DOE and failed to follow procedures established by the NWPA.

- *State of Nevada v. U.S. Nuclear Regulatory Commission*, Court File No. 02-1116 (D.C. Circuit, filed 2002)
  This case challenges the NRC's final rule entitled "Disposal of High-Level Radioactive Waste in a Proposed Geologic Repository at Yucca Mountain, Nevada," 10 C.F.R. Part 63," published at 66 Fed. Reg. 55732 - 55816 (Nov. 2, 2001).

- *State of Nevada v. Department of Energy*, Court File No. 02-1179 (D.C. Circuit, filed June. 2002)
  This case challenges many aspects of DOE's Final Environmental Impact Statement for Yucca Mountain. Nevada claims that DOE's repository design, which includes an above-ground storage facility, is contrary to law and that the EIS was released without a Record of Decision.

- *State of Nevada v. Department of Energy*, Court File No. 02-1196 (D.C. Circuit, filed June 2002)
  This case challenges the Final Environmental Impact Statement.

- *Nuclear Energy Institute v. Environmental Protection Agency*, Court File No. 01-1258 (D.C. Circuit, filed 2001)
  The Nuclear Energy Institute, a nuclear industry group, has also taken the Environmental Protection Agency to court regarding its radiation protection standards. The NEI objects to the EPA rule ground water standard, saying the rules had little scientific backing and don't comply with current law. The lawsuit asks that the ground water standard be deleted. The case has been combined with other lawsuits challenging EPA regulations.

- *State of Nevada v. United States and Department of Energy*, Court File No. 03-1009 (D.C. Circuit, filed January 10, 2003)
  This case challenges the Joint Resolution passed by Congress authorizing DOE to go forward with licensing Yucca Mountain. Nevada argues in its petition to the court that the resolution "arbitrarily and discriminatorily singled out Nevada to bear the burden of disposing of the nation's nuclear waste." Nevada further argues that "the national government lacks the power to require a sovereign state to singularly bear the burden, and thereby relieve all other states from bearing any burden, of resolving a perceived serious problem of national scope, unless either (1) the sovereign State consents to the imposition of such a unique burden; or (2)

Congress imposes such a burden on a particular State for compelling reasons justified by neutral, objective criteria." Nevada indicates there were no compelling reasons imposed by Congress.

The United States has also sued the State of Nevada, over the state's denial of a water appropriation permit.

- *United States v. State of Nevada*, Court File No. CV-S-00-0168 (District Court Nevada, filed 2000)
  This case challenges the State of Nevada's denial of a water use permit to the DOE.

By order dated November 7, 2002, the Court of Appeals in Washington, D.C. ordered that the cases against the Environmental Protection Agency (No. 01-1268 and several others not reported here) be heard in tandem with the cases against the Department of Energy (Nos. 01-1516, 02-1036, 02-1077, 02-1179, and 02-1196). The Court ordered that all these cases be set for oral argument on the same day or the same week, and before the same panel, in September 2003.

In an opening brief filed with the Court of Appeals in the above cases on December 2, 2002, the State of Nevada concluded that it wanted the Court to take the following actions:

- Declare unlawful and set aside DOE's guidelines, DOE's recommendation to the President, and the President's selection of the site for development;

- Declare that DOE has failed to take actions required under the NWPA;

- Declare that DOE's Final EIS is inconsistent with the National Environmental Policy Act and that DOE failed to act in accordance with NEPA;

- Remand the matter to the DOE for further proceedings in conformance with the Court's holdings.
  (See: http://www.yuccamountain.org/pdf/nv021203.pdf)

B. Nuclear Waste Fund

The Nuclear Waste Policy Act established the Nuclear Waste Fund, a separate account established in the Treasury of the United States, that would be a source of funds for locating and constructing a national repository for high level nuclear wastes. Monies in the fund come primarily from fees paid by the owners and generators of civilian nuclear power plants. The fee is 1 mill (0.1 ¢) per kilowatt-hour of electricity generated and sold. Other monies in the fund include any appropriations made by the Congress into the NWF and any unexpended balances that were transferred to the NWF on the date of enactment of the NWPA.

