SEAs, with instructions, and will request that SEAs commence submitting FY 2015 data to the Census Bureau on Tuesday, February 2, 2016. SEAs are urged to submit accurate and complete data by Friday, March 18, 2016, to facilitate timely processing.

Submissions by SEAs to the Census Bureau will be analyzed for accuracy and returned to each SEA for verification. SEAs must submit all data, including any revisions to FY 2014 and FY 2015 data, to the Census Bureau no later than Monday, August 15, 2016. Any resubmissions of FY 2014 or FY 2015 data by SEAs in response to requests for clarification or reconciliation or other inquiries by NCES or the Census Bureau must be completed by Tuesday, September 6, 2016. Between August 15, 2016, and September 6, 2016, SEAs may also, on their own initiative, resubmit data to resolve issues not addressed in their final submission of NPEFS data by August 15, 2016. All outstanding data issues must be reconciled or resolved by the SEAs, NCES, and the Census Bureau as soon as possible, but no later than September 6, 2016.

In order to facilitate timely submission of data, the Census Bureau will send reminder notices to SEAs in May, June, and July of 2016.

Having accurate, consistent, and timely information is critical to an efficient and fair Department of Education (Department) allocation process and to the NCES statistical process. To ensure timely distribution of Federal education funds based on the best, most accurate data available, the Department establishes, for program funding allocation purposes, Monday, August 15, 2016, as the final date by which the SEAs must submit data using either the interactive survey form on the NPEFS data collection Web site at: *http://surveys.nces.ed.gov/ccdnpefs* or ED Form 2447.

Any resubmissions of FY 2014 or FY 2015 data by SEAs in response to requests for clarification or reconciliation or other inquiries by NCES or the Census Bureau must be completed through the interactive survey form on the NPEFS data collection Web site or ED Form 2447 by Tuesday, September 6, 2016. If an SEA submits revised data after the final deadline that result in a lower SPPE figure, the SEA's allocations may be adjusted downward, or the Department may direct the SEA to return funds. SEAs should be aware that all of these data are subject to audit and that, if any inaccuracies are discovered in the audit process, the Department may seek recovery of overpayments for the applicable programs.

Note: The following are important dates in the data collection process for FY 2015:

February 2, 2016—SEAs can begin to submit accurate and complete data for FY 2015 and revisions to previously submitted data for FY 2014.

March 18, 2016—Date by which SEAs are urged to submit accurate and complete data for FY 2014 and FY 2015.

August 15, 2016—Mandatory final submission date for FY 2014 and FY 2015 data to be used for program funding allocation purposes.

September 6, 2016—Mandatory final deadline for responses by SEAs to requests for clarification or reconciliation or other inquiries by NCES or the Census Bureau. All data issues must be resolved.

If an SEA's submission is received by the Census Bureau after August 15, 2016, the SEA must show one of the following as proof that the submission was mailed on or before that date:

1. A legibly dated U.S. Postal Service postmark.
2. A legible mail receipt with the date of mailing stamped by the U.S. Postal Service.
3. A dated shipping label, invoice, or receipt from a commercial carrier.
4. Any other proof of mailing acceptable to the Secretary.

If the SEA mails ED Form 2447 through the U.S. Postal Service, the Secretary does not accept either of the following as proof of mailing:

1. A private metered postmark.
2. A mail receipt that is not dated by the U.S. Postal Service.

Note: The U.S. Postal Service does not uniformly provide a dated postmark. Before relying on this method, an SEA should check with its local post office.

Accessible Format: Individuals with disabilities may obtain this document in an accessible format (*e.g.,* braille, large print, audiotape, or compact disc) on request to: Mr. Stephen Q. Cornman, NPEFS Project Director, National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education. Telephone: (202) 245–7753 or by email: *stephen.cornman@ed.gov.*

Electronic Access to This Document: The official version of this document is the document published in the **Federal Register.** Free Internet access to the official edition of the **Federal Register** and the Code of Federal Regulations is available via the Federal Digital System at: *www.gpo.gov/fdsys.* At this site you can view this document, as well as all other documents of this Department published in the **Federal Register**, in text or Adobe Portable Document Format (PDF). To use PDF you must have Adobe Acrobat Reader, which is available free at this site.

You may also access documents of the Department published in the **Federal Register** by using the article search feature at: *www.federalregister.gov.* Specifically, through the advanced search feature at this site, you can limit your search to documents published by the Department.

Authority: 20 U.S.C. 9543.

Dated: December 18, 2015.

Ruth Neild,

Deputy Director for Policy and Research Delegated the Duties of the Director for the Institute of Education Sciences.

[FR Doc. 2015–32266 Filed 12–22–15; 8:45 am]

BILLING CODE 4000–01–P

DEPARTMENT OF ENERGY

Invitation for Public Comment To Inform the Design of a Consent-Based Siting Process for Nuclear Waste Storage and Disposal Facilities

AGENCY: Fuel Cycle Technologies, Office of Nuclear Energy, Department of Energy.

ACTION: Notice of Invitation for Public Comment (IPC).

SUMMARY: The U.S Department of Energy (DOE) is implementing a consent-based siting process to establish an integrated waste management system to transport, store, and dispose of commercial spent nuclear fuel and high level defense radioactive waste. In a consent-based siting approach, DOE will work with communities, tribal governments and states across the country that express interest in hosting any of the facilities identified as part of an integrated waste management system. As part of this process, the Department wants public input on implementing this system. In order to solicit public feedback, DOE is submitting this Invitation for Public Comment (IPC). Through this IPC, we are requesting feedback from communities, states, Tribes, and other interested stakeholders on how to design a consent-based siting process. In addition, the Department intends to host a series of public meetings to engage communities and discuss the development of a consent-based approach to managing our nation's nuclear waste.

DATES: Written comments will be accepted beginning December 23, 2015 through June 15, 2016. Separate announcements will be made for each public meeting.

ADDRESSES: You may submit questions or comments by any of the following methods:

Email: Responses may be provided by email to *consentbasedsiting@hq.doe.gov.* Please include ''Response to IPC'' in the subject line.

Mail: Responses may be provided by mail to the following address: U.S. Department of Energy, Office of Nuclear Energy, Response to IPC, 1000 Independence Ave SW., Washington, DC 20585.

Fax: Responses may be faxed to 202–586–0544. Please include ''Response to IPC'' on the fax cover page.

Online: Responses will be accepted online at *www.regulations.gov.*

FOR FURTHER INFORMATION CONTACT: Requests for further information should be sent to *consentbasedsiting@hq.doe.gov.* Please include ''Question on IPC'' in the subject line.

SUPPLEMENTARY INFORMATION:

Background

Electricity generated by nuclear energy has powered homes, schools, and industry in the United States since the 1950s. Nuclear material is used to power naval vessels and was used to build the U.S. nuclear weapon stockpile during the Cold War. These activities have generated spent nuclear fuel (SNF) and high-level radioactive waste (HLW).

Isolating and containing this radioactive waste is necessary to ensure the long-term safety and security of the public and environment. Though the Cold War ended a quarter century ago and commercial nuclear power has been generated for over half a century, the country still lacks a permanent disposal solution for SNF and HLW. Instead, commercial SNF is stored at operating and shutdown reactor sites around the country while HLW from defense activities resides at Department of Energy sites. Previous attempts to develop long-term solutions for storage and disposal of this waste have resulted in controversy, litigation, protracted delays, and ultimately a failure to address the problem.[1]

Failure to dispose of nuclear waste has proven costly for energy ratepayers and taxpayers who are paying for the inability of the government to meet federal waste management commitments. States, Tribes, and others in the public carry the undue burden of hosting radioactive waste they were promised was only temporary.[2] Collectively, we have the responsibility to dispose of waste using a process that is fair to present and future generations. We must live up to our obligations and develop a lasting solution.

Purpose

The purpose of this IPC is to seek input on the elements that the Department of Energy should consider in the development of a consent-based siting process. As reflected in the Administration's *Strategy for the Management and Disposal of Used Nuclear Fuel and High-Level Waste* (Strategy),[3] the Department concurs with the recommendation from the Blue Ribbon Commission on America's Nuclear Future that a phased, adaptive, consent-based siting process is the best approach to gain the public trust and confidence needed to site nuclear waste facilities. As the Department begins to consider a process for consent-based siting, we want to hear from all interested parties.

The Administration's Strategy envisioned the implementation of an integrated waste management system consisting of a range of nuclear waste facilities, each serving a specific role, to address the challenges facing the U.S. These nuclear waste facilities could include:

- A pilot interim storage facility with limited capacity capable of accepting used nuclear fuel and high-level radioactive waste and initially focused on serving shut-down reactor sites;
- A larger, consolidated interim storage facility, potentially co-located with the pilot facility and/or with a geologic repository, that provides the needed flexibility in the waste management system and allows for important near-term progress in implementing the federal commitment;
- Deep borehole disposal, which could be an option for disposal of smaller and more compact waste forms currently stored at Department of Energy sites;
- A permanent geologic repository for the disposal of defense high-level waste and, potentially, some DOE-managed spent nuclear fuel, which would be generally less radioactive, cooler, and easier to handle, enabling a simpler design and earlier availability; and
- A permanent geologic repository for the disposal of commercial spent nuclear fuel.

In early to mid-2016, the Department of Energy will host a series of public meetings to receive input for the design of a consent-based siting process. This IPC announces the Department's intention to hold meetings and to request input about what considerations are important when designing a fair and effective process for consent-based siting. Written input as well as feedback from public meetings will enable the Department to draft the initial steps on a proposal for a phased, adaptive, consent-based process for selecting sites.

Moving forward, the Department of Energy will draw upon extensive experience in storage, transportation, siting, policy, legislative, and regulatory issues both in the U.S. and elsewhere. A top priority is to build upon and improve existing relationships with states, Tribes, communities, and stakeholders to help identify important considerations, challenges, and opportunities for discussion.

Questions for Input

(1) How can the Department of Energy ensure that the process for selecting a site is fair?

Consent based siting seeks to ensure fairness in the distribution of costs, benefits, risks and responsibilities now and in future generations. How, in your view, can fairness be best assured by the process for selecting a site?

(2) What models and experience should the Department of Energy use in designing the process?

The challenges and opportunities of site selection drive us to continue to learn from previous or ongoing examples. From your perspective, what experience and models do you think are the most relevant to consider and draw from in designing the process for selecting a site?

(3) Who should be involved in the process for selecting a site, and what is their role?

The Department believes that there may be a wide range of communities who will want to learn more and be involved in selecting a site. Participation in the process for selecting a site carries important responsibilities. What are your views on who should be involved and the roles participants should have?

(4) What information and resources do you think would facilitate your participation?

The Department of Energy is committed to ensuring that people and communities have sufficient information and access to resources for engaging fully and effectively in siting. What information and resources would be essential to enable you to learn the most about and participate in the siting process?

(5) What else should be considered?

[1] Blue Ribbon Commission on America's Nuclear Future, Report to the Secretary of Energy, January 2012. *http://energy.gov/ne/downloads/blue-ribbon-commission-americas-nuclear-future-report-secretary-energy.*

[2] Ibid.

[3] Strategy for the Management and Disposal of Used Nuclear Fuel and High-Level Radioactive Waste, January 2013. *http://www.energy.gov/downloads/strategy-management-and-disposal-used-nuclear-fuel-and-high-level-radioactive-waste.*

The questions posed in this document are a starting point for discussion on the design of the process for consent-based siting of nuclear waste facilities, the Department of Energy would like to hear about and discuss any related questions, issues, and ideas that you think are important.

Next Steps

Written comments from this IPC, along with input from public meetings, will be documented in a draft report scheduled to be released in summer 2016. The Department is planning to solicit comments on the draft report in order to ensure the content accurately reflects input received.

If you are unable to attend a public meeting or would like to further discuss ideas for consent-based siting, please propose an opportunity for us to speak with you. The Department will do its best to accommodate requests and help arrange additional opportunities to engage. To learn more about nuclear energy, nuclear waste, and ongoing technical work please see *energy.gov/consentbasedsiting.*

Submitting Comments

Instructions: Submit comments via any of the mechanisms set forth in the **ADDRESSES** section above. Respondents are requested to provide the following information at the beginning of their response to this IPC:

State, tribal, community, organization, public or individual name;

State, tribal, community, organization, public or individual point of contact; and

Point of contact's address, phone number, and email address.

If an email or phone number is included, it will allow the DOE to contact the commenter if questions or clarifications arise. No responses will be provided to commenters in regards to the disposition of their comments. All comments will be officially recorded without change or edit, including any personal information provided. Personal information (other than name) will be protected from public disclosure upon request.

Please identify your answers by responding to a specific question or topic, if possible. Respondents may answer as many or as few questions as they wish. Any additional comments that do not address a particular question should be included at the end of your response to this IPC as ''Additional Comments.''

DOE would appreciate early input in order to identify initial interest and concerns, as well as any early opportunities. Amended or revised inputs from commenters are also welcome throughout the comment period to help DOE develop this process. Comments received after the closing date will be considered as the planning process progresses; however, the DOE is only able to ensure consideration of comments received on or before the closing date as the initial phase of the consent based siting process is developed. Subsequent comments and input will also be welcome as DOE views this as a core component of a phased and adaptive consent-based siting process.

Privacy Act: Data collected via the mechanisms listed above will not be protected from the public view in any way.

Issued in Washington, DC, on December 15, 2015.

Andrew Griffith,

Associate Deputy Assistant Secretary for Fuel Cycle Technologies, Office of Nuclear Energy, Department of Energy.

[FR Doc. 2015–32346 Filed 12–22–15; 8:45 am]

BILLING CODE 6450–01–P

DEPARTMENT OF ENERGY

Federal Energy Regulatory Commission

[Docket No. NJ16–4–000]

City of Banning, California; Notice of Filing

Take notice that on December 15, 2015, City of Banning, California submitted its tariff filing: Filing 2016 Transmission Revenue Balancing Account Adjustment and Existing Transmission Contracts update, to be effective 1/1/2016.

Any person desiring to intervene or to protest this filing must file in accordance with Rules 211 and 214 of the Commission's Rules of Practice and Procedure (18 CFR 385.211, 385.214). Protests will be considered by the Commission in determining the appropriate action to be taken, but will not serve to make protestants parties to the proceeding. Any person wishing to become a party must file a notice of intervention or motion to intervene, as appropriate. Such notices, motions, or protests must be filed on or before the comment date. On or before the comment date, it is not necessary to serve motions to intervene or protests on persons other than the Applicant.

The Commission encourages electronic submission of protests and interventions in lieu of paper using the ''eFiling'' link at *http://www.ferc.gov.* Persons unable to file electronically should submit an original and 5 copies of the protest or intervention to the Federal Energy Regulatory Commission, 888 First Street NE., Washington, DC 20426.

This filing is accessible on-line at *http://www.ferc.gov,* using the ''eLibrary'' link and is available for review in the Commission's Public Reference Room in Washington, DC. There is an ''eSubscription'' link on the Web site that enables subscribers to receive email notification when a document is added to a subscribed docket(s). For assistance with any FERC Online service, please email *FERCOnlineSupport@ferc.gov,* or call (866) 208–3676 (toll free). For TTY, call (202) 502–8659.

Comment Date: 5:00 p.m. Eastern Time on January 5, 2016.

Dated: December 17, 2015.

Nathaniel J. Davis, Sr.,

Deputy Secretary.

[FR Doc. 2015–32270 Filed 12–22–15; 8:45 am]

BILLING CODE 6717–01–P

DEPARTMENT OF ENERGY

Federal Energy Regulatory Commission

[Docket No. IN16–2–000]

ETRACOM LLC; Michael Rosenberg; Notice of Designation of Commission Staff as Non-Decisional

December 16, 2015.

With respect to an order issued by the Commission on December 16, 2015 in the above-captioned docket, with the exceptions noted below, the staff of the Office of Enforcement are designated as non-decisional in deliberations by the Commission in this docket.[1] Accordingly, pursuant to 18 CFR 385.2202 (2015), they will not serve as advisors to the Commission or take part in the Commission's review of any offer of settlement. Likewise, as non-decisional staff, pursuant to 18 CFR 385.2201 (2015), they are prohibited from communicating with advisory staff concerning any deliberations in this docket.

Exceptions to this designation as non-decisional are:

Larry Parkinson
Lee Ann Watson
Janel Burdick
Maria Brun
Sam Bonar
Gabriel Sterling
Carol Clayton
Wesley Heath
Seema Jain

[1] *ETRACOM LLC and Michael Rosenberg,* 153 FERC ¶ 61,314 (2015).

The Secretary of Energy
Washington, DC 20585

December 22, 2015

The Honorable Darrell Issa
U.S. House of Representatives
Washington, DC 20515

Dear Representative Issa:

Thank you for your September 21 letter regarding spent nuclear fuel (SNF) currently stored at the San Onofre Nuclear Generating Station (SONGS) in California.

In an effort to develop both interim and final solutions for the Nation's SNF and high-level radioactive waste, the Department of Energy (DOE) is implementing the Administration's 2013 Strategy for the Management and Disposal of Used Nuclear Fuel and High-Level Radioactive Waste, which built upon the core recommendations of the Blue Ribbon Commission on America's Nuclear Future. Important components of the Strategy are a pilot-scale interim storage facility with an initial focus on accepting SNF from shutdown reactor sites, a larger-scale interim storage facility for SNF, and a geologic repository for SNF and high-level radioactive waste. All to be developed utilizing a phased, adaptive and consent-based siting approach.

This week, DOE launched an initiative to begin the development of a consent-based siting approach and create a sustainable solution for managing our Nation's nuclear waste. The Department is issuing an invitation for Public Comment in the Federal Register, expected to be published on December 23, soliciting input on important considerations in designing a fair and effective siting process. As part of this effort, the Department plans to host a series of public meetings around the country in 2016 to hear from the public and stakeholders on important principles, values, and considerations that should guide our thinking as we begin designing a consent-based siting process. We encourage you to participate as we work with the Nation to develop this important approach.

As stated above, DOE's plans for the pilot-scale interim storage facility focus on giving priority to accepting SNF from shutdown reactor sites, such as SONGS. Though the Department is conducting activities to lay the groundwork for interim storage, the Department would await new statutory authority before constructing such a facility.

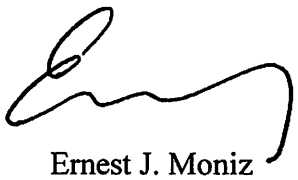
To support the eventual removal of SNF from shutdown reactor sites, DOE is continuing to evaluate the transportation infrastructure and associated operational considerations at shutdown reactor sites to facilitate eventual removal of SNF. To date, 12 of the 13 shutdown nuclear facilities have been visited by DOE staff. As part of this effort to analyze and document on-the-ground conditions at shutdown power plants, in June 2015,

a delegation of DOE scientists and engineers, including Acting Assistant Secretary for Nuclear Energy, John F. Kotek, visited the SONGS site. The Southern California Edison team that hosted their visit was well prepared and provided an extensive amount of very useful information which will be incorporated into DOE's technical documentation.

The Department has not used money from the Nuclear Waste Fund (NWF) for the planning activities described above because Congress has not appropriated funds from the NWF for these activities.

Thank you for your interest in the Department of Energy's ongoing efforts to develop storage and disposal solutions for our Nation's SNF and high-level radioactive waste. I look forward to working with you on this important issue. If you need additional information, please contact me or Ms. Janine Benner, Deputy Assistant Secretary for House Affairs, at (202) 586-5450.

Sincerely,



Ernest J. Moniz

Department of Energy
Washington, DC 20585

December 22, 2015

The Honorable Bill Horn
Chairman
San Diego County Board of Supervisors
1600 Pacific Highway, Room 335
San Diego, CA 92101-2470

Dear Chairman Horn:

Thank you for your September 22 letter to Secretary Moniz regarding future removal of spent nuclear fuel (SNF) currently stored at the San Onofre Nuclear Generation Station (SONGS) in California. Secretary Moniz has asked me to respond on his behalf.

In an effort to develop both interim and final solutions for the Nation's SNF and high-level radioactive waste, the Department of Energy (DOE) is implementing the Administration's 2013 Strategy for the Management and Disposal of Used Nuclear Fuel and High-Level Radioactive Waste, which built upon the core recommendations of the Blue Ribbon Commission on America's Nuclear Future. Important components of the Strategy are a pilot-scale interim storage facility with an initial focus on accepting SNF from shutdown reactor sites, a larger-scale interim storage facility for SNF, and a geologic repository for SNF and high-level radioactive waste. All to be developed utilizing a phased, adaptive and consent-based siting approach.

This week, DOE launched an initiative to begin the development of a consent-based siting approach and create a sustainable solution for managing our Nation's nuclear waste. The Department is issuing an invitation for Public Comment in the Federal Register, expected to be published on December 23, soliciting input on important considerations in designing a fair and effective siting process. As part of this effort, the Department plans to host a series of public meetings around the country in 2016 to hear from the public and stakeholders on important principles, values, and considerations that should guide our thinking as we begin designing a consent-based siting process. We encourage you to participate as we work with the Nation to develop this important approach.

As stated above, DOE's plans for the pilot-scale interim storage facility focus on giving priority to accepting SNF from shutdown reactor sites, such as SONGS. Though the Department is conducting activities to lay the groundwork for interim storage, the Department would await new statutory authority before constructing such a facility.

To support the eventual removal of SNF from shutdown reactor sites, DOE is continuing to evaluate the transportation infrastructure and associated operational considerations at shutdown reactor sites to facilitate eventual removal of SNF. To date, 12 of the 13 shutdown nuclear facilities have been visited by DOE staff. As part of this effort to analyze and document on-the-ground conditions at shutdown power plants, in June 2015,

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a delegation of DOE scientists and engineers, including myself, visited the SONGS site. The Southern California Edison team that hosted their visit was well prepared and provided an extensive amount of very useful information which will be incorporated into DOE's technical documentation.