The table on the next page summarizes the status of the Nuclear Waste Fund as of September 30, 2002.

NUCLEAR WASTE FUND
RATEPAYER PAYMENTS BY STATE
THROUGH 9-30-02 (MILLIONS OF DOLLARS)

STATE	PAYMENTS (1 mill/kwh, One Time+Int)	RETURN ON INVESTMENT	TOTAL (PAY+RETURN)	DEBT*	FUND ASSETS** (TOTAL + DEBT)
AL	401.5	221.5	623.0	0	623.0
AR	220.9	121.9	342.8	146.9	489.7
AZ	168.5	93.0	261.5	0	261.5
CA	708.1	390.7	1098.8	0	1098.8
CO	0.2	0.1	0.3	0	0.3
CT	203.1	112.1	315.2	301.0	616.2
DE	31.1	17.2	48.3	0	48.3
FL	617.0	340.4	957.4	0	957.4
GA	439.5	242.5	682.0	0	682.0
IA	174.2	96.1	270.3	38	308.3
IL	1167.1	643.9	1811.0	816.7	2627.7
IN	154.2	85.1	239.3	193.5	432.8
KS	87.7	48.4	136.1	0	136.1
KY	100.7	55.6	156.3	0	156.3
LA	200.7	110.7	311.4	0	311.4
MA	241.7	133.4	375.1	137.1	512.2
MD	276.5	152.5	429.0	0	429.0
ME	45.3	25.0	70.3	98.3	168.6
MI	188.3	103.9	292.2	166.6	458.8
MN	241.2	133.1	374.3	0	374.3
MO	169.1	93.3	262.4	5.1	267.5
MS	116.0	64.0	180.0	0	180.0
NC	1052.5	580.7	1633.2	0	1633.2
ND	12.6	7.0	19.6	0	19.6
NE	140.1	77.3	217.4	0	217.4
NH	49.2	27.1	76.3	20.2	96.5
NJ	477.1	263.2	740.3	165.6	905.9
NM	49.1	27.1	76.2	0	76.2
NY	531.3	293.1	824.4	425.3	1249.7
OH	301.5	166.3	467.8	27.5	495.3
OR	75.1	41.4	116.5	0	116.5
PA	880.4	485.7	1366.1	55.9	1422.0
RI	3.8	2.1	5.9	5.2	11.1
SC	470.6	259.6	730.2	0	730.2
SD	3.3	1.8	5.1	0	5.1
TN	321.1	177.2	498.3	0	498.3
TX	450.8	248.7	699.5	0	699.5
VA	502.7	277.3	780.0	0	780.0
VT	71.2	39.3	110.5	119.1	229.6
WA	106.1	58.5	164.6	0	164.6
WI	322.7	178.0	500.7	0	500.7
SUBTOTAL	11773.8	6495.8	18269.6	2722	20991.6
FEDERAL	19.8	10.9	30.7	0	30.7
INDUSTRY	16.8	9.3	26.1	0	26.1
TOTAL	11810.4	6516	18326.4	2722	21048.4

* Funds owed for fuel burned before 1983 but not yet paid by utilities (as allowed by DOE contract)
** before withdrawals for expenditures by DOE

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1. Total Contributions

Of the total value of $21 billion in the fund, Xcel (NSP) customers have contributed $374,300,000.

In last year's report, reference was made to a May 2001 DOE report entitled Nuclear Waste Fund Fee Adequacy: An Assessment. At that time, DOE concluded that the fees collected from utilities are adequate to support the costs of disposal of spent nuclear fuel from civilian power plants, although the analysis did not assume any service life extensions, which would increase projected quantities of SNF and fee revenues. There has not been an update to this DOE report.

2. NWF Litigation

A great deal of litigation has ensued over the DOE's failure to construct a national repository and to begin accepting wastes from around the country in January 1998 as directed by the NWPA. Some of this litigation was summarized in last year's report.

Xcel included in its December 2002 Integrated Resource Plan filed with the Minnesota Public Utilities Commission, an update on the status of litigation brought by a number of utilities against the Department of Energy seeking monetary damages. Xcel is seeking damages from the DOE for the costs of the Prairie Island Dry Cask Storage Facility, costs related to Xcel's participation in the Private Fuel Storage Initiative, and costs related to the 1994 state legislation allowing storage of dry casks at Prairie Island. *Northern States Power Company v. United States,* 224 F.3d. 1361 (Fed. Cir. 2000).

In litigation to date, the courts have determined that the DOE has at least partially breached the standard contract it has with utilities to begin accepting waste by January 31, 1998. The parties are currently in the discovery stage and a number of current and former DOE employees have been deposed by attorneys for the utilities.

On July 19, 2000, PECO Energy, – part of the Exelon Generation Company – entered into an agreement with the Department of Energy in which Exelon agreed to forfeit its contract claim at the PECO facility in exchange for credits against the ongoing 1.0 mil per kilowatt hour payments that Exelon customers would otherwise be obligated to pay into the Nuclear Waste Fund. The agreement allowed PECO to keep up to $80 million in nuclear waste fee revenues during the next ten years as compensation for the continuing costs to PECO for storage of waste at the Peach Bottom plant site.

The DOE envisioned that it would use such agreements on an industry-wide basis, but several utilities challenged the arrangement. The U.S. Court of Appeals struck down the agreement, saying that "the Department of Energy is not authorized by law to spend NWF monies on settlement agreements aimed at compensating utilities for their on-site storage costs as a result of the Department's massive breach." *Alabama Power Company v. Department of Energy,* 307 F.3d 1300, 1316, (11th Cir. Sept. 24, 2002). The effect of the court ruling is to put the burden of any DOE payment of potential damages for

violations of its contracts to accept waste onto taxpayers in general, rather than utility company ratepayers who contribute to the Waste Fund.

On July 31, 2001, the U.S. Court of Federal Claims granted a Northern States Power Company motion for summary judgment on liability against the Department of Energy. The DOE has petitioned the Court to consolidate all the various proceedings involving utilities seeking damages from DOE under one judge. Action in the Courts is still pending on the matter of consolidation and the request for damages themselves.

In 1996, an out-of-court settlement between Public Service Company of Colorado and the DOE for management of the waste fuel from the shut down Fort St. Vrain facility was completed. Under terms of the settlement agreement, the DOE has taken title to, and operation of, the plant's independent spent fuel storage installation in Colorado and title to the fuel stored in it. (See: { HYPERLINK "http://www.inel.gov/publicdocuments/factsheet/stvrain-fsheet.pdf" })

C. Monitored Retrievable Storage and Private Storage Options

The 1987 NWPA amendments authorized the use of a Monitored Retrievable Storage facility to store spent fuel and prepare it for delivery to the repository. However, the law prohibits DOE from building an interim facility until it is certain that a permanent repository will be built. Also, NWPA (Sec 145) requires that any MRS facility not be located in the State of Nevada. A Monitored Retrievable Storage facility is unlikely under the present statutory mechanism.

Several private waste storage initiatives have been proposed over the years, but the most prominent proposal has been one put forth by a consortium of eight nuclear utilities, led by Xcel Energy. The group, Private Fuel Storage, Inc., applied to the NRC in 1997 for a license to build a commercial spent fuel storage facility on the Utah reservation of the Skull Valley Band of Goshutes. The NRC licensing process continued this reporting period with the following activities:

- The Final Environmental Impact Statement was released by the NRC on January 3, 2002. It concluded environmental impacts would be small or small to moderate and that the proposed PFS facility is the best alternative of those considered.

- Evidentiary hearings before the Atomic Safety and Licensing Board were held in April, May, and June, and finally were completed in July 2002.

- The Atomic Safety and Licensing Board was expected to complete its review of evidence and testimony presented by PFS, the NRC staff, and project opponents, and make a decision on whether to recommend to the NRC the issuance of a license in early 2003. As of this writing, a decision has not been issued.