Thank you for your interest in the Department of Energy's ongoing efforts to develop storage and disposal solutions for our Nation's SNF and high-level radioactive waste. I look forward to working with you on this important issue.

Sincerely,

John F. Kotek
Acting Assistant Secretary
for Nuclear Energy

Department of Energy
Washington, DC 20585

December 22, 2015

The Honorable Todd Spitzer
Chairman
Orange County Board of Supervisors
Robert E. Thomas Hall of Administration
P. O. Box 687
Santa Ana, California 92702-0687

Dear Chairman Spitzer:

Thank you for your September 22 letter to Secretary Moniz regarding future removal of spent nuclear fuel (SNF) currently stored at the San Onofre Nuclear Generation Station (SONGS) in California. Secretary Moniz has asked me to respond on his behalf.

In an effort to develop both interim and final solutions for the Nation's SNF and high-level radioactive waste, the Department of Energy (DOE) is implementing the Administration's 2013 Strategy for the Management and Disposal of Used Nuclear Fuel and High-Level Radioactive Waste, which built upon the core recommendations of the Blue Ribbon Commission on America's Nuclear Future. Important components of the Strategy are a pilot-scale interim storage facility with an initial focus on accepting SNF from shutdown reactor sites, a larger-scale interim storage facility for SNF, and a geologic repository for SNF and high-level radioactive waste. All to be developed utilizing a phased, adaptive and consent-based siting approach.

This week, DOE launched an initiative to begin the development of a consent-based siting approach and create a sustainable solution for managing our Nation's nuclear waste. The Department is issuing an invitation for Public Comment in the Federal Register, expected to be published on December 23, soliciting input on important considerations in designing a fair and effective siting process. As part of this effort, the Department plans to host a series of public meetings around the country in 2016 to hear from the public and stakeholders on important principles, values, and considerations that should guide our thinking as we begin designing a consent-based siting process. We encourage you to participate as we work with the Nation to develop this important approach.

As stated above, DOE's plans for the pilot-scale interim storage facility focus on giving priority to accepting SNF from shutdown reactor sites, such as SONGS. Though the Department is conducting activities to lay the groundwork for interim storage, the Department would await new statutory authority before constructing such a facility.

To support the eventual removal of SNF from shutdown reactor sites, DOE is continuing to evaluate the transportation infrastructure and associated operational considerations at shutdown reactor sites to facilitate eventual removal of SNF. To date, 12 of the 13 shutdown nuclear facilities have been visited by DOE staff. As part of this effort to

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analyze and document on-the-ground conditions at shutdown power plants, in June 2015, a delegation of DOE scientists and engineers, including myself, visited the SONGS site. The Southern California Edison team that hosted their visit was well prepared and provided an extensive amount of very useful information which will be incorporated into DOE's technical documentation.

Thank you for your interest in the Department of Energy's ongoing efforts to develop storage and disposal solutions for our Nation's SNF and high-level radioactive waste. I look forward to working with you on this important issue.

Sincerely,

John F. Kotek
Acting Assistant Secretary
for Nuclear Energy

cc: The Honorable Lisa Barlette
Vice Chair, Orange County
Board of Supervisors

Andrew Do
Supervisor, First District

Michelle Steel
Supervisor, Second District

Shawn Nelson
Supervisor, Fourth District

COUNTY OF ORANGE

BOARD OF SUPERVISORS

ROBERT E. THOMAS HALL OF ADMINISTRATION
10 CIVIC CENTER PLAZA
P. O. BOX 687
SANTA ANA, CA 92702-0687

October 28, 2015

The Honorable Ernest Moniz
Secretary, United States Department of Energy
11000 Independence Avenue, S.W.
Washington, DC 20585

Dear Secretary Moniz,

On behalf of the residents of Orange County we write to urge your Department to take action to remove spent nuclear fuel from the San Onofre Nuclear Generating Station (SONGS).

For more than 47 years, SONGS has operated from a location five miles from the city of San Clemente in south Orange County with a population of more than 63,000. While SONGS was decommissioned two years ago, 1,400 metric tons of spent nuclear fuel remains stored onsite at this plant.

More than three million Orange County residents live in close proximity to SONGS, which includes the South County cities of San Clemente, Dana Point, and San Juan Capistrano which are within the 10 mile 'hot zone'. The facility is also 200 yards from the Pacific Ocean, and 250 yards from both a major rail line and Interstate 5. We are very concerned about the threat to public safety and our environment should an earthquake, terrorist attack, or other similar disaster occur that damages the storage units at SONGS.

It is the federal government's responsibility to develop a disposal facility for the long-term management of used uranium fuel from SONGS and other nuclear power plants in the United States. However, no permanent repository for spent nuclear fuel exists or has been designated for such a purpose. SONGS' nuclear fuel needs to be removed and relocated to a more secure location far away from Orange County. While this action requires the cooperation from all levels of the federal government, the importance of taking action without delay cannot be overstated.

In order to protect the residents of Orange County, the Board of Supervisors respectfully urges you to take prompt action to remove and relocate the spent nuclear fuel at SONGS.

Sincerely,

TODD SPITZER
Chairman, Orange County Board of Supervisors
Supervisor, Third District

LISA BARTLETT
Vice Chair, Orange County Board of Supervisors
Supervisor, Fifth District

ANDREW DO, ESQ.
Supervisor, First District

MICHELLE STEEL
Supervisor, Second District

SHAWN NELSON
Supervisor, Fourth District

cc: The Honorable Edmund G. Brown Jr., Governor, State of California
Members, Orange County Congressional Delegation
Members, Orange County Legislative Delegation
Mark Ghilarducci, Director of Cal OES
Nuclear Regulatory Commission
California Energy Commission

COUNTY OF ORANGE
BOARD OF SUPERVISORS

ROBERT E. THOMAS HALL OF ADMINISTRATION
10 CIVIC CENTER PLAZA, P.O. BOX 687, SANTA ANA, CALIFORNIA 92702-0687

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The Honorable Ernest Moniz
Secretary, United States Department of Energy
11000 Independence Avenue, S.W.
Washington, DC 20585

20585

EXEC-2015-006179

BILL HORN

CHAIRMAN
SUPERVISOR, FIFTH DISTRICT
SAN DIEGO COUNTY BOARD OF SUPERVISORS

September 22, 2015

The Honorable Ernest Moniz
Secretary
United States Department of Energy
11000 Independence Ave. SW
Washington DC 20585

Dear Secretary Moniz,

On behalf of the San Diego County Board of Supervisors, I write to urge your Department to take action to remove spent nuclear fuel from the San Onofre Nuclear Generating Station (SONGS).

For more than 47 years SONGS operated in the northwest corner of San Diego County and in June of 2013 the station ceased all operations after excessive vibrations and other issues degraded tubes in the steam generators. Today, more than two years after decommissioning 1,400 metric tons of spent nuclear fuel remains stored onsite at SONGS.

In addition to being in close proximity to the more than three million people who reside in San Diego County, SONGS sits 200 yards from the Pacific Ocean and 250 yards from both a major rail line and Interstate 5. Should an earthquake, terrorist attack, or other calamity damage the storage units at SONGS, there is a potential significant impact to the health and safety of this region.

It is the responsibility of the federal government to develop a disposal facility for the long-term management of used uranium fuel from SONGS and other U.S. nuclear power plants. At this time, the federal government has failed to designate a permanent repository for spent nuclear fuel. This radioactive material needs to be removed from San Diego County and disposed of safely away from population centers. We understand that legislative measures are also necessary to move this endeavor forward, and we hope that all levels of the federal government understand the importance of taking action quickly.

In order to protect the residents of this region, the San Diego Board of Supervisors respectfully urges you to take prompt action to remove and relocate the spent nuclear fuel at SONGS outside of the San Diego region.

Sincerely,

BILL HORN
Chairman
County of San Diego

1600 PACIFIC HIGHWAY, ROOM 335, SAN DIEGO, CALIFORNIA 92101-2470
☎ (619) 531-5555 • FAX (619) 685-2555 • bill.horn@sdcounty.ca.gov

Cc:
Governor Jerry Brown
San Diego Congressional Delegation
San Diego State Legislative Delegation
Nuclear Regulatory Commission
California Energy Commission

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US POSTAGE

The Honorable Ernest Moniz
United States Department of Energy
11000 Independence Ave. SW
Washington DC 20585

HBAD598 20585

Congress of the United States
Washington, DC 20515

September 21, 2015

The Honorable Ernest Moniz
Secretary of Energy
U.S. Department of Energy
1000 Independence Ave. SW
Washington, DC 20585

Dear Secretary Moniz:

As members of the San Diego Delegation in Congress, we write to you regarding the nuclear waste stored at the closed San Onofre Nuclear Generating Station (SONGS). We ask that you detail the Department of Energy (DOE)'s actions to remove and relocate this radioactive nuclear waste to a region less geographically vulnerable than San Diego County.

We are concerned that the waste at the San Onofre Nuclear Generating Station is a hazard to San Diego and California residents. Currently, more than 1,400 metric tons of radioactive nuclear waste, accumulated from over 45 years of operations, is stored at the plant. SONGS is located in a high earthquake zone and sits adjacent to the Pacific Ocean and Interstate 5, one of California's most trafficked freeways. This location is vulnerable to seismic events, corrosion, possible tsunamis, and other potential risks. The region does not have the equipment, personnel, or training to manage an emergency involving this large a quantity of radioactive material, especially since SONGS was never intended to be a permanent repository for the generated waste.

Safe disposal of highly radioactive nuclear byproducts in a permanent repository is necessary for all nuclear sites. The 1982 Nuclear Waste Policy Act defines a timeline for establishing a permanent, underground geologic repository for high-level radioactive waste and set a deadline of 1998 for DOE to start transferring used fuel from nuclear energy facilities to a permanent storage site. The deadline established by this Act has long passed. We urge DOE to prioritize transferring nuclear waste from higher risk sites like San Onofre's plant as soon as possible before any leakage occurs, and to update us on DOE's progress in finding a temporary or permanent storage for spent fuel.

Furthermore, DOE Electricity consumers have paid into the Nuclear Waste Fund established by this Act since 1983, accruing $750 million a year to result in a current amount of $30 billion. We ask how DOE is using these funds to pursue a feasible storage facility for the more than 70,000 metric tons of radioactive waste stored at reactors across the country. San Diego and the nation are ready for action on safely storing the country's nuclear waste.

PRINTED ON RECYCLED PAPER

Thank you for your attention to and swift action on this matter.

Sincerely,

Scott Peters
Member of Congress

Darrell Issa
Member of Congress

Juan Vargas
Member of Congress

Duncan Hunter
Member of Congress

Susan Davis
Member of Congress

PUBLIC MEETINGS



GOALS

- Provide opportunity for effective two-way dialogue and mutual learning
- Reinforce the Department's commitment to public engagement
- Demonstrate openness to multiple viewpoints

AGENDA

- Consent-based siting and integrated waste management overview presentation by Acting Assistant Secretary John Kotek
- Panel discussion with a focus on local and regional perspectives
  - Working to include tribal and state interests on panels
- Facilitated small group discussions to receive input on the elements of a consent-based siting process

DATES AND LOCATIONS



LOCATION	DATE
Chicago, IL	March 29
Atlanta, GA	April 11
Sacramento, CA	Late April
Denver, CO	Late May
Boston, MA	Early June
Tempe, AZ	Late June
Boise, ID	Mid July
Minneapolis, MN	Late July



ADDITIONAL ENGAGEMENT OPPORTUNITIES



- Public webinars or conference calls
- Meetings with stakeholders and groups by request
- Opportunities to discuss consent-based siting at recurring, annual, or previously scheduled meetings and conferences
- Series of forums to gain perspectives about nuclear waste and consent-based siting from average Americans

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

January 29, 2016

Vice President, Operations
Entergy Nuclear Operations, Inc.
Vermont Yankee Nuclear Power Station
P.O. Box 250
Governor Hunt Road
Vernon, VT 05354

SUBJECT: VERMONT YANKEE NUCLEAR POWER STATION - POST-SHUTDOWN DECOMMISSIONING ACTIVITIES REPORT (CAC NO. MF5188)

Dear Sir or Madam:

By letter dated December 19, 2014 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML14357A110), Entergy Nuclear Operations, Inc. submitted to the U.S. Nuclear Regulatory Commission (NRC) the Post-Shutdown Decommissioning Activities Report (PSDAR), including the Site-Specific Decommissioning Cost Estimate (DCE), for Vermont Yankee Nuclear Power Station (VY), pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR), Section 50.82(a)(4). Entergy certified on January 12, 2015 (ML15013A426) that it permanently ceased operations on December 29, 2014, permanently removed all fuel from the reactor vessel, and is temporarily storing the spent fuel in the spent fuel pool.

Pursuant to 10 CFR 50.82(a)(4)(i), the PSDAR must contain a description of the planned decommissioning activities along with a schedule for their accomplishment, a discussion that provides the reasons for concluding that the environmental impacts associated with site-specific decommissioning activities will be bounded by appropriate previously issued environmental impact statements, and a site-specific DCE, including the projected cost of managing irradiated fuel. Additionally, pursuant to 10 CFR 50.82(a)(3), decommissioning is to be completed within 60 years of permanent cessation of operations. The regulations do not require the NRC to approve a licensee's submitted PSDAR.

The public was offered opportunities to comment on the PSDAR. A notice was published in the *Federal Register* (80 FR 1975) on January 14, 2015. The NRC staff requested that all comments be submitted by March 23, 2015. Comments that were submitted electronically can be viewed at www.regulations.gov, by searching on Docket NRC-2015-0004 and selecting "Open Docket Folder."

The NRC staff held a public meeting in Brattleboro, VT on February 19, 2015, to explain the decommissioning process and receive comments and questions from the public regarding the PSDAR. A summary of the meeting can be found in ADAMS at ML15082A317. Public comments, and the NRC staff's responses to those comments, are included in the transcript of the meeting (ML15070A234), beginning on page 63.

The NRC staff encouraged members of the public to submit their comments, in writing, through one of the several available formats discussed during the meeting.

A large number of comments were received from the State of Vermont and other individuals and entities. All comments received have been grouped into two categories: (1) questions and comments that are within the regulatory purview of the NRC staff's review of the PSDAR, and considered by the staff during its review, and (2) questions and comments that, upon review, were found to be outside the regulatory authority of the NRC, or were not relevant to the review performed by the NRC staff (i.e., whether the licensee's PSDAR meets the requirement of 10 CFR 50.82(a)(4)) and, thus, were not considered.

The questions and comments that the NRC staff considered during its review of the PSDAR, including those specifically addressed by the NRC staff during the February 19, 2015, public meeting, are summarized below. Details of the specific questions or comments can be found in the documents referenced above.

- Questions or comments about the use decommissioning trust fund resources for expenses other than those defined in 10 CFR 50.2;
- Questions or comments about NRC being certain that there will be enough funds to decommission VY;
- Questions or comments about Entergy's financial liability concerning the decommissioning trust fund;
- Questions or comments regarding what happens to the decommissioning trust fund if Entergy files for bankruptcy;
- Questions or comments regarding the decommissioning trust fund and VY being a merchant plant;
- Questions or comments about the spent fuel remaining onsite without a permanent national high level waste storage facility;
- Questions or comments about dry cask integrity;
- Questions or comments on spent fuel management;
- Questions or comments about the safety of moving spent fuel from the spent fuel pool to dry casks;
- Questions or comments about whether there is reasonable assurance that sufficient funds are available to decommission the facility, and who manages those funds;
- Questions or comments about maintaining an offsite emergency plan until all spent fuel is placed in dry casks;
- Questions or comments about the description of the licensee's activities planned during decommissioning;

- Questions or comments about the decontamination of VY sooner (DECON – immediate dismantling) and not enter SAFSTOR (deferred dismantling);

- Questions and comments about the contents of the Generic Environmental Impact Statement on Decommissioning of Nuclear Facilities (NUREG-0586), and

- Questions or comments about the environmental impact of the decommissioning activities and the maintenance of the historical site assessment.

State, local, and public comments or questions that were considered by the NRC staff during its review of the PSDAR but were found to be outside of the NRC's regulatory purview or outside the scope of the NRC staff's environmental review of the PSDAR, as defined in 10 CFR 50.82(a)(4)(i), are summarized below.

- Questions or comments regarding the independent assessments from citizen oversight committees;

- Questions or comments regarding the appropriateness or reasonableness of allowing the licensee to pass maintenance and decommissioning costs to the customer;

- Questions or comments regarding the specific condition of various plant components, including the condition of the spent fuel in the spent fuel pool;

- Questions or comments regarding the specifics of the spent fuel disposal or greater than class C waste;

- Questions or comments regarding low level waste agreements between states;

- Questions or comments regarding the river water thermal pollution;

- Questions or comments regarding the licensee's purpose for the proposed decommissioning schedule;

- Questions or comments regarding the transportation of low level radioactive material and its ultimate storage;

- Questions on the condition of plant components (e.g., are they "highly radioactive,"), or their ultimate burial location;

- Questions or comments on the cost or benefit of the licensee using wet versus dry spent fuel storage;

- Question or comments relating to regulatory requirements that the licensee must meet (e.g., emergency planning requirements of 10 CFR 50.54(q));

- Questions or comments postulating conditions beyond the design of the nuclear plant, or where a nexus to safety is not clear, or describing events of a speculative nature;

- Questions or comments about safety reviews, inspections, or processes that are defined in current regulations or publically available documents;

- Questions or comments on the acceptability of current NRC regulations; and

- Questions or comments about activities that are regulated by the other entities.

NRC staff's review process of the PSDAR does not require a response to each of the comments submitted. However, the NRC identified a number of similar in scope comments that pertained to the same topic. Generic responses related to those topics are addressed in the enclosure to this letter.

The NRC staff reviewed the PSDAR and DCE against the requirements in 10 CFR 50.82(a). In addition, the NRC staff used the guidance in Regulatory Guide (RG) 1.185, Revision 1, "Standard Format and Content for Post-Shutdown Decommissioning Activities Report," dated June 2013 (ML13140A038), in conducting its review and concludes the following:

1. Section 2.0 of the PSDAR, "Description of Planned Decommissioning Activities," and the DCE provide the applicable information identified in Section C(1) of RG 1.185. The NRC staff's review found that the licensee adequately described the activities associated with the major periods or milestones related to the decommissioning, as required by 10 CFR 50.82(a)(4)(i) and consistent with RG 1.185. These periods included Preparations (for Dormancy), Dormancy, and Preparations for Decommissioning, Decommissioning, and Site Restoration.

2. Section 3.0 of the PSDAR, "Schedule of Decommissioning Activities," and the DCE provide the estimated dates for initiation and completion of major decommissioning activities, as required by 10 CFR 50.82(a)(4)(i) and consistent with Section C(2) of RG 1.185. The NRC staff finds that the schedule for decommissioning activities is adequate to achieve VY license termination within 60 years of permanent cessation of operations, as required by 10 CFR 50.82(a)(3).

3. Section 4.0 of the PSDAR, "Estimate of Expected Decommissioning and Spent Fuel Management Costs," and the DCE provide an estimate of the expected decommissioning costs for VY. By letter dated March 30, 2015 (ML15092A141), Entergy estimated the total decommissioning cost of VY to be approximately $817.22 million (in 2014 dollars), which is greater than the NRC minimum decommissioning cost of $622.8 million (in 2014 dollars). The NRC staff finds that Entergy's site-specific DCE and the cost of long-term storage of spent fuel for VY are not unreasonable, are described consistent with the guidance in R.G. 1.185, provide sufficient details associated with the funding mechanisms, and meet the requirements of 10 CFR 50.82(a)(4)(i).

4. Section 5.0 of the PSDAR, "Environmental Impacts," provides a discussion of the potential environmental impacts associated with VY decommissioning activities, as

identified by Section C(4) of RG 1.185. The PSDAR includes a comparison of potential environmental impacts from VY planned decommissioning activities with impacts from similar activities provided in NUREG-0586, "Final Generic Environmental Impact Statement on Decommissioning of Nuclear Facilities," August 1988 (GEIS) Volumes 1 and 2 of Supplement 1, dated November 2002 (ML023470327 and ML023500310). The GEIS and supplement include evaluations of the environmental impacts of decommissioning activities at nuclear power reactors necessary to reduce residual radioactivity to levels that allow for the termination of the NRC license. The licensee compared the VY facility to the reference facility in NUREG-0586 and found that the VY environmental impacts were all bounded by the analyses provided in NUREG-0586. After reviewing the licensee's comparison, the NRC staff finds that the potential environmental impacts associated with the VY decommissioning activities are bounded by the previously issued GEIS and its supplement, are described consistent with the guidance in RG 1.185, and meet the requirements of 10 CFR 50.82(a)(4)(i).

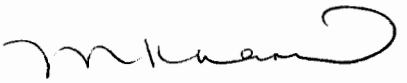
Based on this review, the NRC staff finds that the PSDAR contains the information required by 10 CFR 50.82(a)(4)(i), and is consistent with RG 1.185. In accordance with 10 CFR 50.82(a)(7), Entergy must notify the NRC, in writing, before performing any significant decommissioning activity inconsistent with, or making a significant schedule change from, the planned decommissioning activities or schedules described in the PSDAR, including changes that significantly increase the decommissioning costs.

The NRC will continue to conduct inspections at VY throughout decommissioning under Inspection Manual Chapter 2561, "Decommissioning Power Reactor Inspection Program," to ensure decommissioning activities are performed safely and in compliance with the Commission's rules and regulations, and the conditions of the license.

In accordance with 10 CFR Part 2, "Agency Rules of Practice and Procedure," a copy of this letter will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records component of NRC's ADAMS. ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html.

If you have any questions regarding this letter, please contact James Kim, at (301) 415-4125, or by e-mail at James.Kim@nrc.gov.