Other activities this reporting period may have an impact on the potential development of the PFS proposal. On July 8, 2002, one day before the Senate voted to override the

Nevada notice of disapproval of the Yucca Mountain facility, six of the eight utility proposers of the Private Fuel Storage project sent a letter to the two Utah Senators, Orrin Hatch and Robert Bennett, pledging that their companies would "commit no funds to construction of the PFS facility past the licensing phase so long as the Yucca Mountain project is approved by the Congress and repository development proceeds in a timely fashion." The two proposers who did not sign the letter were Xcel Energy and Dairyland Power Cooperative.

In addition, construction funding issues are unresolved at this time. In the Xcel Energy December 2002 Integrated Resource Plan filing, Xcel stated that "we can no longer count on PFS being there in our planning scenario. We will however continue to pursue the project." (Xcel Energy December 2002 IRP filing at Nuclear section, p.66)

D. Transportation Issues

1. Department of Energy Plan

The Department of Energy anticipates that private contractors will be used to transport spent nuclear fuel to the Yucca Mountain facility in Nevada. Nearly every state in the continental United States will be crossed with rail or truck shipments of the high-level radioactive wastes. A map of likely transportation corridors developed by the State of Nevada is shown below.

NATIONAL HIGHWAY, RAIL, AND BARGE ROUTES TO YUCCA MOUNTAIN

{ EMBED MSPhotoEd.3 }

DOE preliminary plans to ship waste to the Yucca Mountain location indicate that spent fuel transportation through Minnesota to a Nevada facility will involve only waste from Minnesota's two nuclear power plants and Wisconsin's Genoa reactor site near LaCrosse.

In 2002, the State of Nevada focused on the risks associated with transportation as a major reason for its opposition to the Yucca Mountain project. Governor Guinn of Nevada, in his reasons for his notice of disapproval, listed the following transportation related concerns. 1) The FEIS is not adequate about the mode or methodologies of shipment. Barge, rail, and trucks are mentioned but incompletely analyzed. 2) Terrorism risks are not analyzed. 3) Nuclear criticality risks are not analyzed. 4) The shipping casks are still in various stages of development, but no physical testing is proposed for the casks to be used. 5) Even very robust casks are vulnerable to attacks from small missiles.

Included in the State of Nevada's lawsuits against the federal government is a claim that the Final EIS is inadequate because the DOE failed to adequately address transportation of spent nuclear fuel and high-level radioactive waste to Yucca Mountain, and that the transportation analysis contained in the FEIS is legally and substantively deficient and entirely inadequate. The DOE Final Environmental Impact statement indicates that impacts are evaluated based on 24 years of transportation activities. During the time shipments are sent to Yucca Mountain, annual shipments would be about 2,200 (2,200

truck, 13 rail) for the mostly legal weight truck scenario and about 450 (400 rail, 45 truck) for the mostly rail scenario. For the mostly legal-weight truck scenario, the analysis estimated there could be as many as 5 (4.9) fatalities over 24 years from vehicle collisions and other traffic accidents during the 53,000 legal-weight truck and 300 rail shipments. For the mostly rail scenario, which would involve as many as 9,600 rail and 1,100 legal weight truck shipments, the analysis estimated there could be about 3 (2.5 to 3.3) fatalities over 24 years attributable to train operations; these could include fatalities from grade-crossing accidents and trespassers struck and killed by trains.

2. Shipments from Minnesota Facilities

Even though the Yucca Mountain project has moved from the political arena to the NRC licensing phase, there remains considerable uncertainty about the timing of waste removal and amount of waste that will need to be removed from the Prairie Island facility.

At this point in time the two potential destinations for spent fuel produced at the plant are either Yucca Mountain or the Utah PFS facility. There is no date certain for the availability of either of these facilities. When operational, waste shipment schedules from Prairie Island to either of these sites will be constrained by the rate at which these facilities can accept waste once in operation.