Sincerely,



Meena K. Khanna, Chief
Plant Licensing IV-2 and Decommissioning
Transition Branch
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-271

Enclosure:
Comments and Responses Associated with Vermont Yankee
Post-Shutdown Decommissioning Activities Report

cc w/encl: Distribution via Listserv

GENERAL RESPONSES TO COMMENTS ASSOCIATED WITH VERMONT YANKEE

POST-SHUTDOWN DECOMMISSIONING ACTIVITIES REPORT

NRC STAFF RESPONSES TO THE STATE OF VERMONT COMMENTS

Extensive comments were received from the State of Vermont and the complete package of comments can be viewed under ADAMS Accession No. ML15082A234. Some of the comments that the State submitted are addressed in the material referenced below. In addition, the State's comments on the PSDAR were attached to the State's Petition for Intervention and Request for Hearing filed on April 20, 2015 (ML15110A484) and relied on by the State in that adjudication. The State's PSDAR comments were also attached to and relied on in the petition that the State filed with the Commission on November 4, 2015, titled "Petition of the State of Vermont, the Vermont Yankee Nuclear Power Corporation, and Green Mountain Power Corporation for Review of Entergy Nuclear Operation, Inc.'s Planned Use of the Vermont Yankee Nuclear Decommissioning Trust Fund" (ML15309A758). Given that the issues are in litigation, the NRC staff will not address them here. The NRC staff did, however, file an answer to the April 20, 2015 Petition and its answer can be accessed through ADAMS (ML15135A523). The NRC staff's answer to the November 5, 2015 Petition can also be accessed through ADAMS (ML15341A361).

GENERAL RESPONSES

The NRC identified a number of similar comments that pertained to the same topic. Below are generic responses related to those topics:

Funding of Offsite EP

There is no NRC requirement for a licensee to provide funding to a State or Commonwealth and it is considered a matter between the State and Entergy.

Decommissioning Fund

The NRC regulations require licensees of nuclear power plants to submit data every 2 years, and annually for decommissioned plants on the status of funds to be put aside to cover the cost of decommissioning their nuclear plants (known as the Decommissioning Funding Status (DFS) Report). Any licensee for a plant that is within 5 years of the projected end of its operation, or where conditions have changed such that it will close within 5 years (before the end of its licensed life), or that has already closed (before the end of its licensed life), or that is involved in a merger or an acquisition shall submit this report annually. The NRC staff independently analyzes each of these reports to determine whether the agency has reasonable assurance that the licensees are providing sufficient funding for radiological decommissioning of the reactor when it is permanently shut down. This assurance is referred to as "decommissioning funding assurance (DFA)."

Section 4.0 of the PSDAR, "Estimate of Expected Decommissioning and Spent Fuel Management Costs," and the DCE provide an estimate of the expected decommissioning costs for VY. By letter dated March 30, 2015 (ML15092A141), Entergy estimated the total decommissioning cost of VY to be approximately $817.22 million (in 2014 dollars), which is greater than the NRC minimum decommissioning cost of $622.8 million (in 2014 dollars). The NRC staff finds that Entergy's site-specific DCE and the cost of long-term storage of spent fuel for VY are not unreasonable, are described consistent with the guidance in Regulatory Guide (RG) 1.185, Revision 1, "Standard Format and Content for Post-Shutdown Decommissioning Activities Report," dated June 2013 (ML13140A038), provides sufficient details associated with the funding mechanisms, and meets the requirements of 10 CFR 50.82(a)(4)(i).

SAFSTOR

The decommissioning approach that Entergy selected for VY is the SAFSTOR method.

SAFSTOR: After the plant is shut down and defueled, the facility is placed in a safe, stable condition and maintained in that state (safe storage). The facility is decontaminated and dismantled at the end of the storage period to levels that permit license termination. During SAFSTOR, a facility is left intact or may be partially dismantled, but the fuel is removed from the reactor vessel and radioactive liquids are drained from systems and components and then processed. Radioactive decay occurs during the SAFSTOR period, thereby reducing the quantity of contamination and radioactivity that must be disposed of during decontamination and dismantlement.

The NRC has strict rules governing nuclear power plant decommissioning, involving cleanup of radioactively contaminated plant systems and structures, and removal of the radioactive fuel. These requirements protect workers and the public during the entire decommissioning process and the public after the license is terminated.

In addition, 10 CFR 50.82(a)(3) requires decommissioning to be completed within 60 years of permanent cessation of operations.

Dry Cask

The NRC authorizes storage of spent nuclear fuel at an independent spent fuel storage installation (ISFSI) under a general license for VY. A general license authorizes Entergy to store spent fuel in NRC-approved casks at VY.

Entergy is required to perform evaluations of VY to demonstrate that the site is adequate for storing spent fuel in dry casks. These evaluations must show that the cask Certificate of Compliance conditions and technical specifications can be met, including analysis of earthquake events and tornado missiles. The licensee must also review its security program, emergency plan, quality assurance program, training program and radiation protection program, and make any necessary changes to incorporate the ISFSI at its reactor site.

An NRC-approved cask is one that has undergone a technical review of its safety aspects and been found to be adequate to store spent fuel at a site that has been evaluated by the licensee to meet all of the NRC's requirements in 10 CFR Part 72.

The NRC issues a Certificate of Compliance for a cask design to a cask vendor if the review of the design finds it technically adequate. The cask certificate is valid for up to 40 years from the date of issuance.

Spent Fuel Pool vs Dry Cask

Used (spent) radioactive nuclear fuel can be safely shielded with water, or steel and concrete. The NRC allows two types of storage methods for used nuclear fuel using these shielding methods: wet and dry storage. Wet storage (spent fuel pool) is an underwater storage and cooling facility for spent fuel elements that have been removed from the reactor. It involves placing the fuel assemblies under at least 20 feet of water. The water serves two purposes: it serves as a shield to reduce the radiation levels that people working above may be exposed to and it cools the fuel assemblies that continue to produce heat (called decay heat) for some time after removal.

In the late 1970's and early 1980's, the need for alternative storage began to grow when pools at many nuclear reactors began to fill up with stored used fuel. Utilities began looking at options for increasing spent fuel storage capacity. The first choice was to re-rack the SFPs, moving the stored assemblies closer together (high-density fuel storage). The NRC allowed high-density storage of spent fuel in pools originally designed to hold much smaller inventories (low-density, open rack storage). Plants started to use a dense storage configuration, with assemblies approximately 1 inch apart. In order to prevent the spent fuel from going critical, the fuel assemblies are partitioned off from each other in metal boxes whose walls contain neutron absorbing boron. These shields effectively create a thermal barrier around each waste assembly. Eventually, SFPs reached their capacity.

Dry cask storage allows spent fuel that has already been cooled in the spent fuel pool for at least 5 years to be surrounded by inert gas inside a container called a cask and stored on a concrete pad. The casks are typically steel cylinders that are either welded or bolted closed. The steel cylinder provides a leak-tight containment of the spent fuel. Each cylinder is surrounded by additional steel and concrete to provide radiation shielding to workers and members of the public. The fuel is kept cool by air entering vents on the side of the container and circulating around the outside of the steel canister. Each canister is designed to hold approximately 2-6 dozen spent fuel assemblies. Water and air are removed, the canister is filled with inert gas, sealed, and tested for leaks.

The NRC regulates spent fuel through a combination of regulatory requirements, licensing; safety oversight, including inspection, assessment of performance; and enforcement; operational experience evaluation; and regulatory support activities. The NRC's regulations are found in Chapter I of Title 10, "Energy", of the *Code of Federal Regulations*. Chapter I is divided into Parts 1 through 199. Part 72, "Licensing Requirements for the Independent Storage of Spent Nuclear Fuel and High Level Radioactive Waste, and Reactor-Related Greater than Class C Waste," rules spent fuel storage. The NRC periodically inspects the design, fabrication, and use of dry cask storage.

By COMSECY-13-0030, dated November 12, 2013 (ML13273A601 and ML13273A628), the NRC staff concluded that the expedited transfer of spent fuel to dry cask storage would provide only a minor or limited safety benefit.

By SRM COMSECY-13-0030, dated May 23, 2014 (ML14143A360), the Commission approved the NRC staff's recommendation that this Tier 3 Japan lessons learned activity be closed and that no further generic assessments be pursued related to possible regulatory actions to require the expedited transfer of spent fuel to dry cask storage.

Exemptions to the Planning Standards of 10 CFR 50.47 and Requirements of Appendix E to 10 CFR Part 50

By letter dated March 14, 2014, "Request for Exemptions from Portions of 10 CFR 50.47 and 10 CFR 50, Appendix E" (ML14080A141), Entergy requested exemptions from specific EP requirements for VY. These requested exemptions would be implemented 15.4 months after the reactor is shut down (estimated as April 2016). The NRC staff made a request for additional information (RAI) in a letter dated August 19, 2014, "Vermont Yankee Nuclear Power Station - Request for Additional Information Regarding Exemption from the Requirements of 10 CFR 50.47 and Appendix E (TAC No. MF3614)" (ML14192A835). In a letter dated August 29, 2014, "Request for Exemptions from Portions of 10 CFR 50.47 and 10 CFR 50 Appendix E - Supplement 1 (TAC No. MF3614)" (ML14246A176), Entergy provided responses to the RAI. The NRC staff found the application complete and the licensee's associated technical justification provided a basis for the Commission's consideration of the requested exemptions. The exemptions requested by Entergy, and the NRC staff's review of this information, are detailed in SECY-14-0125, dated November 14, 2014 (ML14227A711).

In Attachment 2 to the March 14, 2014, letter, Entergy provided the accident analyses associated with Design-Basis Accidents (DBAs) and beyond DBAs as a basis for justifying the request for approval of the VY Permanently Defueled Emergency Plan (PDEP). Entergy's requested exemptions included analyses to show that the radiological consequences of DBAs will not exceed the limits of the Environmental Protection Agency's (EPA's) protective action guides (PAGs) at the exclusion area boundary 17 days after shut down. Additionally, Entergy performed analyses for beyond DBA loss of spent fuel pool (SFP) inventory events, including an event that has uncovered spent fuel with no air cooling. In the unlikely event that cooling to the spent fuel is not possible, the analysis shows that 15.4 months after shut down (estimated as April 2016), 10 hours would be available from the time the fuel is uncovered until it reaches a temperature of 900 degrees Celsius to initiate mitigative actions consistent with plant conditions and, if necessary, for offsite authorities to employ their comprehensive emergency management plan (CEMP) to take protective actions. In addition, significant decay of short-lived radionuclides that would occur over the 15.4 months from shut down provides assurance in other ways. The time available to initiate mitigative actions and the significant decay of short-lived radionuclides would continue to increase beyond 15.4 months after shutdown providing further assurance. As indicated by the results of research conducted for NUREG-1738, "Technical Study of Spent Fuel Pool Accident Risk at Decommissioning Nuclear Power Plants" (ML010430066), and more recently, NUREG-2161, "Consequence Study of a Beyond-Design-Basis Earthquake Affecting the Spent Fuel Pool for a U.S. Mark I Boiling Water Reactor" (ML14255A365), while other consequences can be extensive, accidents from SFPs with significant decay time have little potential to cause offsite early fatalities, even if the existing offsite radiological emergency plan requirements were relaxed.

In Attachment 1 to the March 14, 2014, letter, Entergy furnished information to supplement its requested exemptions concerning its SFP inventory makeup strategies. Several sources of

makeup to the pool are available, such as the service water (SW) system, which has redundant pumping capability and power supplies to ensure alternative fuel pool makeup function. Additionally, there are electric-driven and diesel-driven fire pumps that can supply makeup water to the SFP via the SW system or the fire water system. All sources discussed above take suction from the Connecticut River. VY also has an engine-driven emergency makeup pump capable of taking suction from the Cooling Tower No. 2 deep basin to provide an alternate source of makeup water to the SFP. There are multiple ways to add makeup water to the SFP with or without entry to the refuel floor. In a letter dated April 24, 2014, "Technical Specifications Proposed Change No. 307, Revision to Mitigation Strategy License Condition and Technical Specification Administrative Controls for Permanently Defueled Condition - Supplement 1 (TAC No. MF 2991)" (ML14119A099), Entergy withdrew its request to remove License Condition 3.N, Mitigation Strategy License Condition, from the VY Renewed Facility Operating License. This license condition requires VY to maintain its SFP inventory makeup strategies, as discussed above.

In the unlikely situation that a radiological release is expected, elements of the revised EP would facilitate the ability of offsite authorities to take protective actions under a CEMP. The licensee must still maintain an ability to determine if a radiological release is occurring, and if a release is occurring or expected to occur, promptly communicate that information to offsite authorities.

The NRC staff reviewed Entergy's requested exemptions against the requirements in 10 CFR 50.47, Appendix E to 10 CFR Part 50, and 10 CFR 72.32, "Emergency Plan." The review considered the status of the facility, which will be permanently shut down and defueled at the time when the exemptions will be implemented and the low likelihood of any credible accident resulting in radiological releases requiring offsite protective measures. The NRC staff based its evaluation of the Entergy request for exemptions from EP requirements on site-specific analyses provided by the licensee. The NRC staff verified Entergy's analyses and its calculations. The analysis provided reasonable assurance that in granting the requested exemptions to Entergy: (1) an offsite radiological release will not exceed the EPA's PAGs at the site boundary for a DBA; and (2) in the unlikely event of a beyond DBA resulting in a loss of all SFP cooling, there is sufficient time to initiate appropriate mitigating actions and, if a release is projected to occur, there is sufficient time for offsite agencies to take protective actions using a CEMP to protect the health and safety of the public.

Consistent with the June 17, 1993, memorandum of understanding (MOU) between the NRC and the Federal Emergency Management Agency (FEMA), contained in Appendix A to 44 CFR 353, the NRC staff has discussed and coordinated its review of requests for exemptions to EP regulations with FEMA. As part of the NRC staff's evaluation of the recent EP exemptions requested for the Kewaunee Power Station, the NRC staff provided FEMA with a copy of SECY-14-0066, "Request by Dominion Energy Kewaunee, Inc. for Exemptions from Certain Emergency Requirements," dated June 27, 2014 (ML14072A257), and the opportunity to ask questions, obtain clarification, and comment on the paper, prior to the Commission receiving it for review. FEMA provided the following comments in response to the EP exemptions proposed in SECY-14-0066:

> FEMA is not taking a position on the technical arguments presented by the licensee or the NRC's assessments. FEMA recognizes the NRC's role to analyze the possibility of incidents that could result in offsite dose impacts.

> FEMA acknowledges that individual states and local governments have the primary authority and responsibility to protect their citizens and respond to disasters and emergencies. The exemption, if issued, could create a transitional environment for off-site emergency planners in how they consider radiological hazards. FEMA will continue to support offsite organizations as they adjust their plans, capabilities, and resources to the changing radiological threat. Among the resources available to support FEMA stakeholders during the transition process include, but are not limited to, the National Preparedness System guidance materials, the Federal Radiological Preparedness Coordinating Committee, and assistance from FEMA Headquarters and Regional Staff.

The NRC staff considered FEMA's comments as part of SECY-14-0066 and believes that the technical and safety basis for the exemptions demonstrate reasonable assurance in the two areas mentioned above.

FEMA was offered the opportunity to comment on the draft VY SECY paper. In response, FEMA indicated that they had no further comments other than the inclusion of the statement above from SECY-14-0066.

The decommissioning facility, at the time the exemptions are granted, would pose significantly less of a radiological risk to public health and safety than an operating power reactor, which should result in a straightforward transition to a more streamlined CEMP. Aspects of existing offsite radiological emergency preparedness plans may remain in place, at the State's discretion, before completion of any adjustments to State and local CEMPs that are appropriate for the reduced radiological risk and can be adopted to minimize burden on the State and local governments. VY will still be required to maintain an onsite EP, which would provide for the notification of, and coordination with, offsite organizations commensurate with the approved exemptions.

The exemption would not affect the authority that FEMA has under its regulations in 44 CFR Chapter I, "Federal Emergency Management Agency," for overall emergency management and assistance to State and local response organizations, nor would it affect the responsibilities of State and local governments to establish and maintain CEMPs. The NRC would base its finding of reasonable assurance on its review of licensee onsite emergency preparedness and would not require a finding from FEMA on the adequacy of State and local CEMPs. Under its role as described in the National Response Framework, the NRC remains ready to support FEMA by providing it and State and local governments technical advice related to the safety and security of operations at the plant.

In a letter dated June 12, 2014, "Vermont Yankee Permanently Defueled Emergency Plan and Emergency Action Level Scheme" (ML14168A302), Entergy also requested a license amendment to revise its emergency plan, implementing changes that reflect the permanently shut down and defueled status of VY based on the NRC granting the requested exemptions from portions of 10 CFR 50.47 and 10 CFR 50 Appendix E. This included the exemption to the emergency planning zone and the exemption to increase the notification time from 15 minutes to 60 minutes are contained in SECY-14-0125. The revised EP also includes other changes consistent with the proposed exemptions discussed in SECY-14-0125.

By SRM-SECY-14-0125, dated March 2, 2015 (ML15061A516), the Commission approved the NRC staff's recommendation to grant Entergy's request for exemptions from certain EP requirements of 10 CFR 50.47(b) and Appendix E to 10 CFR Part 50 for Vermont Yankee to be implemented as stipulated in SECY-14-0125, dated November 14, 2014 (ML14227A711).

The NRC staff approved the requested exemptions effective as of April 15, 2016. The exemptions would remove the requirements to address hostile action in the VY PDEP, to maintain an emergency planning zone and an emergency operations facility (EOF), and to have an evaluation of the adequacy of offsite radiological emergency response by FEMA.

The Commission recently approved similar exemption requests for the Kewaunee Power Station; Crystal River Unit 3 Nuclear Generating Plant; and San Onofre Nuclear Generating Station, Units 1, 2, and 3; (ML14261A223, ML15058A906, and ML15082A204, respectively).

Generic Environmental Impact Statement (GEIS)

The NRC staff performed a review of the environmental impacts of license renewal on eventual decommissioning in Section 7.0 of NUREG-1437, Supplement 30, "Generic Environmental Impact Statement for License Renewal of Nuclear Plants: Regarding Vermont Yankee Nuclear Power Station - Final Report," Volume 1 and 2, dated August 2007 (ML072050012 and ML072050013.

Environmental impacts from the activities associated with the decommissioning of any reactor before or at the end of an initial or renewed license are evaluated in the "Generic Environmental Impact Statement for Decommissioning of Nuclear Facilities (Decommissioning GEIS): Supplement 1, Regarding the Decommissioning of Nuclear Power Reactors," NUREG-0586, Supplement 1, dated November 2002 (ML023470304 and ML023470323). The NRC staff's evaluation of the environmental impacts of decommissioning presented in NUREG-0586, Supplement 1, identifies a range of impacts for each environmental issue.

The incremental environmental impacts associated with decommissioning activities resulting from continued plant operation during the renewal term are discussed in the *Generic Environmental Impact Statement for License Renewal of Nuclear Plants* (License Renewal GEIS), NUREG-1437, Volumes 1 and 2 (NRC 1996, 1999, and 2013). The License Renewal GEIS includes a determination of whether the analysis of the environmental issue could be applied to all plants and whether additional mitigation measures would be warranted. Issues were then assigned a Category 1 or a Category 2 designation. As stated in the License Renewal GEIS, Category 1 issues are those that meet all of the following criteria: (1) the environmental impacts associated with the issue have been determined to apply either to all plants or, for some issues, to plants having a specific type of cooling system or other specified plant or site characteristics, (2) A single significance level (i.e., small, moderate, or large) has been assigned to the impacts (except for collective offsite radiological impacts from the fuel cycle and from high-level waste and spent fuel disposal), and (3) mitigation of adverse impacts associated with the issue has been considered in the analysis, and it has been determined that additional plant-specific mitigation measures are likely not to be sufficiently beneficial to warrant implementation.

For issues that meet Category 1 criteria, no additional plant-specific analysis is required unless new and significant information is identified.

Category 2 issues are those that do not meet one or more of the criteria for Category 1, and, therefore, additional plant-specific review of these issues is required. There are no Category 2 issues related to decommissioning in the License Renewal GEIS.

Based on information in the License Renewal GEIS, the Commission found that

> Decommissioning would have some short-term socioeconomic impacts. The impacts would not be increased by delaying decommissioning until the end of a 20-year relicense period, but they might be decreased by population and economic growth.

Therefore, the NRC staff concluded that there would be no socioeconomic impacts associated with decommissioning following the license renewal term beyond those described in the GEIS.

In the PSDAR, Entergy states, in part, the following:

> Decommissioning of VYNPS is expected to result in negative socioeconomic impacts. As VYNPS transitions from an operating plant to a shutdown plant and into the different phases of decommissioning, an overall decrease in plant staff will occur. The lost wages of these plant staff will result in decreases in revenues available to support the local economy and local tax authorities. Some laid-off workers may relocate, thus potentially impacting the local cost of housing and availability of public services.

Section 4.3.12 of the Decommissioning GEIS (NUREG-0586) evaluated changes in workforce and population, changes in local tax revenues, and changes in public services. The evaluation also examined large plants located in rural areas that permanently shut down early and selected the SAFSTOR option. The Decommissioning GEIS determined that this situation is the likeliest to have negative impacts. The Decommissioning GEIS concluded that socioeconomic impacts are neither detectable nor destabilizing and that mitigation measures are not warranted. Therefore, Entergy concludes that the impacts of VYNPS decommissioning on socioeconomic impacts are bounded by the Decommissioning GEIS.

ADDITIONAL INFORMATION

Additional information can be found in the following documents:

Backgrounder on Decommissioning Nuclear Power Plants: www.nrc.gov/reading-rm/doc-collections/fact-sheets/decommissioning.html

Frequently Asked Questions About Reactor Decommissioning: www.nrc.gov/waste/decommissioning/faq.html

If you have any questions regarding this letter, please contact James Kim, at (301) 415-4125, or by e-mail at James.Kim@nrc.gov.

Sincerely,

/RA/

Meena K. Khanna, Chief
Plant Licensing IV-2 and Decommissioning
Transition Branch
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-271

Enclosure:
Comments and Responses Associated with Vermont Yankee
Post-Shutdown Decommissioning Activities Report

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Nuclear commission OKs Vermont Yankee decommissioning plans

By DAVE GRAM - *Associated Press - Thursday, February 4, 2016*

MONTPELIER, Vt. (AP) - The federal Nuclear Regulatory Commission, despite objections voiced by state officials, is giving positive reviews to the decommissioning plans developed by the owner of the closed Vermont Yankee nuclear plant.

"We do not have any concerns or objections to the decommissioning road map that Entergy has developed," NRC spokesman Neil Sheehan said Thursday.

He made the comment shortly after the NRC made public a letter it had written to New Orleans-based Entergy Corp. that touched on several aspects of managing the Vernon reactor post-shutdown.

Vermont Yankee closed permanently 13 months ago after nearly 43 years of operation, with Entergy officials saying it was no longer economically viable in a New England energy market that had come to be dominated by generators using cheap natural gas.

Entergy plans to mothball the plant, likely until the second half of this century, before dismantling it in hopes the fund set aside for that work - recently valued at about $665 million - grows and plant components become less radioactive as the years pass.

Fights have erupted between the state and Entergy over management of the fund, with the state suing over the company's use of the fund to pay ongoing expenses including property taxes, and over the company's plan to cut funding for emergency planning in the plant's emergency evacuation zone. That zone extends 10 miles out from the plant, in Vermont's southeast corner, into neighboring communities in Vermont, Massachusetts and New Hampshire.

In the letter released Thursday, the NRC essentially said it did not find any problems with the plant's decommissioning activities. The company's estimates of the total cost of various aspects of decommissioning, $817 million in 2014 dollars, "are not unreasonable," the agency said.

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The schedule Entergy set out for the various phases of decommissioning is “adequate to achieve VY license termination within 60 years of permanent cessation of operations,” meaning the deadline for the work getting done would be in the mid-2070s.

Vermont Yankee spokesman Martin Cohn said plant officials were “proud” of the results they had gotten from the NRC.

“We met the NRC’s requirements and provided all the information” the agency wanted, he said.

The commissioner of the state Department of Public Service, Christopher Recchia, said litigation over Entergy’s plan to cut emergency funding and to use money from the decommissioning fund for ongoing operating expenses was pending.

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- CHRIS CHRISTIE
- JEB BUSH
- OTHER

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12 October 2015

Bill Christiansen
District Director
Office of Congressman Darrell Issa
1800 Thibodo Road
Suite 310 Vista, CA 92081

RE: Consolidated Interim Storage

VIA EMAIL: Bill.Christiansen@mail.house.gov

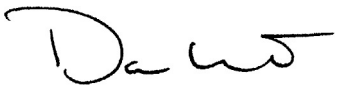
Dear Bill,

Many thanks for meeting with us Monday (October 5th) to discuss the options for moving the spent fuel from San Onofre as promptly as possible. As we discussed, the San Onofre Community Engagement Panel (CEP) has devoted much of its agenda over the last two years to this problem. In recent months we have focused heavily on the opportunity created by private companies that are offering consolidated interim storage (CIS). We are in the middle of a major effort to do the spadework needed to understand and expand local political support for this option. We are also learning about the large number of practical details that need to be settled before the option becomes a reality—for example, planning and coordination of transportation routes. I attach a short memo that reflects some of the current thinking on the CEP about how those details might be sorted, including key roles for action in Sacramento.

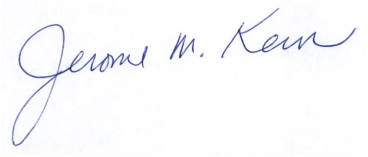
It is encouraging to see Congressman Issa's support for new legislation to advance

CIS. If there is anything that we or other members of the CEP can do to help as you elaborate and build support for that legislation, please do let us know. There is a large and growing common interest in finding ways to move the spent fuel canisters from the San Onofre site to better locations inland.

Yours Sincerely,



David Victor
Chairman,
Community Engagement Panel
Professor, UC San Diego



Jerry Kern
Member,
Community Engagement Panel
Councilman, City of Oceanside

Design and Prototype Fabrication of Railcars for Transport of High-Level Radioactive Material; ATLAS Kickoff Meeting

Mark A. Denton
Senior Project Manager
Washington, D.C.
September 10, 2015

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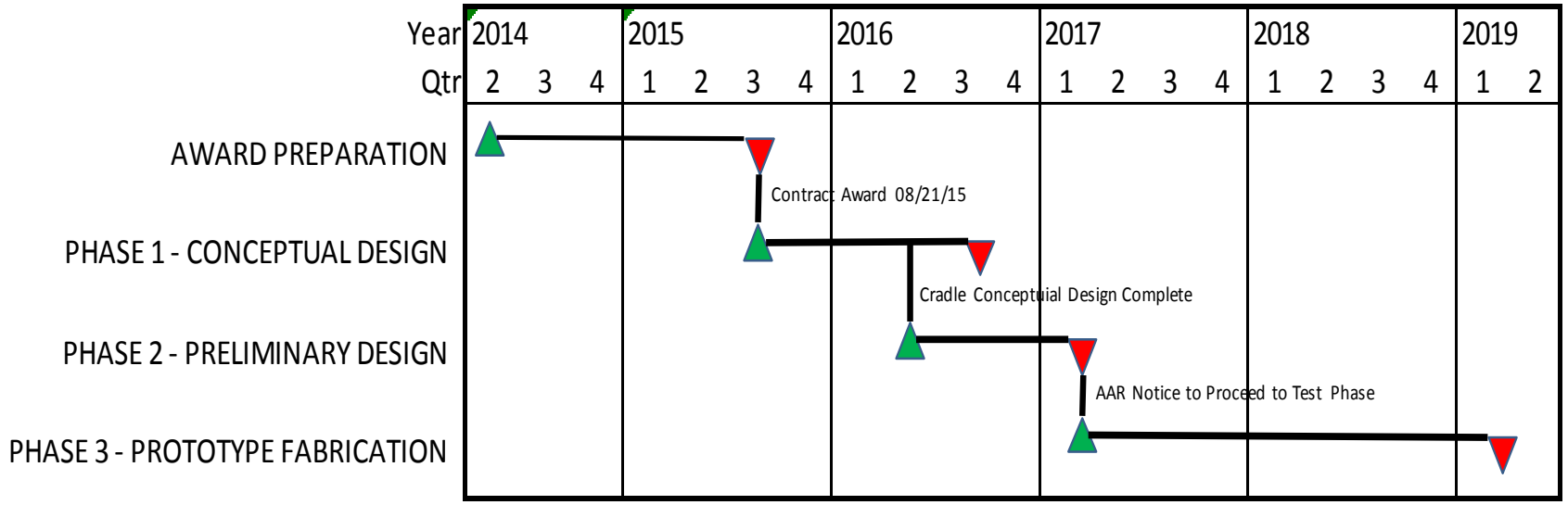
Agenda

- Safety Message
- Overview
- Phase 1 – Conceptual Design
- Phase 2 – Preliminary Design
- Phase 3 – Prototype Fabrication

Overview
Contract & SOW Assignments

- **No exceptions taken to contract's Statement of Work (SOW)**
- **No exceptions taken to contract's terms and conditions**
- **SOW has 3 phases, now under single multi-year contract**
  - **Phase 1 - Mobilization and Conceptual Design**
    - AFS performing cradle and attachment conceptual design
    - AREVA-TN & AFS performing general loading procedure generation
    - AFS, AREVA-TN, KASGRO performing functional and operational requirements
    - AFS, KASGRO, SN3 performing oversight and peer review
  - **Phase 2 - Preliminary Design – KASGRO, TTCI & AFS**
  - **Phase 3 - Prototype Fabrication and Delivery (also includes detailed design) – KASGRO & AFS**
- ***Note: High Level Radioactive Material (HLRM) = Spent Nuclear Fuel (SNF) + High Level Waste (HLW)***

Overview
Project Schedule

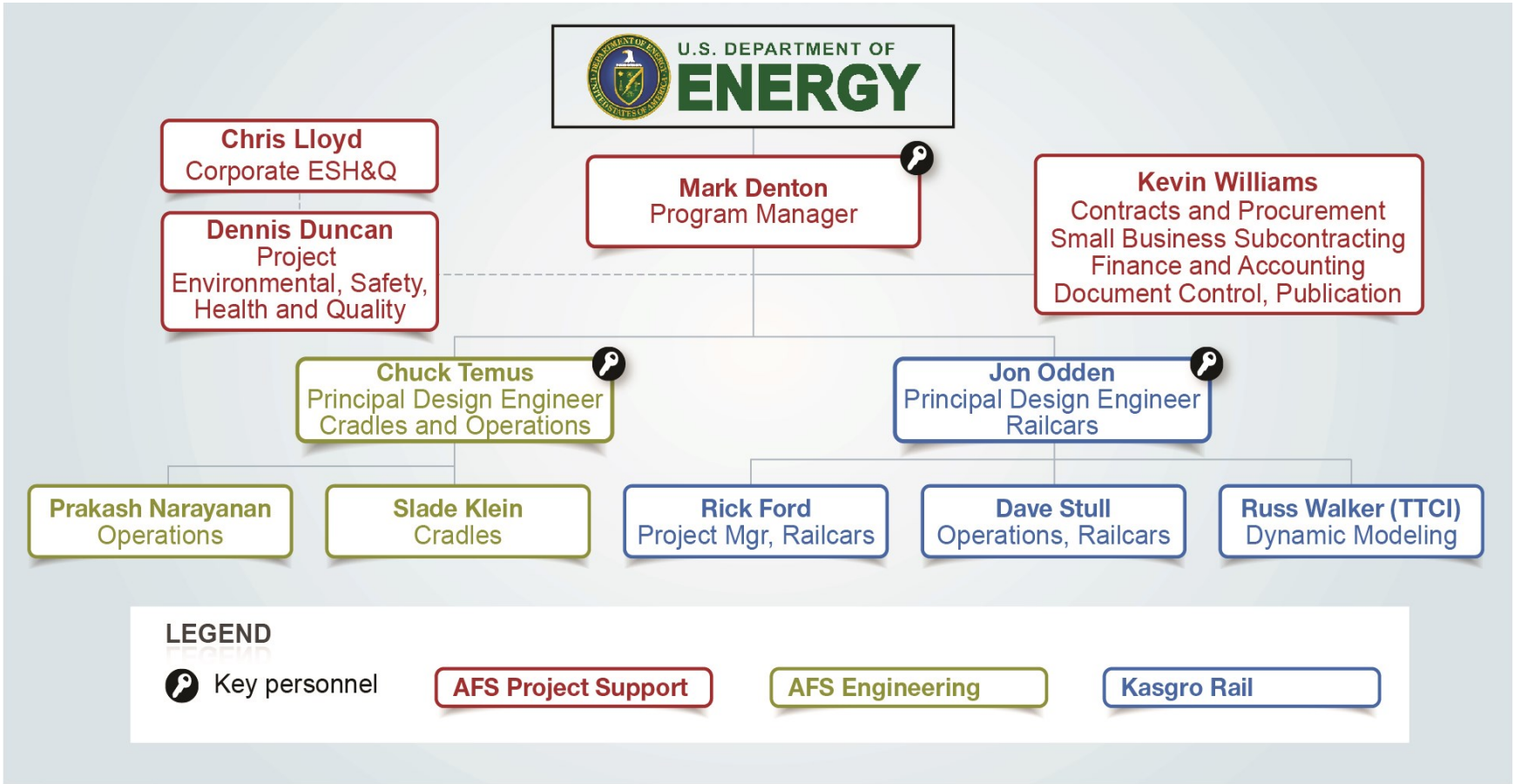


Overview
Primary Team Members

- AREVA Federal Services (AFS) – project integrator & management oversight, cradle conceptual designs of cask cradles and attachment mechanisms
- AREVA-TN (aka Transnuclear) – cask-to-cradle-to-ATLAS railcar loading procedures, peer review
- KASGRO Rail – railcar attachment overview, railcar conceptual design, detail railcar designs including finite modeling, and prototype fabrication
- Transportation Technology Center, Inc (TTCI) – dynamic modeling of railcar designs and S-2043 submittal expertise
- Stoller Newport News Nuclear (SN3) – as performed proof of concept for U.S. Navy's cask cradle, performing peer review of cradle design and loading procedures

Overview
Project Organization

ATLAS HLRM Cask Railcar Project Team



Overview KASGRO Rail

- Privately-owned small business located in New Castle, PA
  - Approximately 70 employees; non-union shop
  - Fabricator of heavy duty railcars
  - Lessor of heavy duty railcars; fleet of approximately 400 railcars
- Association of American Railroads (AAR) QA Program certified to M-1003
- Fabricator of only AAR S-2043 approved railcar – U.S. Navy M-290 Cask railcar
- KASGRO Rail was awarded the first of multiple contracts to design and build railcars to transport spent nuclear fuel from U.S. Navy vessels to temporary storage facilities. KASGRO Rail designed and built for the U.S. Navy a railcar specifically for the transport of spent nuclear fuel casks

Overview
The Association of American Railroads

- AAR is a trade association
- AAR represents the railroad industry before Congress, regulatory agencies, etc.
- AAR collects and distributes railroad statistical data
- AAR provides public affairs services and activities
- AAR sets industry standards such as S-2043
- Primary mission of AAR subsidiaries, Transportation Technology Center Inc. (TTCI) and RAILINC.
  - Lead railroad research and evaluate new technologies (TTCI)
  - Provide railroad information technology services (RAILINC)



ASSOCIATION OF AMERICAN RAILROADS

TTCI

RAILINC

Overview
Plans for Project Compliance

- Plans are living documents updated with each project phase
- Project Management Plan – contract and deliverables
- Engineering Work Plan – design team roles, responsibilities, and Design Basis Requirements Document (DBR) development
- DBR Document – used to ensure compliance; specific design requirements for prototype railcars and how fulfilled; to also include functional and operational requirements
- AAR S-2043 Design Submittal Package Plan/Format – to ensure needed AAR S-2043 data collected properly and timely
- Quality Assurance Plan – quality assurance requirements to establish quality control process for design and fabrication
  - Single document incorporates AAR S-2043, 10CFR71 (cradles) & AFS QAP
- Engineering Oversight Plan – AFS engineering oversight of subcontractors during design and fabrication activities

Phase 1
Conceptual Design Cradles & Attachment

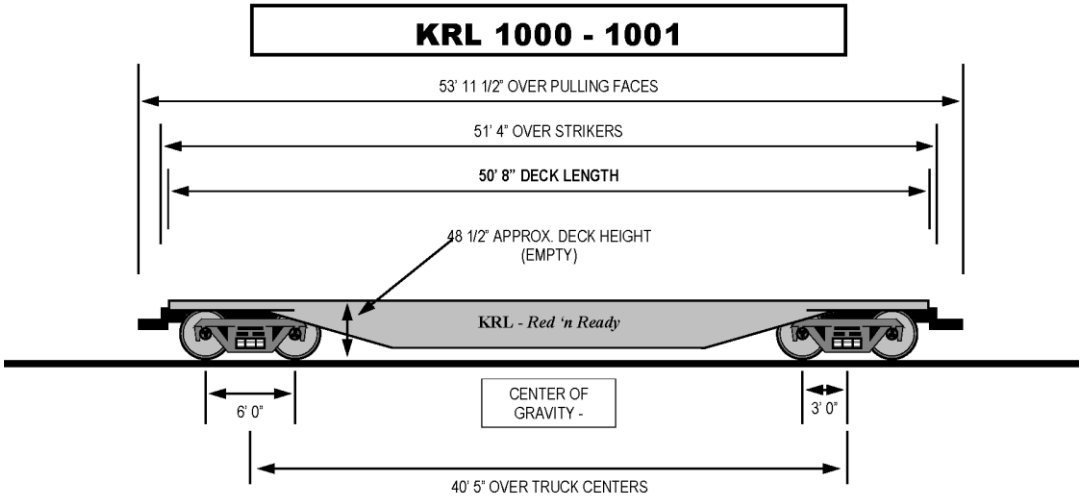
- Gather detailed cask load/dimension information from cask suppliers and public sources/licenses
- Fifteen cask designs to be evaluated
  - Goal to use as few cradle designs as possible with standardized cradle to railcar attachment points/mechanisms
- AFS to develop conceptual design of cradles and cradle-to-railcar-attachment system
- Determine bounding conditions for conceptual cradle designs for railcar design and modeling; conceptual design packages delivered
- Generate procedures for cask-to-cradle-to-railcar loading
- Exploring 10CFR Part 71 requirements – will advise

Phase 1
Conceptual Design ATLAS Cask Railcar

- **KASGRO to lead conceptual design**
- **Overall ATLAS cask railcar design goals is make as reasonably railcar as reasonably short as possible**
  - **Allows turning radius of ATLAS car to have greatest level of meeting AAR "Plate C" sizing requirement for oversized casks (~144" diameter) in both railcar length and height**
  - **Preference of flat railcar deck vs depressed deck, but still undetermined**
    - Allows placement/removal of impact limiters on ATLAS railcar
- **Use of U.S. Navy's M-290 railcar's basic design allows conceptual and detail design activities to be reduced**
  - **Major railcar components already designed, specifications developed, finite and dynamic modeling performed**
  - **Reduces project risk for AAR non-acceptance**

Phase 1
Conceptual Design Buffer Railcar

- **Modification of standard KASGRO flat deck railcar design**
  - **Utilize same trucks and wheelsets as ATLAS railcar for proper tracking**
  - **Will have tie-down structure or rails for securing needed cask/cradle handling equipment**
  - **Length to be a balance between consist tracking, handling equipment carriage requirements and dose reduction**



Phase 1
Cask Loading Procedures

- **Developed by AREVA-TN with SN3 assistance based on:**
  - **Actual operating experience with various transport and transfer casks**
  - **Actual transportation via rail experience**
  - **Actual experience with U.S. Navy's AAR S-2043 M-290 railcar cask/cradle/railcar trials**
  - **DOE Advisory and Assistance Task Order 17 – Cask Design Study Final Report (Report No. RPT-3011681-000)**
- **Develop procedure for the following anticipated loading operations:**
  - **Loading of a cask onto a cradle**
  - **Placement of cask/cradle directly onto railcar**
  - **Up/down-ending of cask, as required**
  - **Installation of cask impact limiters, as required**
  - **Moving cask/cradle onto heavy haul vehicle, then moving cask/cradle from heavy haul vehicle to railcar; use of facility crane with railcar**
  - **Removal of cask/cradle from railcar**

Phase 1
Functional & Operational Requirements

- **A document listing the functional and operational requirements of the cask car and buffer car designs. Will include:**
  - **AAR S-2043 limits on loads, speeds, dimensions, component requirements, etc.**
  - **Any additional identified limitations discovered during conceptual design**
  - **Specific constraints and limitation such as function, dimensions, speed, weight, center of gravity, and other specifications**
  - **Material and component requirements and specifications**
  - **Will collaborate with the cask vendors for the casks identified in Attachment A of the SOW**
  - **Regulatory requirements and industry standards**
- **DBR to include railcar functional and operational requirements**

Phase 2
Preliminary Railcar Design

- **Preliminary design package conforming to Section 4.7 of S-2043, and submitted to AAR**
  - Component & assembly drawings
  - Parts lists
  - Non-structural analysis
  - Brake system design
  - Safety monitoring system design
  - Finite modeling for structural analysis
  - Dynamic modeling & load simulation with resulting data package
  - Ballast design
  - Railcar clearance
  - Component classification
  - Procurement specification
  - Detail drawing package
- **All assisted by use of M-290 railcar basis**

Phase 2
Preliminary Railcar Design

- Deliver Phase 2 design package (above and previous page)
- Generate and deliver required components, procurement specifications, qualified vendor listing, vendor drawings/cut sheets, general sources of supply
- Generate fabrication inspection requirements and plan
- Generate and deliver ATLAS cask and buffer railcar testing phase cost estimate and schedule; includes prototype fabrication, railcar testing and AAR approval process
- Generate and deliver cost estimate and schedule for production run of 120 ATLAS cask railcars and 60 buffer railcars
- Receive notice to proceed to prototype fabrication

Phase 2
Interface With AAR

- **Determined during development of AAR S-2043 Design Submittal Package Plan/Format**
  - **Review with AAR representative(s) prior to start of preliminary design to ensure understanding of objectives**
  - **Periodic briefings with AAR representative(s) for submission package status and review scheduling**
  - **Formal briefing with AAR upon submission of S-2043 design package**
  - **Status and follow-up support to AAR as needed during review process**
  - **Celebration of receipt of notice to proceed to prototype fabrication**
- **A team process**
  - **KASGRO to perform lead role**
  - **TTCI to provide advisement and format guidance**
  - **AFS to perform oversight and track project timing/schedule of design activities, modeling activities, submission format**

Phase 3
Material Procurement

- Anticipate use of KASGRO M-290 major railcar component supply chain
- Long-lead items include
  - Body plates and railcar frame steel
  - Suspension springs
  - Truck assemblies (build and exercised with wheelsets)
  - Wheel sets
  - Cushion units and couplers
  - Truck mounted brakes
  - Bolsters
  - Electronic / Pneumatic Brake System
- Order at risk if necessary due to market conditions
- All material subject to KASGRO receipt inspection and AFS QA oversight
- AFS & KASGRO Receipt inspections tied to contract payment milestones

Phase 3 Fabrication

- Fabrication of ATLAS cask railcar and buffer railcar to utilize KASGRO detailed fabrication drawings/process travelers, in-house inspection plans, tooling and fixtures
- Fabrication inspection and testing includes
  - Non-Destructive Examination (NDE) via radiographs
  - Wheel-set / truck assembly exercise
  - Jack-lug proof test
  - Brake tests (in-house and AAR witnessed)
  - Final inspection
- Delivery of railcars to AAR's TTC site, Pueblo, CO
- Delivery of final as-built documentation package

THE LEADER IN ENERGY & ENVIRONMENTAL POLICY NEWS

NUCLEAR POLICY:

DOE team crafting strategy for moving, storing reactor waste

Hannah Northey, E&E reporter

Published: Tuesday, October 20, 2015

The Obama administration is preparing plans for transporting used reactor fuel to temporary storage sites and creating a federal corporation to oversee the process, according to sources and documents obtained by *Greenwire*.