For this report two scenarios are examined that may be indicative of the range of possible scenarios for how much fuel gets generated at Prairie Island, and when the fuel could be expected to be removed from the plant site. Both scenarios assume the Yucca Mountain facility begins to accept waste in the year 2015, the year Xcel says Yucca Mountain is most likely to become available. Any delays in availability of the Yucca Mountain facility beyond 2015 will extend the time frame for total waste removal in both of these scenarios.

The first scenario assumes a “minimum amount” of waste is generated, by assuming the plant shuts down as scheduled in 2007, and an early shipment schedule is possible if the Private Fuel Storage facility in Utah becomes available as predicted in 2005. In this scenario, Xcel Energy expects that the last shipment of high level waste would leave the Prairie Island plant in the year 2026. No casks beyond the 17 currently authorized are required. The shipment schedule predicts that the TN-40 casks will be gone from the site in the year 2011.

The second scenario assumes a “maximum amount” of waste generated, by assuming relicensing and extending operation of the Prairie Island facility until 2034, and the only place to send the waste is Yucca Mountain. The model assumes Yucca Mountain starts to accept waste beginning in 2015. In this scenario Xcel anticipates that 30 additional casks, of a different style than the TN-40 casks presently at the site, would be needed to store waste at the plant site.

In this example, according to Xcel Energy, the last shipment of spent fuel is projected to leave PI in the year 2062. The TN-40 casks will be gone from the site in the year 2032. The waste fuel pool would be emptied in the year 2052. After the pool is emptied the waste fuel from the 30 new casks, capable of storing 24 fuel assemblies each, would begin to be shipped.

This scenario also assumes that there is some political decision either to increase storage capability at Yucca Mountain beyond the 70,000 MTU currently authorized to be stored there by Congress, or to create a second repository elsewhere. Xcel anticipates that Yucca Mountain will reach the federally legislated capacity limit around the year 2036. In that year, Xcel projects that there would still be 1099 spent fuel assemblies stored at the plant in the spent fuel pool, and 30 new style dry casks (designed to hold 24 assemblies each) stored at the plant.

See the graphs in Appendix C for the on site spent fuel inventory level details for each of these two possible scenarios at Prairie Island.

V. Upcoming Activities

A. Department of Energy

Now that the Congress and the President have affirmed the administration's determination of Yucca Mountain as a suitable site for a permanent repository, the site suitability process defined in the NWPA has been completed. The DOE will now focus its activities on the preparation and submission to the NRC of a license request to construct the Yucca Mountain facility.

The NWPA dictated that the DOE should file a construction permit at the NRC within 90 days of receiving congressional and Presidential approval for the Yucca Mountain site. [42 U.S.C. 10134 Sec. 114]. The DOE did not do so. Secretary Abraham has stated that he considered the 90 days a guideline instead of a deadline. The DOE current plans call for the submission of an application to the NRC by December 2004.

The DOE current program schedule expects that license review by the NRC will take about two years and be completed by early 2007. Under this schedule, construction of the repository facility would begin in 2007, and the Yucca Mountain facility would start accepting waste in 2010.

Actual timing of these program milestones is dependent on a number of factors, including the timeframe for NRC review, legal challenges, and budget appropriations. Historically, Congress has consistently funded below the DOE requested amounts. DOE expects to increase its congressional funding requests now that the site is approved.

The NWPA (Sec 161) provided for a report to the President and to Congress on the need for a second repository. That report is required no sooner than January 1, 2007, and no

later than January 1, 2010. The DOE can be expected to produce this report near the January 1, 2007, date.

Further development of the waste transportation issues will be forthcoming from the DOE prior to or coincident with submission of an NRC construction license application.

B. Nuclear Regulatory Commission

The NRC will continue its efforts this year to finalize its Yucca Mountain license application review plan.

Along with this activity, the NRC will continue to react to applications for certification of new plant designs, license extensions for existing reactors, and for early site permits for new facilities.

C. Federal Legislation

The reauthorization of the Price Anderson Act, (current bills for this are S. 156, H.R. 330) originally enacted as part of the Atomic Energy Act of 1957 (P.L. 85-256; 42 U.S.C section 2210), which limits plant owner liability from accidents for new nuclear facilities, will be a discussion item this session in Congress. Without this type of liability protection, it is unlikely new facilities would be constructed. Both Houses of Congress passed versions of the reauthorization in 2002, but the matter failed to get out of a conference committee.

The Administration has announced that it will be exploring efforts to free up funding for construction of Yucca Mountain. Although billions of dollars have been collected into the NWF, spending levels out of this fund are appropriated each year during the annual federal budget cycle.

Appendix A

Nuclear Waste Management
A Chronology

1954 – 2001

See the January 2002 Annual Report for a list of events for these years.

2002

On January 10, 2002, the Secretary of the Department of Energy, Spencer Abraham, notifies the Governor of the State of Nevada that he intends to make a positive recommendation to the President about the suitability of Yucca Mountain as a national repository.

On February 14, 2002, Secretary Abraham recommends to the President that Yucca Mountain is a suitable site for a permanent repository for high level nuclear waste.

On February 15, President Bush determines that he considers Yucca Mountain to be qualified for construction authorization.

In March 2002 workers at the Davis Besse nuclear power plant near Toledo, Ohio, discover a cavity in the head of the reactor vessel. The plant is closed down; repairs are expected to be completed in spring 2003 at a cost of $400 million.

On April 8, 2002, Governor Kenny Guinn of Nevada files a "notice of disapproval" of the recommendation by the President, in accordance with the Nuclear Waste Policy Act.

On May 8, 2002, the United States House of Representatives passes House Joint Resolution 87 by a vote of 306-117 to approve the Yucca Mountain site for licensing.

On July 9, 2002, the United States Senate passes Senate Joint Resolution 34 to approve the Yucca Mountain site.

On July 23, 2002, President Bush signs the Joint Resolution, overriding the State of Nevada's veto, and allowing the Department of Energy to apply to the Nuclear Regulatory Commission for a permit for Yucca Mountain.

In July Xcel Energy fills the last of 17 casks at the dry cask storage facility at the Prairie Island plant.

On September 24, 2002, the United States Court of Appeals strikes down an agreement between the Department of Energy and one of the nuclear power companies providing the company with a credit against its future payments into the Nuclear Waste Fund as payment of damages for DOE's failure to construct a national repository.

On October 1, 2002, Xcel Energy announces five finalists on the short list for a contingency bid to replace the energy from Prairie Island.

On December 2, 2002, Xcel Energy files its Integrated Resource Plan with the Minnesota Public Utilities Commission, in which it states that the company intends to ask the Legislature to address the matter of the future operation of its nuclear power plants.

During the course of 2002 the State of Nevada files a number of lawsuits against the federal government, alleging various deficiencies in the manner in which the government has gone about the process of evaluating and approving the Yucca Mountain site.

Appendix B

Principal Resources

Department of Commerce, “Background on Nuclear Power in Minnesota.”
{ HYPERLINK
"http://www.state.mn.us/mn/externalDocs/Nuclear_Power_121702090354_NuclearBackground.pdf" }

DOE, Office of Civilian Radioactive Waste Management: { HYPERLINK
"http://www.ocrwm.doe.gov" }

Energy Information Administration: U.S. Nuclear Reactors
{ HYPERLINK "http://www.eia.doe.gov/cneaf/nuclear/page/nuc_reactors/reactsum.html"
}

Energy Information Administration: Monthly U.S. Nuclear Generation by Reactor by State, 2001 { HYPERLINK
"http://www.eia.doe.gov/cneaf/nuclear/page/nuc_generation/usreact.html" }

Energy Information Administration: Monthly Energy Review, January 2003
{ HYPERLINK "http://www.eia.doe.gov/emeu/mer/pdf/pages/sec8_3.pdf" }

Eureka County, NV, Nuclear Waste Page: { HYPERLINK
"http://yuccamountain.org/new.htm" }