The Department of Energy has assembled a team of a dozen or so staffers to "lay the groundwork" for transporting spent reactor fuel from closed nuclear power plants to not-yet-identified interim storage sites, team leaders said in a Sept. 2 presentation to the Office of Nuclear Energy.

The goal is to build a "foundation" for the organization that would oversee waste disposal, documents say.

The administration launched the "Nuclear Fuel Storage and Transportation Planning Project" three years ago under a strategy to build a pilot interim storage site by 2021, a larger interim site by 2025 and a new geologic repository by 2048.

The Sept. 2 presentation provides a new window into those plans.

Andrew Griffith, DOE's associate deputy assistant secretary for fuel cycle technologies in the Office of Nuclear Energy, will lead the effort. He'll report to John Kotek, the acting assistant secretary of nuclear energy, who's being vetted today by the Senate Energy and Natural Resources Committee for the full-time appointment (***E&E Daily***, Oct. 19).

Other key team members: Mark Nutt, a nuclear engineer at Argonne National Laboratory; Rob Howard, a senior project engineer at the Oak Ridge National Laboratory; and Melissa Bates, a DOE engineer who works on nuclear fuels and transportation.

In the near term, the group has been tasked with developing options for interim storage, establishing a database to characterize material that would go into the new waste management system, finding ways for the public to comment on storage and transportation options, and preparing for a pilot interim waste-storage facility.

DOE lists 13 closed nuclear plants where almost 18,000 used nuclear fuel assemblies are being held in dry storage casks -- large concrete vessels -- waiting for final disposal.

The department has expressed interest in moving forward with interim storage as a way to stave off costly lawsuits DOE faces for failing to uphold 1980s agreements to take possession of waste piling up at reactors across the country. Damages could be more than $20 billion by 2020 and up

to $500 million annually after 2020, according to the Nuclear Energy Institute.

There have been rumors about the DOE team and the administration's focus on finding temporary solutions for the country's 70,000 metric tons of spent nuclear fuel circulating among industry officials for several weeks.

One industry source praised DOE for its effort to find storage options for reactor fuel after disassembling the Yucca Mountain, Nev., repository program five years ago.

"Since 2010, the department hasn't done a great deal on the back end of the fuel cycle, when Yucca was halted," the source said. "This is finally seeing some action on their part to move forward. While not with Yucca Mountain, which the industry, of course, would like ... they're beginning to plan and think about consolidated storage."

The presentation raises the question of whether DOE is considering proposals for interim storage in Texas and New Mexico, the source said.

Waste Control Specialists, a Dallas-based company whose former owner, billionaire Harold Simmons, once dubbed President Obama the most "dangerous man in America," unveiled plans earlier this year to build the nation's first private, temporary storage site for spent reactor fuel in arid West Texas.

And in New Mexico, Holtec International Inc. has proposed an underground storage facility to store casks of used fuel.

But the industry source also made clear Yucca Mountain must be part of the DOE package.

"The two -- consolidated storage and Yucca -- they can go forward together. And if they go forward, they need to do so together," the source said. "Consolidated storage is not a solution in itself. You need the repository, but the repository isn't going to be open for a couple decades at least."

Legal authority

As DOE inches toward resolving the country's waste issues, it faces constraints.

DOE has been warned by government watchdogs that it lacks clear legislative authority for consolidated interim storage or permanent disposal at a site other than Yucca Mountain. Nor can the department transport spent reactor fuel to temporary sites, the Government Accountability Office has said.

GAO also found the department would need to buy new equipment and fund costly upgrades if it were to pursue moving nuclear waste by rail.

"The federal government's ability to site, license, construct and operate a consolidated interim storage facility not tied to Yucca Mountain depends on new legislative authority," according to a **GAO report** to a House subcommittee.

A Republican congressional aide agreed DOE faces constraints under the 1982 Nuclear Waste Policy Act, and the department's activities on interim storage could trigger concern on the Hill as

GOP lawmakers and the Nuclear Energy Institute have called for a federal thumbs-up or -down on Yucca Mountain before any other option is pursued.

"I think there would be concern about how far and what exactly they're trying to do that goes beyond the limits of the Nuclear Waste Policy Act," the aide said. "It's important DOE maintain a semblance of activity on the used fuel management program, but there are limits to how much generic work can be done in this space until you actually start. Whether it's interim or whether they want to move toward a repository, they need to have legal authority to do that."

But DOE is aiming to align its activities with the Blue Ribbon Commission on America's Nuclear Future, a presidential panel that called on Congress three years ago to develop nuclear storage sites and dumps.

The commission also warned that narrowly focusing on the development of Yucca Mountain would exacerbate a policy impasse that has stranded nuclear waste across the country (***Greenwire***, Feb. 1, 2012).

A DOE spokesman said the team is part of a strategy the department unveiled in March for tackling defense and commercial nuclear waste separately (***E&ENews PM***, March 24).

"Based on this announcement a team has been developing plans and performing technical analysis of various components of an integrated waste management system, as well as evaluating the Department's next steps in the consent-based siting process," Bartlett Jackson said in an email.

"The Department believes that siting of any facility for storage or disposal of nuclear waste should be done in a consent-based fashion consistent with the phased, adaptive, and consent-based approach that has been endorsed by the National Academies and the [Blue Ribbon Commission] and is an essential element of the administration's Strategy for the Management and Disposal of Used Nuclear Fuel and High-Level Radioactive Waste."

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United States Government Accountability Office



Testimony

Before the Subcommittee on Environment and the Economy, Committee on Energy and Commerce, House of Representatives

For Release on Delivery
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SPENT NUCLEAR FUEL

Legislative, Technical, and Societal Challenges to Its Transportation

Statement of Frank Rusco, Director, Natural Resources and Environment

October 1, 2015

SPENT NUCLEAR FUEL

Legislative, Technical, and Societal Challenges to Its Transportation

Highlights of GAO-16-121T, a testimony before the Subcommittee on Environment and the Economy, Committee on Energy and Commerce, House of Representatives

Why GAO Did This Study

Spent nuclear fuel—the used fuel removed from commercial nuclear power reactors—is an extremely harmful substance if not managed properly. The nation's inventory of spent nuclear fuel has grown to about 72,000 metric tons currently stored at 75 sites in 33 states, primarily where it was generated.

Under the Nuclear Waste Policy Act of 1982, DOE was to investigate Yucca Mountain, a site about 100 miles northwest of Las Vegas, Nevada, for the disposal of spent nuclear fuel. DOE terminated its work at Yucca Mountain in 2010 and now plans to transport the spent nuclear fuel to interim storage sites beginning in 2021 and 2024, then to a permanent disposal site by 2048. Transportation of spent nuclear fuel is a major element of any policy adopted to manage and dispose of spent nuclear fuel.

This testimony discusses three key challenges related to transporting spent nuclear fuel: legislative, technical, and societal. It is based on reports GAO issued from November 2009 to October 2014.

What GAO Recommends

GAO is making no new recommendations.

View GAO-16-121T. For more information, contact Frank Rusco at (202) 512-3841 or ruscof@gao.gov.

What GAO Found

Based on its prior work, GAO found three key challenges related to the transportation of spent nuclear fuel: legislative, technical, and societal.

- **Legislative challenges**. As GAO reported in November 2009, August 2012, and October 2014, DOE does not have clear legislative authority for either consolidated interim storage or for permanent disposal at a site other than Yucca Mountain. Specifically, provisions in the Nuclear Waste Policy Act of 1982 that authorized the Department of Energy (DOE) to arrange for consolidated interim storage have either expired or are unusable. For permanent disposal, GAO reported in October 2014 that the amendments to the Nuclear Waste Policy Act of 1982 directed DOE to terminate work on sites other than Yucca Mountain. Without clear authority, DOE cannot site an interim storage or permanent disposal facility and make related transportation decisions for commercial spent nuclear fuel.
- **Technical challenges**. As GAO reported in October 2014, experts identified technical challenges that could affect the transportation of spent nuclear fuel. These challenges could be resolved, but it would take time and could be costly. Specifically, GAO reported that there were uncertainties about the safety of transporting what is considered to be high burn-up spent nuclear fuel—newer fuel that burns longer and at a higher rate than older fuel—because of potential degradation while in storage. GAO also reported that guidelines for storage of spent nuclear fuel allow higher temperatures and external radiation levels than guidelines for transportation, rendering some spent nuclear fuel not readily transportable. In addition, GAO reported that the current transportation infrastructure, particularly for a mostly rail option of transportation—which is DOE's preferred mode—may not be adequate without procuring new equipment and costly and time-consuming upgrades on the infrastructure.
- **Societal challenges**. As GAO reported in October 2014, public acceptance is key for any aspect of a spent nuclear fuel management and disposition program—including transporting it—and maintaining that acceptance over the decades needed to implement a spent fuel management program is challenging. In that regard, GAO reported that in order for stakeholders and the general public to support any spent nuclear fuel program—particularly one for which a site has not been identified—there must be a broad understanding of the issues associated with management of spent nuclear fuel. Also, GAO found that some organizations that oppose DOE have effectively used social media to promote their agendas to the public, but that DOE had no coordinated outreach strategy, including social media. GAO recommended that DOE develop and implement a coordinated outreach strategy for providing information to the public on their spent nuclear fuel program. DOE generally agreed with GAO's recommendation.

Chairman Shimkus, Ranking Member Tonko, and Members of the Subcommittee:

I am pleased to be here today to discuss our work on issues related to transportation of commercial spent nuclear fuel. Spent nuclear fuel—used nuclear fuel that has been removed from the reactor core of a nuclear power reactor[1]—is an extremely harmful substance if not managed properly. Without protective shielding, its intense radioactivity can kill a person who is directly exposed to it or cause long-term health hazards, such as cancer. In addition, if not managed properly, or if released by a natural disaster or an act of terrorism, it could contaminate the environment with radiation. The nation's inventory of spent nuclear fuel from commercial nuclear power reactors—which amounts to about 72,000 metric tons— is stored at 75 sites in 33 states, generally where it was generated. The spent nuclear fuel is stored either wet in pools of water or dry in storage systems that typically consist of stainless steel canisters within protective casks. Dry storage systems are designed with thick steel and concrete walls to provide radiation shielding and passive pathways for removal of spent nuclear fuel decay heat, such as air vents in the casks. Transporting the spent nuclear fuel anywhere depends on the policy that is ultimately put into place for management and final disposition of the spent nuclear fuel.

National policy for the disposition of spent nuclear fuel dates to the passage of the Nuclear Waste Policy Act of 1982 (NWPA), which made disposal of spent nuclear fuel a federal responsibility.[2] NWPA directed the Department of Energy (DOE) to investigate sites for a permanent repository. In 1987, Congress amended the act to direct DOE to focus its

[1]Spent (or used) nuclear fuel can no longer efficiently generate power in a nuclear reactor. However, it is potentially a resource because it can be reprocessed to separate out uranium and plutonium to be used again as fuel in a reactor. Reprocessing, however, still results in high-level radioactive waste that requires disposal, and the United States does not currently reprocess spent nuclear fuel from commercial nuclear power reactors. The federal government generates spent nuclear fuel from power, research, and navy shipboard reactors. The U.S. Nuclear Regulatory Commission considers spent nuclear fuel that is accepted for disposal to be high-level radioactive waste. High-level radioactive waste also includes by-products of weapons production and other defense-related activities generated from reprocessing spent nuclear fuel. The scope of this statement only includes commercial spent nuclear fuel.

[2]Pub. L. No. 97-425 §§ 112, 113. NWPA also addressed disposal of high-level radioactive waste other than spent nuclear fuel.

efforts only on a site at Yucca Mountain, Nevada, about 100 miles northwest of Las Vegas. In 2008, DOE submitted a license application for a repository at Yucca Mountain to the Nuclear Regulatory Commission (NRC), which is responsible for regulating storage, transportation, and disposal of spent nuclear fuel from commercial nuclear power reactors. Then, in a change of policy in 2009, the Secretary of Energy said that a repository at Yucca Mountain was not a workable option and, in 2010, DOE terminated its efforts to license a repository there. In 2010, DOE chartered the Blue Ribbon Commission on America's Nuclear Future to recommend a plan for management and disposal of spent nuclear fuel. In January 2012, the Blue Ribbon Commission issued its report.[3] Among other things, the commission recommended that DOE consider consolidated interim storage of spent nuclear fuel and develop a consent-based approach to locating or establishing (or "siting") future spent nuclear fuel management facilities. In January 2013, DOE issued a strategy for managing spent nuclear fuel in response to the commission's recommendations.[4] The strategy calls for the federal government to begin accepting spent nuclear fuel for management at a pilot interim storage facility by 2021 and at a larger consolidated interim storage facility by 2025, then begin disposal at a permanent repository by 2048. According to the strategy, it represents "an initial basis for discussions among the Administration, Congress and other stakeholders on a sustainable path forward for disposal" of spent nuclear fuel and other types of high-level radioactive waste.

Over the past decade, we have issued a number of reports related to the management of spent nuclear fuel. My testimony today discusses the three key challenges related to transporting spent nuclear fuel that we have identified in our prior work. Generally speaking, challenges related to transportation fall into one of three categories: legislative, technical, or societal. I will discuss each of these categories. This testimony is based

[3]Blue Ribbon Commission on America's Nuclear Future, Report to the Secretary of Energy (Washington, D.C.: Jan. 26, 2012).

[4]DOE, *Strategy for the Management and Disposal of Used Nuclear Fuel and High-Level Radioactive Waste*, (Washington, D.C.: January 2013).

on reports we issued from November 2009 to October 2014. [5] In particular, I will be highlighting our October 2014 report on spent nuclear fuel management. For this work, we reviewed documents and interviewed officials from DOE and NRC regarding their regulatory roles related to spent nuclear fuel management. In addition, we obtained input from experts and stakeholders in spent nuclear fuel management.[6] A detailed discussion of our scope and methodologies can be found in each of our published reports. We conducted the work that this testimony is based on in accordance with generally accepted government auditing standards. Those standards require that we plan and perform audits to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Background

The transportation of large amounts of spent fuel to an interim storage or permanent disposal location is inherently complex and the planning and implementation may take decades to accomplish. The actual time it would take depends on a number of variables including distance, quantity of material, mode of transport, rate of shipment, level of security, and coordination with state and local authorities. For example, according to officials from a state regional organization we interviewed and the Blue Ribbon Commission report, transportation planning could take about 10 years, in part because routes have to be agreed upon, first responders

[5]For example, see GAO, Nuclear Waste Management: Key Attributes, Challenges, and Costs for the Yucca Mountain Repository and Two Potential Alternatives, GAO-10-48 (Washington, D.C.: Nov. 4, 2009); Yucca Mountain: Information on Alternative Uses of the Site and Related Challenges, GAO-11-847 (Washington, D.C.: Sept. 16, 2011); Commercial Nuclear Waste: Effects of a Termination of the Yucca Mountain Repository Program and Lessons Learned, GAO-11-229 (Washington, D.C.: Apr. 8, 2011); Spent Nuclear Fuel: Accumulating Quantities at Commercial Reactors Present Storage and Other Challenges, GAO-12-797 (Washington, D.C.: Aug. 15, 2012); Commercial Spent Nuclear Fuel: Observations on the Key Attributes and Challenges of Storage and Disposal Options, GAO-13-532T (Washington, D.C.: Apr. 11, 2013); and Spent Nuclear Fuel Management: Outreach Needed to Help Gain Public Acceptance for Federal Activities That Address Liability, GAO-15-141. (Washington, D.C.: Oct. 9, 2014).

[6]In total, we interviewed over 90 individuals, including federal officials, who represented a wide range of viewpoints and expertise. However, our selection of experts is non-generalizable, in that opinions cannot be generalized to other experts or tallied, either within or across types of expertise.

have to be trained, and critical elements of infrastructure and equipment need to be designed and deployed.

Legislative Challenges to Transporting Spent Nuclear Fuel

As we previously reported, DOE does not have clear legislative authority for either consolidated interim storage or for permanent disposal at a site other than Yucca Mountain and, as such, there is no facility to which DOE can transport commercial spent nuclear fuel. Without clear authority, DOE cannot make the transportation decisions necessary regarding commercial spent nuclear fuel.

Specifically, as we reported in November 2009, August 2012, and October 2014, provisions in NWPA that authorize DOE to arrange for consolidated interim storage have either expired or are unusable because they are tied to milestones in the development of a repository at Yucca Mountain that have not been met.[7] DOE officials and experts from industry we interviewed in October 2014 agreed with this assessment, and noted that the federal government's ability to site, license, construct, and operate a consolidated interim storage facility not tied to Yucca Mountain depends on new legislative authority.

For permanent disposal, we reported in April 2011,[8] that developing a permanent repository other than Yucca Mountain will restart the likely time-consuming and costly process of siting, licensing, and developing such a repository and it is uncertain what legislative changes might be needed, if any, to develop a new repository. In part, this is because NWPA, as amended, directs DOE to terminate all site specific activities at candidate sites other than Yucca Mountain.

[7]GAO-10-48, GAO-12-797, GAO-15-141.

[8]GAO-11-229.

Technical Challenges to Transporting Spent Nuclear Fuel

As we reported in October 2014,[9] experts identified technical challenges that could affect the transportation of spent nuclear fuel and these challenges could be resolved with sufficient time. The three technical challenges the experts described were (1) uncertainties related to the safety of high burn-up fuel during transportation,[10] (2) readiness of spent nuclear fuel to be transported under current guidelines, and (3) sufficiency of the infrastructure to support transportation.

Before 2000, most fuel discharged from U.S. nuclear power reactors was considered low burn-up fuel and, consequently, the industry has had decades of experience in transporting it. As we reported in October 2014, various reports from DOE, NRC, the Electric Power Research Institute, and the Nuclear Waste Technical Review Board, as well as experts we interviewed, agreed that uncertainties exist on how long high burn-up fuel—used for about 10 years— can be stored and then still be safely transported. Once sealed in a canister, the spent fuel cannot easily be inspected for degradation. We reported that as of August 2014, NRC officials told us that they had analyzed laboratory tests and models developed to predict the changes that occur during dry storage and that the results indicate that high burn-up fuel will maintain its integrity over very long periods of storage and can eventually be safely transported. However, NRC officials said they continued to seek additional evidence to confirm their position that long-term storage and transportation of high burn-up spent nuclear fuel is safe. We also reported that DOE and the Electric Power Research Institute have planned a joint development project to test high burn-up fuel for degradation, but those results will not be available for about a decade.

As we reported in October 2014,[11] because the guidelines governing dry storage of spent nuclear fuel allow higher temperatures and external radiation levels than guidelines for transporting the fuel, some of the spent nuclear fuel in dry storage may not be readily transportable. For example, according to the Nuclear Energy Institute, as of 2012, only about 30 percent of spent nuclear fuel currently in dry storage is cool

[9]GAO-15-141.

[10]Reactor fuel burn-up is a measure of the energy produced by the fuel. High burn-up fuel generally has been in a reactor longer than low burn-up fuel and is defined as having a burn-up higher than 45,000-megawatt days per metric ton.

[11]GAO-15-141.

enough to be directly transportable. For safety reasons, transportation guidelines do not allow the surface of the transportation cask to exceed 185 degrees Fahrenheit (85 degrees Celsius) because the spent nuclear fuel is traveling through public areas using the nation's public transportation infrastructure. NRC's guidelines on spent nuclear fuel dry storage limit spent nuclear fuel temperature to 752 degrees Fahrenheit (400 degrees Celsius). Scientists from the national laboratories and experts from industry we interviewed suggested three options for dealing with the stored spent nuclear fuel so it can be transported safely: (1) leave it to cool and decay at reactor sites, (2) repackage it into smaller canisters that reduce the heat and radiation, or (3) develop a special transportation "overpack" to safely transport the spent nuclear fuel in the current large canisters. However, as we reported in August 2012,[12] spent nuclear fuel stored at reactor sites that had already shut down and dismantled their infrastructure may pose an even more difficult challenge because the ability to repackage the fuel or develop similar solutions may be limited without building additional infrastructure, such as a special transfer facility, or the spent fuel would need to be shipped to a site that had a transfer facility.

According to a 2013 DOE report, the preferred mode for transporting spent nuclear fuel to a consolidated interim storage facility would be rail.[13] However, as we reported in October 2014,[14] several experts from industry pointed out that not all of the spent nuclear fuel currently in dry storage is situated near rail lines; also, one of these experts said that procuring qualified rail cars capable of transporting spent nuclear fuel will be a lengthy process. Storage sites without access to a rail line may require upgrades to the transportation infrastructure or alternative modes of transportation to the nearest rail line. Constructing new rail lines or extending existing rail lines could be a time-consuming and costly endeavor. In addition, an industry official we interviewed noted that if spent nuclear fuel were trucked to the nearest rail line, the federal government would have to develop a safe method of transferring the spent nuclear fuel from heavy haul trucks onto rail cars. In September

[12]GAO-12-797.

[13]See DOE, *Office of Fuel Cycle and Research Development, A Project Concept for Nuclear Fuels Storage and Transportation*, FCRD-NFST-2013-000132 Rev. 1 (June 15, 2013).