House Research Department, “Nuclear Energy and Xcel Energy’s 2002 Resource Plan”, January 2003, { HYPERLINK "http://www.house.mn/hrd/pubs/nucxcel.pdf" }

Michigan PSC staff report: Nuclear Waste Fund Payments by State: { HYPERLINK
"http://www.cis.state.mi.us/mpsc/lic-enf/nuclear/" }

Nuclear Energy Institute: { HYPERLINK "http://www.nei.org" }

Nuclear Energy Institute, List of Plant sales; { HYPERLINK
"http://www.nei.org/documents/Nuclear_Plant_Sales.pdf" }

Office of Civilian Radioactive Waste Management, FY 2002 Year End Report
{ HYPERLINK "http://www.ocrwm.doe.gov/pm/budget/MonSumSep2002.pdf" }

Office of Civilian Radioactive Waste Management, Spent Nuclear Fuel Transportation
{ HYPERLINK "http://www.ocrwm.doe.gov/wat/pdf/snf_trans.pdf" }

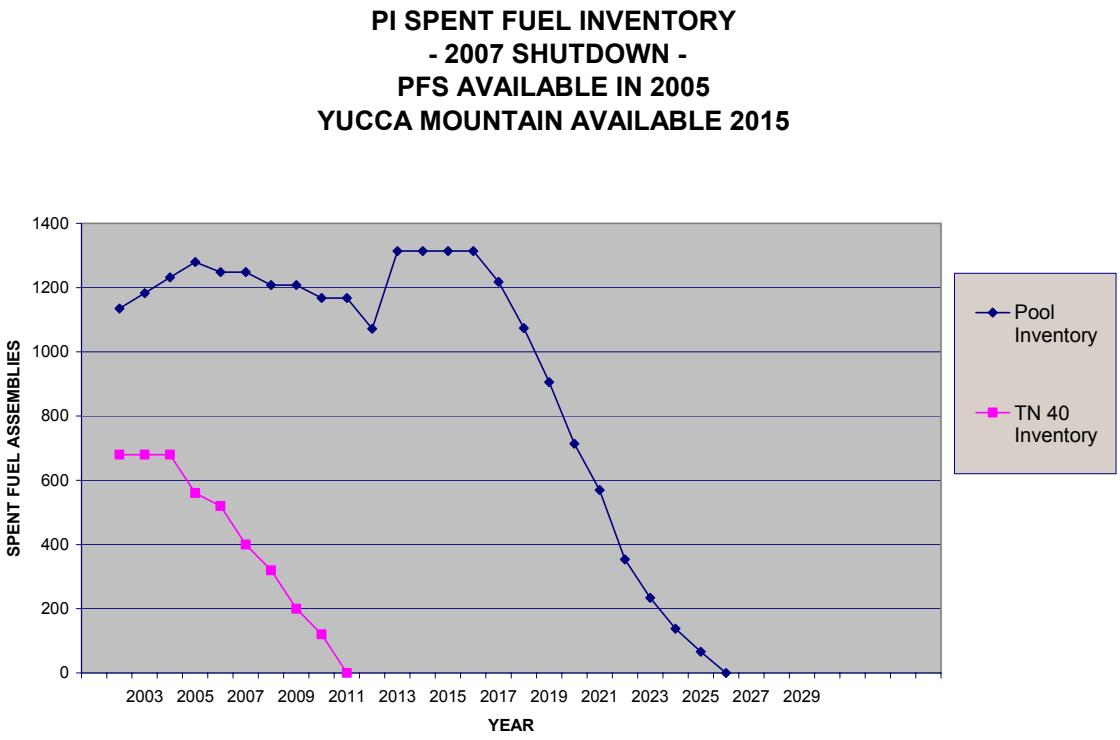
State of Nevada, Nuclear Waste Project Office: { HYPERLINK
"http://www.state.nv.us/nucwaste/index.htm" }

Xcel Energy 2002 Integrated Resource Plan, PUC filing, December 2, 2002.

Xcel Energy, Annual Nuclear Waste Management Report, August 12, 2002.

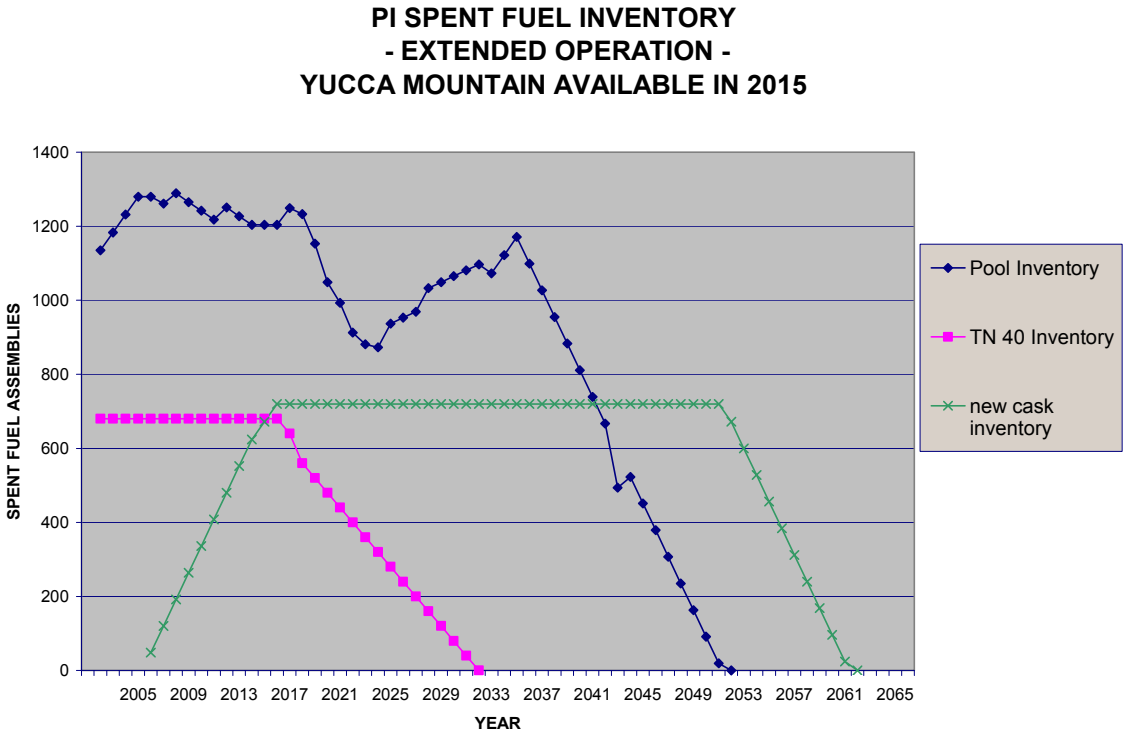
Xcel Energy, Information request response from Jim Alders, January 6, 2003.

Appendix C
Scenarios of PI Waste Generation and Shipment



Spent fuel inventory levels at Prairie Island plant assuming the plant ceases to produce more waste in 2007, the Private Fuel Storage facility in Utah becomes operational in 2005, and the Yucca Mountain repository becomes operational in the year 2015.

In this scenario no additional casks are required, and the TN-40 casks are emptied first. The waste in the TN-40 casks would be removed from the site by 2010. All waste is removed from the plant site by 2026.



Spent fuel inventory levels at Prairie Island plant, assuming the plant receives a 20 year license extension from the NRC and continues to operate until 2034, and only Yucca Mountain is available to receive the waste fuel beginning in the year 2015.

Xcel Energy estimates that a total of 30 new style casks capable of storing 24 assemblies each would be required at the plant site to store waste fuel in this scenario. Yucca Mountain would reach its 70, 000 MTU authorized storage capacity in the year 2036. Either additional capacity at Yucca Mountain or another repository would have to be approved by Congress for additional storage capacity in this scenario.

In this scenario the TN-40 casks are emptied first, the waste fuel pool inventory second, and the newer 24 fuel assembly style casks are emptied last.