[14]GAO-15-141.

2013, DOE completed a preliminary technical evaluation of options available and needed infrastructure for DOE or a new waste management and disposal organization to transport spent nuclear fuel from shut-down sites to a consolidated interim storage facility. According to DOE officials, there was no need to make a decision regarding how best to move forward with the study results because there was, at that time, no site and no authorization to site, license, construct, and operate a consolidated interim storage facility.[15] We also reported in October 2014 that procuring qualified railcars may be a time-consuming process, in part because of the design, testing, and approval for a railcar that meets specific Association of American Railroads standards for transporting spent nuclear fuel.[16]

Societal Challenges to Transporting Spent Nuclear Fuel

As we found in October 2014, public acceptance is key to any aspect of a spent nuclear fuel management and disposition program, including transportation. Specifically, unless and until there is a broad understanding of the issues associated with management of spent nuclear fuel, specific stakeholders and the general public may be unlikely to support any spent nuclear fuel program. In particular, a program that has not yet been developed or for which a site has not been identified may have challenges in obtaining public acceptance. This finding is not new and, in April 2011 and in October 2014 we found reports spanning several decades that identified societal and political opposition as the key obstacles to spent nuclear fuel management.[17] For example, in 1982, the congressional Office of Technology Assessment reported that public and political opposition were key factors to siting and building a repository. The National Research Council of the National Academies reiterated this conclusion in a 2001 report, stating that the most significant challenge to siting and commencing operations at a repository is societal. Our analysis of stakeholder and expert comments indicates the societal and political

[15]DOE, *Preliminary Evaluation of Removing Used Nuclear Fuel from Shutdown Sites*, PNNL-22676 Rev.1 (Sept. 30, 2013).

[16]The American Association of Railroads established the S-2043 standard that sets higher standards for transportation of spent nuclear fuel than for normal rail operations. For example, S-2043 requires on-board safety protection technology unique to spent nuclear fuel shipments and structural upgrades to accommodate the extra weight.

[17]GAO-11-229, GAO-15-141.

factors opposing a repository are the same for a consolidated interim storage facility.

Moreover, we reported in April 2011[18] and October 2014[19] that any spent nuclear fuel management program is going to take decades to develop and to implement and that maintaining public acceptance over that length of time will face significant challenges. We also reported in November 2009, that the nation could not be certain that future generations would have the willingness or ability to maintain decades-long programs we put into place today.[20] Of particular concern is having to transport spent nuclear fuel more than once, which may be required if some spent nuclear fuel is moved to an interim storage facility prior to permanent disposal. Some stakeholders have voiced concerns that because of this opposition to multiple transport events, a consolidated interim storage site may become a de facto permanent storage site.

In October 2014, we reported that according to experts and stakeholders, social media has been used effectively to provide information to the public through coordinated outreach efforts by organizations with an interest in spent nuclear fuel policy. Some of these organizations oppose DOE's strategy and the information they distribute reflects their agendas. In contrast, we reported that DOE had no coordinated outreach strategy, including social media. We concluded that in the absence of a coordinated outreach strategy by DOE, specific stakeholders and the general public may not have complete or accurate information about the agency's activities, making it more difficult for the federal government to move forward with any policy to manage spent nuclear fuel. We recommended that DOE develop and implement a coordinate outreach strategy for providing information to specific stakeholders and the general public on federal activities related to managing spent nuclear fuel—which would include transportation planning. DOE generally agreed with our recommendation.

[18]GAO-11-229.

[19]GAO-15-141.

[20]GAO-10-48.

Chairman Shimkus, Ranking Member Tonko, and Members of the Subcommittee, this concludes my prepared statement. I would be pleased to respond to any questions you may have at this time.

GAO Contact and Staff Acknowledgments

If you or your staff members have any questions about this testimony, please contact me at (202) 512-3841 or ruscof@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this testimony. Karla Springer (Assistant Director), and Antoinette Capaccio, Robert Sánchez, and Kiki Theodoropoulos also made key contributions to this testimony.

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US waste storage development hinges on political push

Nov 2, 2015

The US nuclear industry must mobilize political support on Capitol Hill for commercial consolidated interim storage facilities (CISFs) as developers look to demonstrate the stand alone value of their facilities alongside the much-delayed Yucca Mountain project, leading industry figures said.

The biggest obstacle to the commercial viability of consolidated interim storage facilities in the United States is politics, Pierre Oneid, Holtec International Senior Vice President and Chief Nuclear Officer, told Nuclear Energy Insider.

"It's not a technical issue, it's a political issue," Oneid said. There are people out there that don't want us to exist. We need to get to the Hill and get them moving. That's the strategy. We're a trillion dollar industry, but our scorecard on the Hill is almost negative."

Oneid's Holtec is one of several companies seeking cooperation from the federal government to allow commercial storage of spent nuclear fuel (SNF) and high level waste (HLW), and has partnered with the Eddy-Lea



A new legislative basis for commercial storage needs to marry differing approaches in the two Houses. (Image credit: slowgogo)

Related Articles

- German operators



Upcoming Events

- **Nuclear Operations and Maintenance Efficiency Conference**
  Nov 16, 2015 to Nov 17, 2015
  Ritz-Calton Hotel, Charlotte NC
- **Nuclear Supply Chain Conference South Africa**
  Dec 1, 2015 to Dec 2, 2015
  Southern Sun Cape Sun Hotel, Cape Town, South Africa

In-Depth Analysis

Energy Alliance (ELEA) to construct such a facility in southeastern New Mexico.

A law passed in 1987 specified that a proposed state-owned SNF and HLW repository at Nevada's Yucca Mountain would be the first US nuclear waste repository, requiring legislative changes for other facilities to be constructed beforehand.

seek gov't plan on waste storage as they cost up shutdowns

- UK to steer plutonium processing projects by year end

However, lack of progress on a centralized storage site has meant that used nuclear fuel continues to be stored on site at nuclear power plants.

White Papers

Market Map- Nuclear Decommissioning & Used Fuel Market Map 2015

Small Modular Reactor Deployment in the UK

Overcoming Nuclear Obsolescance

Nuclear UK Skills Gap Challenges

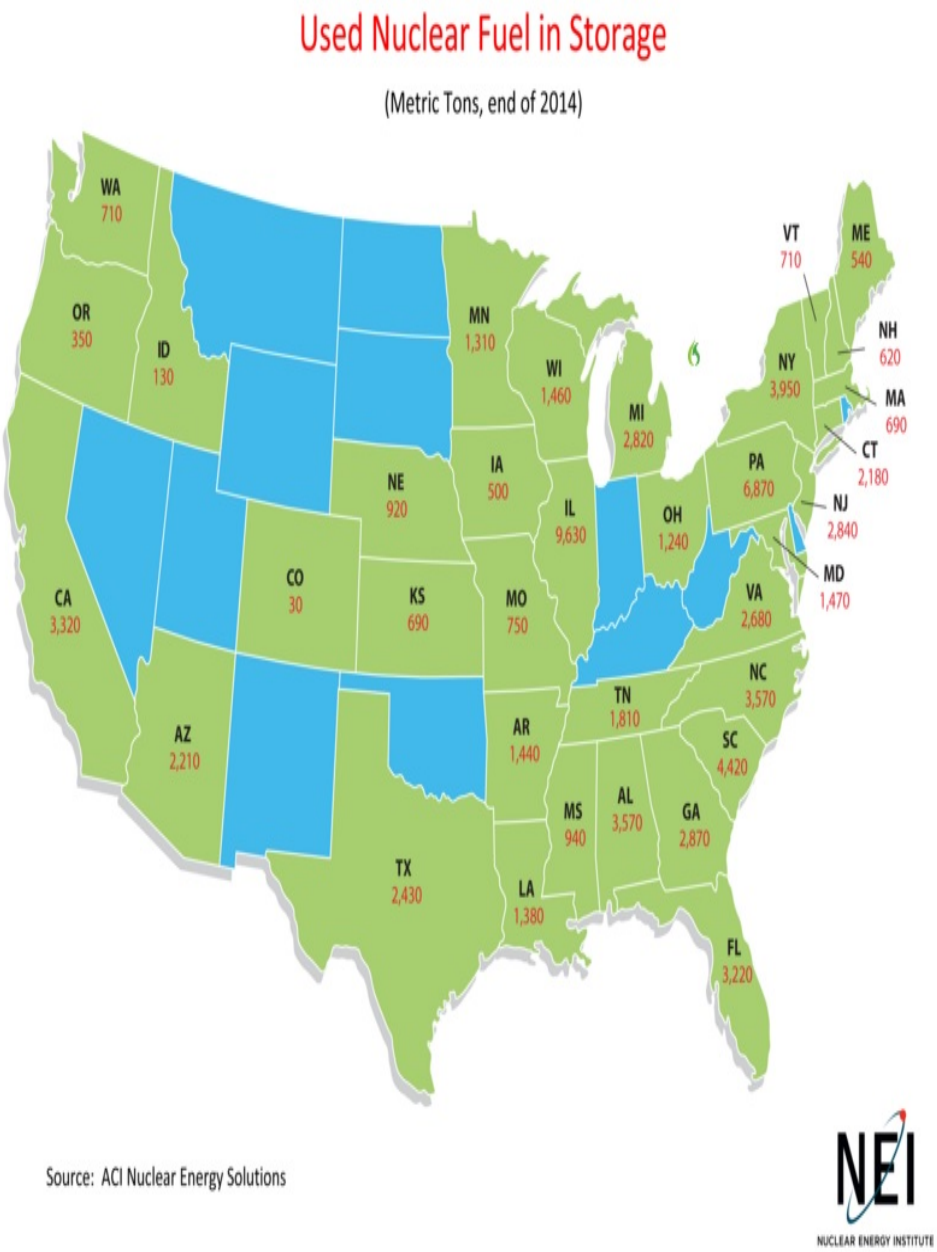
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Nuclear Cyber Essentials

International SMR Licensing Hurdles

Webinars

- **Holtec's Consolidated Interim Storage Plans for US Spent Nuclear Fuel**



Steve Nesbit, Duke Energy's Director of Nuclear Policy and Support, outlined recent political developments and the major sticking points in getting Washington's approval for commercial CISFs, when he spoke at Nuclear Energy Insider's 2nd Annual Nuclear Decommissioning & Used Fuel Strategy Summit in North Carolina October 5.

In May 2015, the Senate Appropriations Committee passed a bill which included no funding for the proposed Yucca Mountain long term repository, but included funding for a pilot consolidated storage program for used fuel. In the same month, the House of Representatives passed an appropriations bill allocating $175 million for the review of the Yucca Mountain repository license application.

"The Senate has a higher level of excitement for consolidated storage, and the House is interested in the Yucca Mountain project," Nesbit said. "They are sort of at loggerheads with each other."

Conaway's act

Consolidated Storage Act of 2015, which would amend the existing Nuclear Waste Policy Act allowing the US Department of Energy (DOE) to take title to the nuclear waste and contract with private companies to store the waste.

Conaway's district includes the city of Andrews, Texas, which is the proposed site for a storage facility built and operated by Waste Control Specialists (WCS). Areva is a partner in the project which would ultimately house 40,000 metric tons of heavy metal (MTHM). Based on its current timeline of acquiring licenses and approval, WCS could begin construction of the facility in the autumn of 2019 and it would come on-line at the end of 2020.

The proposed time plan for the Holtec-ELEA project in New Mexico also targets construction to start in 2019 ahead of start up in 2020.

According to a statement October 5 from Rod Baltzer, President of WCS, Congressman Conaway's bill has "15 co-sponsors, many of whom have districts in Texas. Four cosponsors have decommissioned plants in their districts and constituents [are] anxious to move the stranded waste out of town."

While both the WCS and Holtec-ELEA projects have strong support on the local and state levels, industry voices like Nesbit believe that without "concurrent progress at Yucca Mountain," the prospects for Conaway's bill to succeed are not good.

There is some frustration in the industry that the progress of CISF projects has been somewhat tied to that of the Yucca Mountain project, which has seen painfully slow progress. It is almost 30 years since Yucca Mountain was designated as a deep geological repository for SNF and HLW in 1987.

The Senate's primary detractor of the Yucca Mountain proposal continues to be Senator Harry Reid (D-NV), who famously persuaded then-Presidential hopeful Barack Obama to oppose the long-planned site in 2008 in exchange for his support in that year's election as well as future ones.

Reid had served as Senate Majority Leader since 2007, but Republicans won

control of the Senate in the 2014 midterm elections. Republicans now hold a 54-44 seat advantage (with two independents), but Nesbit said Reid is still in position to stop any spent fuel legislation he wants to. While the Republicans have a nominal 247-188 member advantage over the Democrats, Reid's long term as Majority Leader has earned him many cross-party alliances and allies over the past eight years. Reid, who will turn 76 in December, has announced he will not seek re-election to the Senate in 2016.

Nesbit added that he does not expect any funds to be appropriated to government studies on the feasibility or safety of CISFs in Fiscal Year (FY) 2016, and that funds for FY2017 will not be settled until after the 2016 Presidential election.

According to Oneid, CISFs should be either completely decoupled from Yucca Mountain or used as a transition to the larger government facility once it becomes operational.
“Why can’t interim storage be on the way to Yucca Mountain?” Oneid said. “It’s safer, it’s proven, and it’s a lot cheaper.”

People power

Beyond the political hurdles, developers have also had to take on board shifts in public opinion.
Americans appear in favor of CISFs in principle, but opinion over nuclear power is divided.

A major driving force to build CISFs is to get SNF away from populated areas, particularly for plants that have been decommissioned and there is a plan to return the sites to greenfield status.

In a poll conducted in April by Quest Global Research, 45% surveyed said they “strongly agreed” the US should develop interim storage facilities, while only 5% “strongly disagreed.”

However, in a poll conducted in June by information and research firm Morning Consult, some 77% of registered voters said they would not live within 10 miles of a nuclear waste storage site, and 63% said they would not live within 100 miles of one.

A Gallup poll also conducted around the same time showed just 51% of Americans in favor of nuclear energy as a whole, down 11 percentage points

from 62% in late 2010, which was just a few months before the Fukushima Daiichi incident in Japan in March 2011.

Speaking at the 2nd Annual Nuclear Decommissioning & Used Fuel Strategy Summit in early October, Areva Senior Vice President & Project Director, WCS Commercial Interim Storage Facility, said that success in commercializing CISFs could have a positive impact on the public's view of the broader nuclear power sector.

"We can break that (fear), we can move this fuel forward, we can de-inventory these sites," said McMahon.
"We can remove a significant vulnerability in terms of public acceptance of nuclear power."

By Nick Georgandis

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COUNTY OF SAN DIEGO

CITIZENS OVERSIGHT, INC., a California non-profit corporation; PATRICIA BORCHMANN, an individual,

Petitioners and Plaintiffs,

v.

CALIFORNIA COASTAL COMMISSION; SOUTHERN CALIFORNIA EDISON COMPANY, Real Party in Interest; and DOES 1 to 100,

Respondents and Defendants.

Case No. **37-2015-00037137-CU-WM-CTL**

VERIFIED PETITION FOR WRIT OF ADMINISTRATIVE MANDATE (C.C.P. § 1094.5) AND COMPLAINT FOR DECLARATORY RELIEF

Citizens Oversight, Inc. and Patricia Borchmann, Petitioners, hereby petition this Court for a writ of administrative mandamus under California Code of Civil Procedure § 1094.5 directed to the California Coastal Commission as follows:

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INTRODUCTION

By this verified petition and complaint, Petitioners and Plaintiffs allege:

1. From 1968 to 31 January 2012, Southern California Edison (Edison) was in the business of generating and selling electricity from its San Onofre nuclear power plant (plant) in San Diego County, California. The plant was designed with three units: Unit 1 operated from 1968 to 1992; Unit 2 from 1983-2012; and Unit 3 from 1984-2012. Unit 1 was decommissioned in 1992.

2. Since 1984, the plant generated an average of 16 million megawatt hours of electricity annually, making it the second largest electric generating facility in California. The plant generated enough electricity to meet the needs of 2.3 million California households -- about 8 percent (8%) of all electricity generated in the State.

3. Since 1992, the plant operated two Units consisting of nuclear Pressurized Water Reactors (PWRs), each rated at 3358 MWt (1180 MWe). Units 2 and 3 were originally equipped with two CE Model 3340 recirculating steam generators. These original steam generators (OSGs) were designed for a 40-year service life.

4. To generate electricity, Edison used uranium oxide fuel in the form of small ceramic pellets that were placed inside metal fuel rods. These rods were grouped into bundles called assemblies. Assemblies at San Onofre were a structured group of fuel rods (long, slender, metal tubes containing pellets of fissionable material which provide fuel for nuclear reactors:

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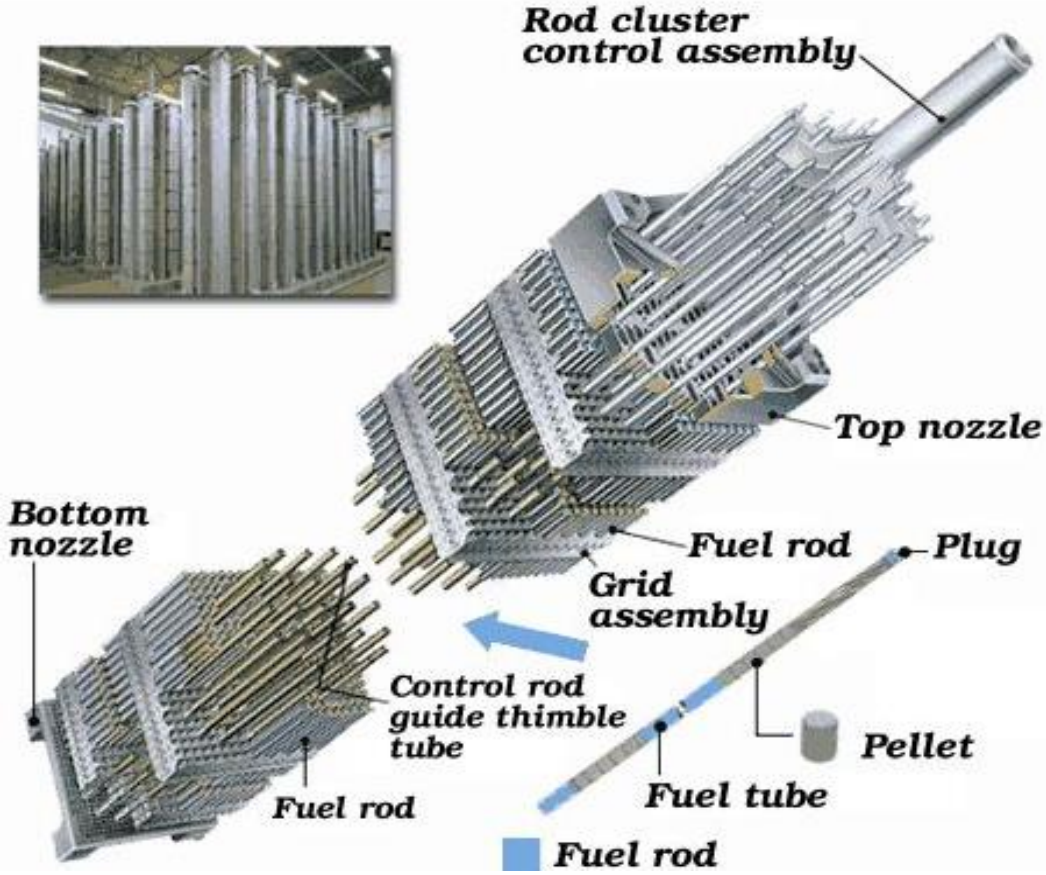
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Figure 3: Schematic view of PWR fuel assembly (Mitsubishi Nuclear Fuel)



5. PWR fuel assemblies like those at San Onofre are comprised of a bottom nozzle into which rods are fixed through the lattice; to finish the whole assembly, it is crowned by a top nozzle. The bottom and top nozzles are heavily constructed as they provide much of the mechanical support for the fuel assembly structure. In the finished assembly, most rod components are fuel rods, but some are guide thimbles, with one or more are likely to be dedicated to instrumentation.

6. An 1100 MWe PWR core may contain 193 fuel assemblies composed of over 50,000 fuel rods and some 18 million fuel pellets. Once loaded, fuel stays in the core for several years depending on the design of the operating cycle:

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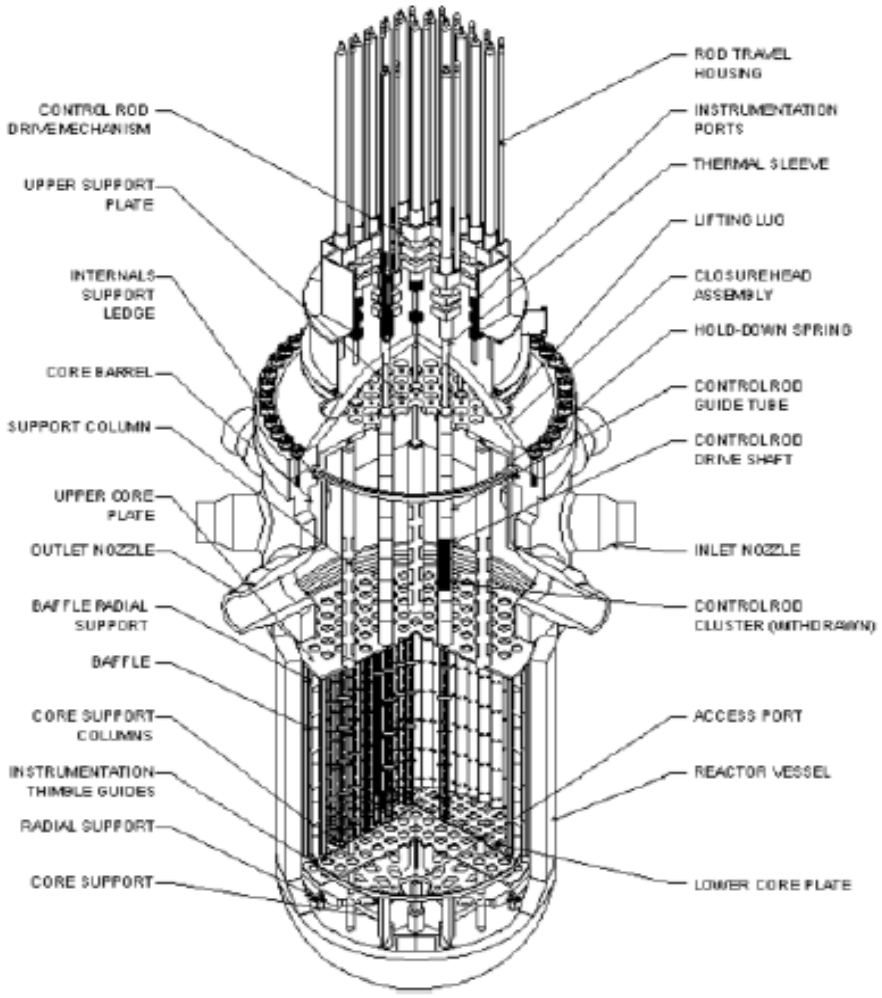


Figure 6 PWR Pressure Vessel Internals

7. Fission, the splitting of uranium atoms in a chain reaction, was used at the plant to produce a tremendous amount of heat.

8. This energy was used to boil water into steam, which drove the turbine generators at the plant to produce electricity:

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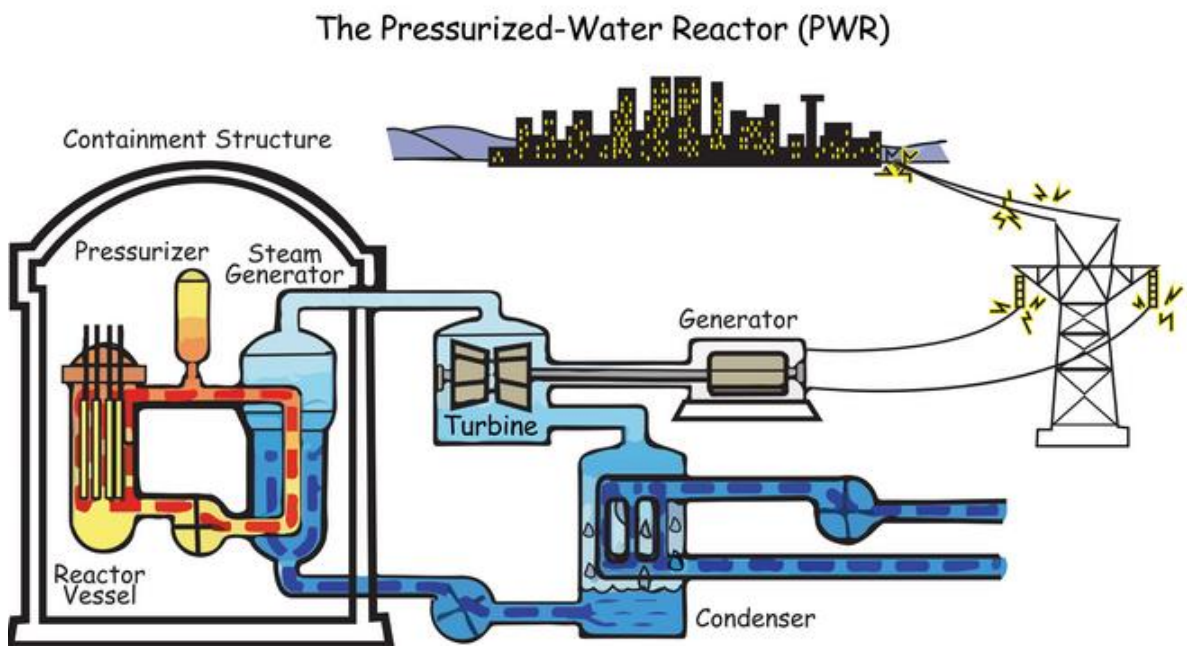
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9. During refueling, every 12 to 18 months, some of the fuel - usually one third or one quarter of the core – was removed to storage, while the remainder was rearranged to a location in the core better suited to its remaining level of enrichment.

10. Over time, the nuclear fuel at the plant lost efficiency. Every 18-24 months, Edison shut down the plant to remove and replace about one-third of the fuel, consisting of the oldest assemblies. While the plant was generating electricity, its three (then two) reactors were also producing nuclear spent-fuel waste. The nuclear waste produced at San Onofre looked exactly like the fuel that was loaded into the three reactors – the assemblies of metal rods enclosing stacked-up ceramic pellets. Nuclear fuel spent about three years in the San Onofre reactors to generate heat for electricity.

11. As of October 2014 Edison admitted there were 2,668 in the water pool at San Onofre (approximately 1,100 of them are High Burn -up Fuel). The longer the nuclear fuel remains in the reactor, the higher the burnup. Burnup is a way to measure how much uranium is burned in the reactor. It is the amount of energy produced by the uranium.

12. Following the 18-24 month cycle, Edison installed the newer assemblies and removed some of the spent ones to underwater storage pools:



13. San Onofre was in the midst of its sixteenth refueling cycle when on 31 January 2012, it experienced an event as follows:

> "At 1505 PST[1], Unit 3 entered Abnormal Operation Instruction S023-13-14 'Reactor Coolant Leak' for a steam generator leak exceeding 5 gallons per day.
>
> "At 1549 PST, the leak rate was determined to be 82 gallons per day. At 1610 PST, a leak rate greater than 75 gallons per day with an increasing rate of leakage exceeding 30 gallons per hour was established and entry into S023-13-28 'Rapid Power Reduction' was performed.
>
> "At 1630 PST, commenced rapid power reduction per S023-13-28 'Rapid Power Reduction'. At 1731 PST, with reactor power at 35% the Unit was manually tripped. At 1738 PST, Unit 3 entered Emergency Operation Instruction S023-12-4 'Steam Generator Tube Rupture'.
>
> "At 1800 PST the affected steam generator was isolated."
>
> All control rods fully inserted on the trip. Decay heat is being removed thru the main steam bypass valves into the main condenser. Main feedwater is maintaining steam generator level. No relief valves lifted during the manual trip. The plant is in normal shutdown electrical lineup.
>
> Unit 2 is presently in a refueling outage and was not affected by this event.

[1] PST, Pacific Standard Time.

The licensee has notified the NRC Resident Inspector. The licensee has issued a press release.

14. As a result of the failure of its steam generators after only 11 months of joint operation, the plant was closed permanently on 31 January 2012. When the plant closed, Edison had over 2,668 fuel assemblies in the spent fuel pools for Units 2 and 3. These assemblies must be cooled in the spent fuel pools for five to seven years or more. Edison has removed some of the assemblies from the pools and stored them in dry cask storage. About 800 Unit 2 and 3 fuel assemblies are stored in above-ground dry cask storage at the plant. In addition, there are about 400 Unit 1 used nuclear fuel assemblies in dry cask storage on site.

15. During decommissioning of Unit 1, the nuclear spent fuel was originally spread between all three units' spent fuel pools. All Unit 1 fuel has now been transferred to dry cask storage (five casks from the Unit 3 pool were loaded between October and December 2003; nine casks from the Unit **1** pool were loaded in May 2004; and three casks from the Unit 2 pool were loaded in June 2005). Transfer of Unit 2 & Unit 3 fuel to dry cask storage began in 2006.

THE PERMIT AND THIS CHALLENGE THERETO

16. Edison applied to the Coastal Commission for a permit to bury close to 3,600,000 lbs. of nuclear waste on a San Diego beach, calling the project an "Independent Spent Fuel Storage Installation," or an "ISFSI." The permit was approved on October 6, 2015.

17. Unless the permit is revoked, Edison will be permitted to bury at least 75 storage modules filled with the nuclear waste produced by Edison as part of its business operations. There are 2,668 spent fuel assemblies in wet storage pools in buildings in which Edison conducted the business that produced the nuclear waste. The fuel is highly radioactive and will remain so for thousands of years.

18. Plaintiffs seek an administrative writ of mandate, or a declaration, directing Respondent and Defendant California Coastal Commission (CC) to set aside its 6 October 2015 decision to grant Southern California Edison (Edison) a permit to construct and operate a facility to store nuclear waste produced by Edison as part of its business operations.

/ / /

19. Edison's decision to establish an Independent Spent Fuel Storage Installation, or ISFSI, just 100 feet from the shore of a San Diego beach is the worst alternative:

* The location of the ISFSI is within a few dozen yards of the ocean;

* It is designed to be built entirely below-grade, but the water table is so high, it can be only partially buried and then a berm added around it;

*The water table is only inches from the bottom of the ISFSI structure;

* This area of the coast will likely erode one third of the way to the ISFSI within 35 years, according to estimates in the CC staff report;

* This is in a tsunami inundation zone;

* This is on the moving Pacific Plate and is therefore subject to earthquakes;

* A major freeway (Interstate 5), transporting over 147,000 vehicles per day, runs within the exclusion zone, unlike all other nuclear plants in North America;

* LOSSAN (LA-San Diego & San Luis Obispo) Rail Corridor; 351 miles, 6 counties, servicing 41 stations, 150 daily passenger trains and the only viable freight rail link to the rest of the nation.

* 8.4 million people live within a 50-mile evacuation area;

* The relatively thin canisters (only 5/8 inch thick) are subject to salt-air corrosion and may last only a few decades before cracking due to chlorine-induced stress corrosion cracking (CISCC);

* Once corrosion starts, transporting the canisters becomes difficult;

* The canisters are too large to transport economically using conventional rail cars, which are limited to 286,000 pounds net weight, while the canisters plus the transportation overpack can weight well over 400,000 pounds; and

* The canisters are not compliant with size and weight standards to insure safe and economical transfer to a permanent storage solution.

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20. Edison's reckless and knowing conduct in deploying defective steam generators that caused the plant to close brought the need to find an intermediate storage to a head. Edison was repeatedly warned that there were fatal flaws in the design Edison chose for its new steam generators deployed by Edison at the San Onofre plant in 2010 and 2011. The warnings were in Edison emails, action items, minutes, reports, and letters. The new steam generators suffered from very high void fraction and produced steam too hot for the new steam generators to handle. It was these defects that caused the Unit 3 generators to spring a leak. Similar tube wear was then discovered in Unit 2 and the plant was closed, precipitating the need to find an intermediate storage site for the spent fuel.

21. In approving the permit to allow 3,600,000 lbs of high level nuclear waste to be buried on the beach 100 feet from the shoreline with no plan for removal, despite storm warnings, and without requiring Edison to show it had exhausted other reasonable alternatives, the Commission (1) proceeded without, or in excess of, jurisdiction; (2) did not provide a fair hearing because of rampant and widespread ex parte communications with Edison; and (3) abused its discretion because the Commission failed to proceed in the manner required by law, which requires the Commission to protect the California Coast lines from such hazardous waste.

22. The Commission's decision finding that there are no alternatives is not support by substantial evidence. The whole record and the relevant evidence demonstrates that the Commission's reliance on Edison's statements -- in light of Edison's habitual misrepresentations and reckless conduct in deploying the failed steam generators that closed the plant -- was wholly unjustified. No reasonable person would have granted a permit to store the nuclear waste on the beach 100 feet from the shoreline on this record.

23. Edison did not adequately and in good faith attempt to investigate or develop any other alternatives to the coastal site, other than those already in the licensed area.

24. The Coastal Commission (CC), in connection with the issuance of the permit, accepted an agreement with Edison under which Edison would pay the CC in excess of $5,000,000. The CC Commissioners also obtained an unenforceable indemnity agreement from Edison in which Edison agreed to indemnify the CC Commissioners for the intentionally

unlawful act of issuing the permit.

25. This action is brought pursuant to Code of Civil Procedure sections 1094.5 and 1060, and Public Resources Code sections 30801 and 30804. All further statutory references are to the Public Resources Code, unless otherwise indicated.

THE PARTIES

26. Petitioner and Plaintiff Patricia Borchmann is an individual who participated in the permit proceedings.

27. Petitioner and Plaintiff Citizens Oversight, Inc, a 501(c)3 corporation with offices in California and members that reside near the San Onofre facility, participated in the permit proceedings.

28. Respondent Southern California Edison Company, a California corporation, is a real party in interest and a necessary party as the applicant for the permit that is at issue in this petition.

29. Respondent and Defendant California Coastal Commission recently granted a permit to SCE to bury close to 3,600,000 lbs. on the beach in San Diego County. The plaintiffs live in and.or operate out of San Diego and are aggrieved persons with the right to judicial review of the Commission's decision. Pub. Res. Code § 30801.

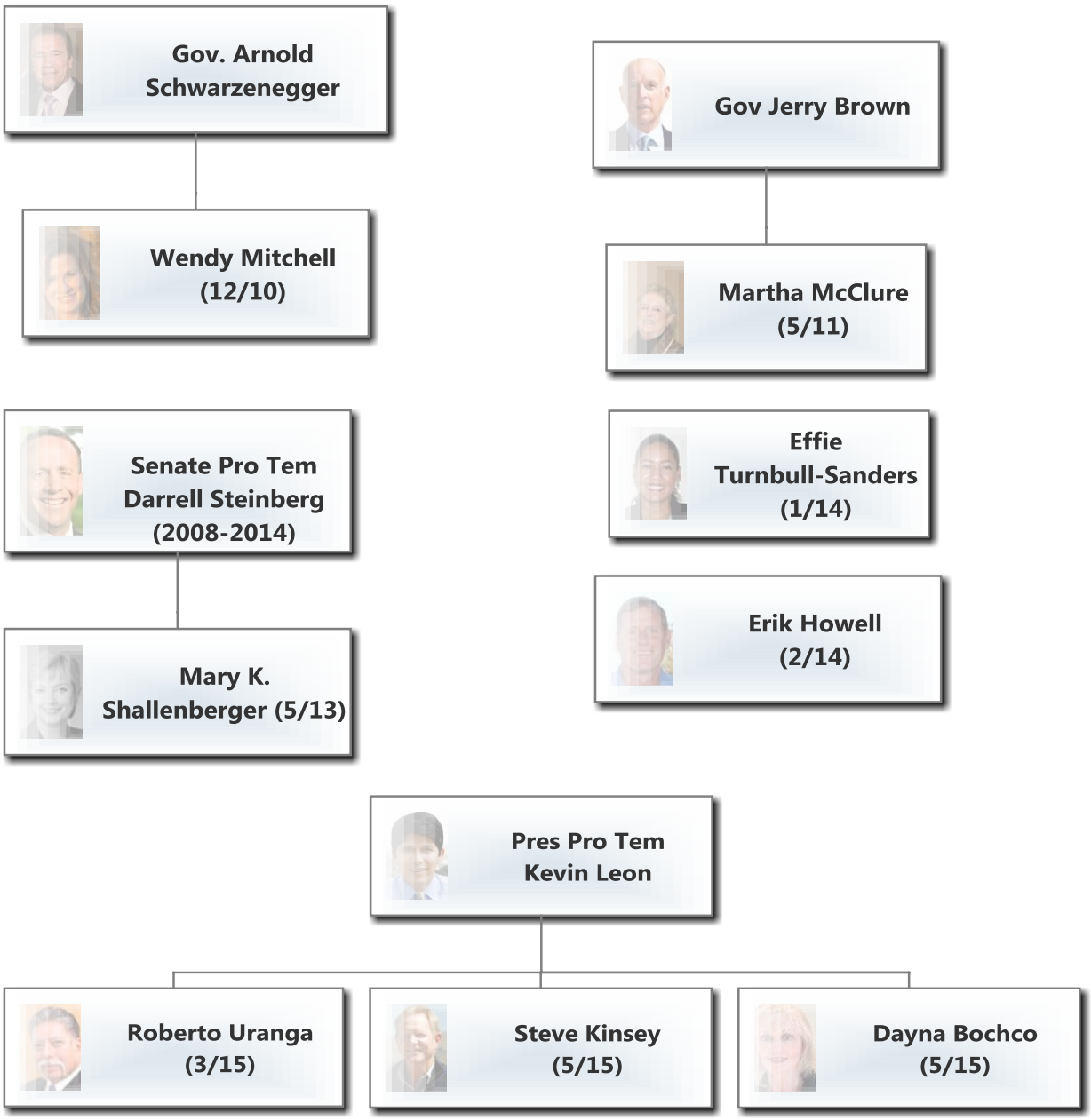
30. Respondent California Coastal Commission (CC) is the state administrative body authorized to enforce the California Coastal Act (Pub. Res. Code §§ 30000, etseq.) consistent with the constitutional rights of private property owners (id.§§ 30001.5(c)).

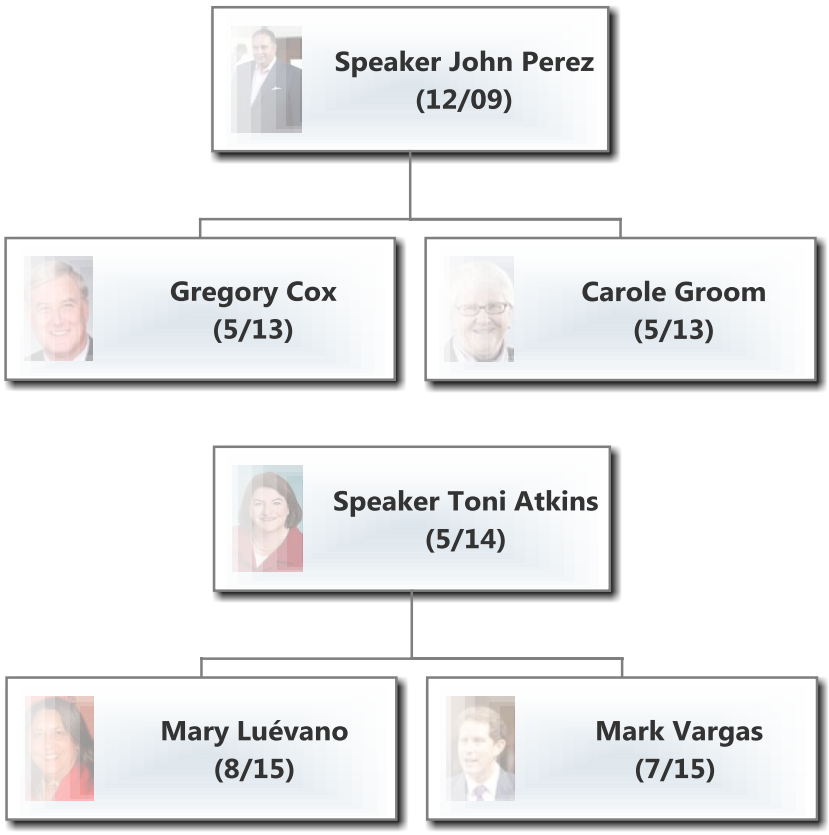
31. The CC Commissioners were appointed by Governors Jerry Brown and Arnold Schwarzenegger, Assembly Speakers John A. Pérez (December 2009), and Toni G. Atkins (March 2014), and President Pro Tempore Kevin de Leon (October 2014) and Darrell Steinberg (November 2008). The following CC Commissioners were appointed to the following terms by the following appointing authorities:

/ / /

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Gov. Arnold Schwarzenegger
Wendy Mitchell (12/10)
Gov Jerry Brown
Martha McClure (5/11)
Senate Pro Tem Darrell Steinberg (2008-2014)
Mary K. Shallenberger (5/13)
Effie Turnbull-Sanders (1/14)
Erik Howell (2/14)
Pres Pro Tem Kevin Leon
Roberto Uranga (3/15)
Steve Kinsey (5/15)
Dayna Bochco (5/15)



32. Does 1 through 50 are persons or entities unknown to the Plaintiffs and Petitioners at this time who may have some interest that may be affected by this action sufficient to render them necessary parties. Plaintiffs will amend this petition to specifically identify each such person or entity as a respondent and/or real party in interest, if and when their identities become known.

VENUE

33. Venue is proper in this Court, because the property that is the subject of this litigation is located in the County of San Diego.

ABANDONMENT OF SAFETY OBLIGATION

34. A Memorandum of Understanding (MOU) has been entered into by a 7-member lnterjurisdictional Planning Committee (lPC) which includes the Counties of Orange and San Diego; the Cities of Dana Point, San Juan Capistrano and San Clemente; Camp Pendleton; California, (local jurisdictions) and California State Parks. Under the MOU, local jurisdictions prepare annual budgets identifying specific baseline activities related to radiological emergency planning. Although each of the local jurisdictions are well-intended, none have the infrastructure

capability to provide meaningful emergency services in the event of a major nuclear event at San Onofre. These jurisdictions do not have established and understood emergency protocols; they do not have the training in nuclear emergency procedures, and they lack the staff and equipment needed for a radiation emergency event at San Onofe. The Coastal Commission decision to issue the permit for Edison's nuclear waste site at San Onofe leaves Southern California families living under a nuclear Sword of Damocles.

EDISON FAILED TO CONSIDER ALTERNATIVES

35. SCE's current plan is to transfer the fuel assemblies from two spent fuel pools (SFPs) to dry cask storage, creating an on-site ISFSI, or indefinite nuclear waste site, at San Onofre. There are several reasons why the Coastal Commission should not have rushed to grant Edison permission to store its nuclear waste at the location of the decommissioned San Onofre plant on the San Diego coastline:

* SCE's Aging Management Program (AMP), required by the NRC and by Special Condition #2 by which the California Coastal Commission permit was granted, is still "in development"

*SCE's AMP, not available at present nor expected to be developed within the next 20 years, is needed for monitoring and inspection of the storage casks to ensure the long-term transportability and eventual removal of the casks ISFSI from the site

*SCE's AMP, the utility mechanism for monitoring and maintenance of the spent fuel casks, has not been previously demonstrated nor is it clear when these techniques, tools and standards would become available for use at San Onofre.

*SCE's yet undeveloped AMP is required to provide the monitoring of environmental conditions, i.e. temperature and humidity, the influencing risks of corrosion and degradation of the casks hence prohibiting SCE's removal the casks as planned in 2051

*SCE's undeveloped AMP is also required to provide structural integrity validation of the casks planned for removal by visual observation, surface measurements, and other inspection techniques related to the physical condition of the casks

*SCE's intended but yet undeveloped AMP cannot deliver the combination of the inspections required by the NRC and Special Condition #2 of the California Coastal Commission's permit, to monitor and maintain the condition of the casks throughout their service life, provide assurance they are performing as designed and allowing the spent fuel to be safely removed when the DOE provides an interim storage facility or permanent repository

* Due to SCE's inability to develop and deliver the required AMP, if the steel fuel storage casks should degrade becoming unsafe to transport, the proposed ISFSI would be possibly be required for many decades and the temporary permit would consequently transition San Onofre to a permanent nuclear waste storage site continuing and accelerating increased

risk to public safety and the potential to adversely affect marine and visual resources and coastal access

* The California Commission own 'Potential for Reasonably Foreseeable Impacts' within the Conclusion of the permit states. "Therefore there is the potential that the proposed ISFSI site will be undermined by shoreline retreat and/or subjected to flooding as a result of sea level rise, storm waves or a tsunami event. Despite the claim of the facility's robust design, these geologic forces would eventually result in a loss of stability and structural integrity, and cause the discharge of debris into the coastal ocean to the detriment of water quality and marine organisms."

36. First, dry casks on nuclear reactor sites stored in ISFSI were originally intended as a temporary solution until the Department of Energy (DOE) developed a permanent disposal in a deep geologic repository. However, due to the DOE's failure to establish a permanent nuclear waste repository, on-site storage of nuclear waste on a somewhat permanent basis has become a dangerous default situation, especially when the nuclear reactors are located on the coastline in a high-density population area.

37. Second, the original site decision for San Onofre was chosen for the purpose of being within close proximity to population centers, and thus, close to the users of the energy produced. However, the same reasoning does not apply for siting decisions for nuclear waste storage as, in the event of an emergency, there is greater per capita risk in siting the ISFSI near densely populated areas -- a risk that only increases with the length of time nuclear waste remains in the populated area.

38. Third, the general public did not agree to indefinite nuclear waste storage at the nuclear plant site when the plant was originally approved and put online.

*Although available by the SCE filing date (6-15-2015) the CA Coastal Commission staff permit application review did not include the NRC approved SCE Emergency Planning (EP) exemptions for San Onofre (6-4 and 6-5 2015). These NTC EP exemptions were not disclosed in the public review process nor included in the documentation encompassed by CA Coastal Commission staff in the permit's application under IV Finding and Declarations, **B. OTHER AGENCY APPROVALS U.S. Nuclear Regulatory Commission;** *Federal Pre-emption.* Those NRC EP approvals were also accompanied by a Federal Pre-emptive notification to U.S. Department of Homeland Security, Federal Emergency Management Agency (FEMA), on June 5, 2015, that FEMA is no longer required to review, monitor and report activities associated with off-site radiological emergency planning and preparedness as they relate to San Onofre under the provisions of 44 CFT 350. The NRC further requested FEMA notify the appropriate state and local governments that off-site radiological emergency plans and preparedness, as described in 44 CFR 350, are no longer required.

*As such, these approved NRC EP exemptions:

- eliminate the breadth of SCE's obligations to keep the State emergency response organizations and the general public informed in the event of an emergency;
- decrease the safeguards to public health and safety in the event of a credible and foreseeable accident scenario i.e. cask drop;
- discontinue the federal requirement for support to State planning and monitoring activities resulting in a clear reduction in State's emergency plan effectiveness by reducing the ability to effectively respond to an emergency;
- propose notification and interaction procedures with State and local agencies are eliminated almost in their entirety, based on the erroneous assumption that San Onofre, in its present state with spent fuel in the cooling pool, be viewed only as an ISFSI;
- fail to adequately analyze a number of credible scenarios and consider circumstances unique to California's coastal nuclear facilities: risks to public health and safety associated with and exacerbated by the state's seismicity and risk of tsunami;
- provide reasonable assurance that the health, safety, common defense and security of the public will be endangered.

39. Fourth, the highly-concentrated salt air environment at the San Onofre site poses increased degradation risks of chloride-induced stress corrosion cracking (CISCC) due to the close proximity to the ocean and prevailing winds. Furthermore, while the San Onofre nuclear plant needed cold ocean water to condense steam back to water, the ISFSI does not need to be located within close proximity to the ocean. In fact, coastal sites are more likely to result in CISCC as the CISCC process does not begin until the surface temperature of the canisters drops below 85 degrees C (185 degrees F). It likely that during the fourteen (14) – to - thirty (30) year cooling period planned by Edison, the canisters will have cooled enough for CISCC to commence and early cracking could occur.

40. In a staff review of the proposal, the Coastal Commission itself stated "it cannot be ignored that the proposed ISFSI location within the NIA lies just over 100 feet from the shoreline, at some of the lowest grade elevations present at the San Onofre site….the site could potentially be exposed to several coastal hazards depending on how long the facility were to remain in place."

41. Most importantly, the Coastal Commission presented the alternative of "shipping the material to an off-site ISFSI to be developed by SCE." Under this alternative, Edison could apply for a specific license to develop its own ISFSI away from the San Onofre licensed area.

However, Edison admitted it did not investigate any alternative locations away from coastal environments due to permitting restrictions. Below are examples of proposed off-site alternatives:

THE PALO VERDE ALTERNATIVE

42. Moving Edison's nuclear waste at San Onofre to Edison's nuclear waste site at Palo Verde is a better alternative than leaving it on San Diego's shoreline. As these pictures show, trucks can move nuclear waste:



43. As this picture below shows, there is a remote area at the Palo Verde nuclear plant (Edison holds 15% ownership) in the desert where nuclear waste is already stored The Palo Verde Nuclear Generating Station is a nuclear power plant located near Tonopah, Arizona in western Arizona:



FISHEL CALIFORNIA ALTERNATIVE

44. Fishel is located in East San Bernardino County, CA. Fishel has a population of zero (0); the closest improved property, a water pumping plant, is thirteen (13) miles away, and it is located next within close proximity to a railroad line. Railroads have been demonstrated to be one of the safest ways to transport nuclear waste and other hazardous material. Fishel is not a designated wilderness area and is comprised of land mostly owned by the Federal Government.

EAST CAMP PENDLETON ALTERNATIVE

45. One potential location evaluated by Edison and the Coastal Commission was the San Onofre "Mesa" location, which is an Edison-operated, non-nuclear auxiliary facility located within Camp Pendleton. The Mesa location has the advantages of being a previously-developed site under Edison ownership, but like San Onofre, it is located on an easement granted by the Navy to be terminated in 2017.

EDISON HAD NO PLAN TO CLEAN UP THE WASTE ITS BUSINESS PRODUCED

46. Edison's nuclear power reactors at San Onofre were licensed based on a set of requirements called the plant's "licensing basis." A principal licensing basis document is the plant's final safety analysis report (FSAR). The FSAR and the plant's Nuclear Regulatory Commission (NRC) license and associated technical specifications are the principal regulatory documents describing how the plant is designed, constructed, and operated.

47. Because a plant's design and operation are not static, certain changes are necessary over the course of a facility's operating life. Reactor licensees must follow NRC regulations to justify and implement changes in the design basis and licensing basis for their facilities, and are required to document such changes in the FSAR. 10 CFR 50.71(e) requires the FSAR to be periodically **updated.** The objectives of 10 CFR 50.71(e) are to ensure that licensees maintain the information in the Updated FSAR (UFSAR) to reflect the current status of the facility and address new issues as they arise so that the UFSAR can be used as a reference document in safety analysis.

48. The NRC has defined the changes that a licensee may make to a licensed facility without prior NRC approval. Pursuant to 10 CFR 50.59(c)(1), without obtaining a license

amendment, the holder of a license may: (1) make changes in the facility as described in the FSAR (as updated), or (2) make changes in the procedures as described in the FSAR (as updated), and (3) conduct tests or experiments not described in the FSAR (as updated) only if a change to the technical specifications incorporated in the license is not required, and the change, test or experiment does not meet any of the eight 10 CFR 50.59(c)(2) criteria.

49. In 2004, Edison applied to the California Public Utilities Commission (CPUC) for an order permitting Edison to install new steam generators at its San Onofre plant. In December 2005, the CPUC decided to allow Edison to proceed with the new steam generators at San Onofre. On 30 November 2004 Edison's Vice President, Dwight Nunn, described the significant design issues and the increased safety threat of the new steam generators in a letter (Nunn Letter). The 30 November 2004 Nunn letter provides in pertinent part:

SOUTHERN CALIFORNIA EDISON®
An EDISON INTERNATIONAL® Company

Dwight E. Nunn
Vice President

November 30, 2004

Mr. Akira Sawa
General Manager
Mitsubishi Heavy Industries, LTD
Kobe Shipyard & Machinery Works
1-1, Wadasaki-Cho 1-Chome
Hyogo-Ku
Kobe 652-8585
Japan

Dear Mr. Sawa:

Subject: Replacement Steam Generators
San Onofre Nuclear Generating Station, Units 2 & 3

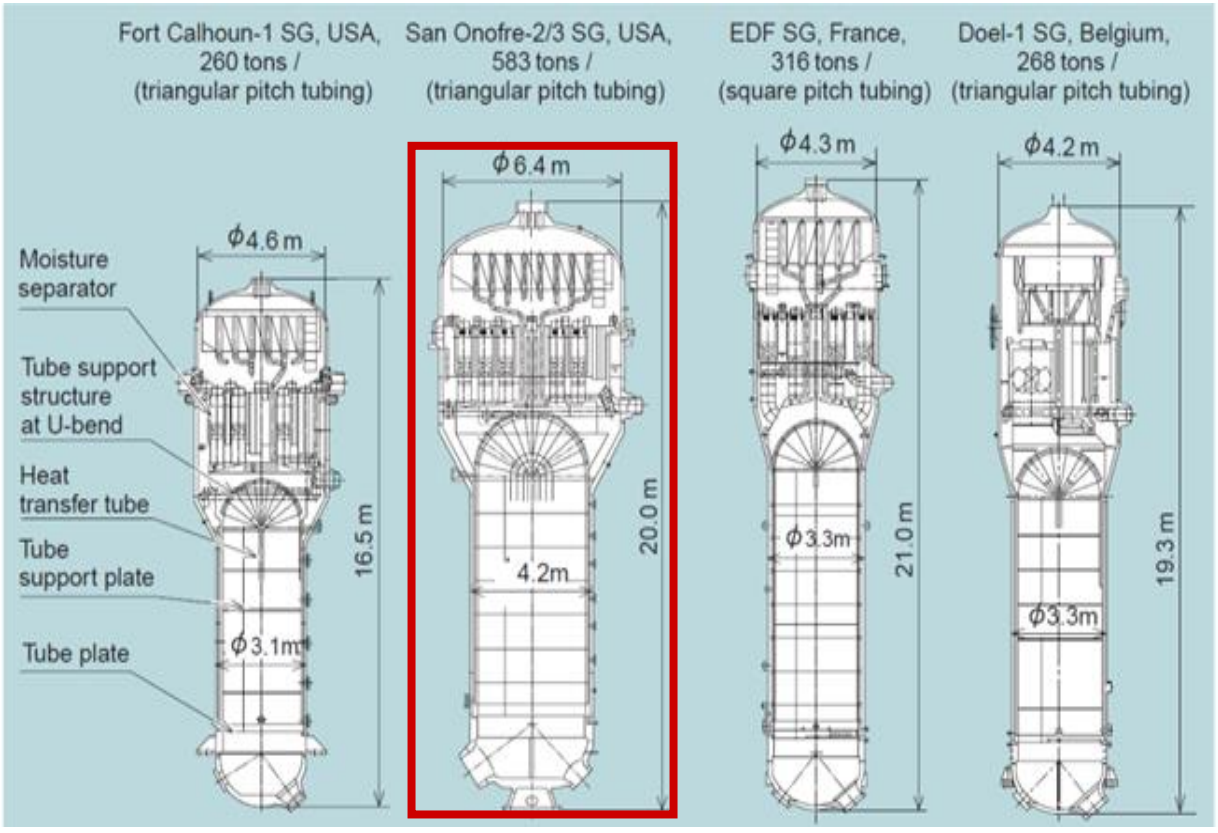
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This will be one of the largest steam generators ever built for the United States and represents a significant increase in size from those that Mitsubishi Heavy Industries has built in the past. It will require Mitsubishi Heavy Industries to evolve a new design beyond that which they currently have available. Such design evolutions require a careful, well thought approach that fully evaluates the risks inherent in creating a new and significantly larger steam generator. Such design evolutions tend to challenge the capability of existing models and engineering tools used for proven steam generator designs. Success in developing a new and larger steam generator design requires a full understanding of the risks inherent in this process and putting in place measures to manage these risks.

Based upon these observations, I am concerned that there is the potential that design flaws could be inadvertently introduced into the steam generator design that will lead to unacceptable consequences (e.g., tube wear and eventually tube plugging). This would be a disastrous outcome for both of us and a result each of our companies desire to avoid. In

50. Edison "souped-up" the new steam generators with 9,727 tubes -- 377 more than were in the original generators. In order to make room for the increased tubes, Edison had to remove stabilizing components such as the stay cylinder, supporting the tube sheet, and the "egg crate" tube support.

51. The drawings below illustrate how much bigger the new steam generators were in comparison to any generators previously manufactured by the company Edison hired:



52. After the defective steam generators deployed by Edison at its San Onofre plant failed eleven (11) months into their joint use, the Atomic Safety and Licensing Board found Edison's new steam generators "differed in design from the original steam generators." For example, each new steam generator (1) has 9,727 tubes, which is 377 more than are in the original; (2) does not have a stay cylinder supporting the tube sheet; and (3) has a broached tube

design, rather than an "egg crate" tube support."

53. In order to make room for the 377 new and longer tubes, Edison removed key mechanisms from the stabilizing components of the new steam generators. The following diagrams illustrate the location of the additional 377 tubes, the removed stay cylinder, and the removed egg crate tube support.

Edison's Overloaded Steam Generators
(377 More Tubes than in Original)



54. In order to make room for the 377 tubes, Edison removed the egg crate tube support and stay cylinder parts of the steam generators stabilization system:

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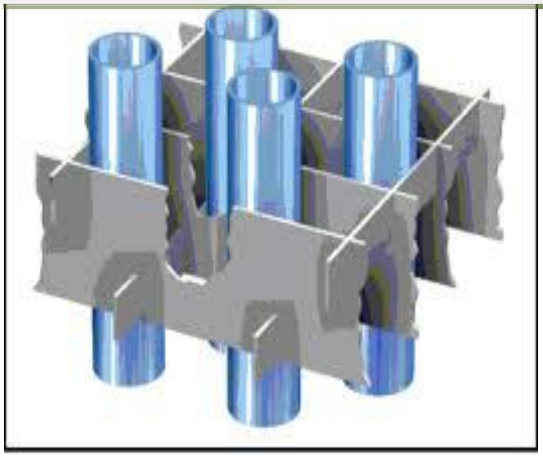
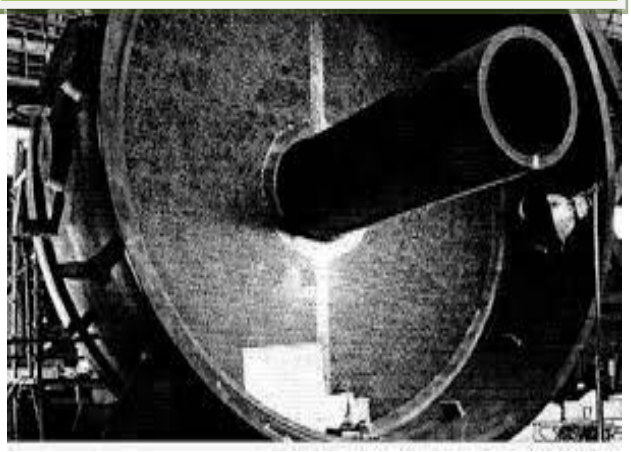
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Edison removed egg crate support	Edison removed massive stay cylinder
	

55. Section 10 CFR 50.59 stipulates that the FSAR (as updated) is expected to include FSAR changes resulting from evaluations performed pursuant to the regulation (10 CFR 50.59(c)(3)) such as Edison's plan to alter the design of the new steam generators with more tubes and reduced structural protections. Edison was required under this provision and directed to maintain records of changes in the facility (10 CFR 50.59 (d)(1)) and to submit a report containing a brief description of any changes, tests, and experiments made under this regulation, including a summary of the evaluation of each (10 CFR 50.59 (d)(2)). According to 10 CFR 50.59(d)(2), this report must be submitted to NRC at intervals not to exceed 24 months.

56. Because the new design's additional tubes and reduced stabilization increased safety risks, the safety license exemption was not available under 10 CFR 50.59. Edison's changes resulted in more than a minimal increase in the likelihood of the occurrence of a malfunction in the consequences of an accident, and increased the consequences of a malfunction of a structure, system and components (SSC).

57. Edison crossed over the line and went from avoidance, to evasion, of § 50.59 even before the "AVB Design Team recognized that the design for the San Onofre RSGs resulted in higher steam quality (void fraction) than previous designs;" Edison did not implement "changes in design to reduce the void fraction" because the potential changes "could impede the ability to justify the RSG design under the provisions of 10 C.F.R. 50.59."[2]

/ / /

[2] Mitsubishi Heavy Industries (MHI) Root Cause Report p.22

58. Edison's failure to obtain a safety license amendment was not excused by the §50.59 exemption. Edison's Boguslaw Olech, a key engineer who worked for Edison on the design and deployment of the new steam generators, admitted that Edison adopted the policy to evade the safety license amendment under the veil of §50.59. According to Olech, the new steam generators' design requirements and improvements had to be solved so they could be installed under the § 50.59 rule.[3]

59. The former Deputy Regional Administrator of the Nuclear Regulatory Commission, Elmo Collins, admitted that Edison should have requested a license amendment from the NRC prior to deploying the defective steam generators at San Onofre. Collins also admitted "the steam generator design was fundamentally flawed and would not have been approved as designed."

60. The CC Commissioners knew Edison had operated its nuclear waste-producing business for over 40 years but failed to develop a plan to locate the Edison nuclear waste to a safe location not on San Diego's coastline. The CC Commissioners knew Edison could not state it could remove its nuclear waste it seeks to bury on the beach by even as late as 2051. The 75 modules will be buried below sea level in concrete, making their safe removal infeasible. The CC Commissioners knew Edison had no plan to relocate Edison's nuclear waste from the beach in San Diego.

61. It appears that on 7 June 2006, Edison notified the NRC of Edison's plan to install new steam generators at San Onofre. Edison did not inform the NRC that the AVB Design Team had discovered a void fraction problem and Edison had limited correctives to those that would not alert the NRC. Instead, the SCE briefing to the NRC indicated there would be no associated power uprate (i.e. there was to be no increase in San Onofre's maximum power level).

62. The briefing document identified the changes as key design "improvements." Edison referred to the limited anti-vibration bar changes as "**improved** anti-vibration bar design." The briefing document also falsely identified that both the original and replacement steam generators were **identical in height.** The briefing informed the NRC that the new steam

[3] 20 March 2012 "Steam Generators: Design and details" Atomic Power Review, p. 2

generators were 643.6 tons, which was 23.6 tons heavier than the original, and that the replacement and would have more tubes than the original (9,727 versus 9,350).

63. Edison's PowerPoint for the new steam generator project at San Onofre did not inform the reader as to the negative void problem; it referred to the changes in the steam generators as "improvements:"

SOUTHERN CALIFORNIA EDISON
An EDISON INTERNATIONAL Company

San Onofre Nuclear Generating Station
Units 2 & 3

STEAM GENERATOR REPLACEMENT
PROJECT OVERVIEW

June 7, 2006

SONGS SGR TEAM

1

Some Key Design Improvements

- Larger Surface Area
- Alloy 690 Thermally Treated Tubing
- Improved AVB Design
- Integral Steam Nozzle
- Improved Material for Tube Supports
- Forged Shell



S/G 3A Lower and Middle Shell
S/G 2A Balance Ring, Extension Ring, & Tubesheet

12

SONGS SGR TEAM

DEFECTIVE STEAM GENERATORS FAIL IN 11 MONTHS

64. Edison deployed the defective steam generators, despite having been warned of their defects. The defective steam generators failed within eleven (11) months, causing the closure of the San Onofre plant.

UNREASONABLE RELIANCE ON SCE REPRESENTATIONS NO ALTERNATIVES

65. Edison seeks to bury its nuclear waste on the beach in San Diego as a result of its reckless conduct in deploying four (4) defective steam generators at its nuclear plant at San Onofre. Edison has made a series of false statements to California State officials at the CPUC and to the public that demonstrate that it is unreasonable to rely on Edison's statements regarding San Onofre.

66. The permit should be revoked until Edison identified and obtains an off-site location for the ISFSI. Edison effort to escape responsibility for storing the nuclear waste its business activities produced raises unacceptable, life-threatening risks for the people living in and around San Onofre. In the event someone else or the federal government does not provide a permanent repository or other offsite interim storage facility emerges, or if the shipment of San Onofre's spent fuel to an off-site location is otherwise delayed, or if the steel fuel storage casks proposed for use in the ISFSI degraded to the point of becoming unsafe to transport, the proposed ISFSI could be required beyond 2051, possibly for many decades. Under this scenario the ISFSI would eventually be exposed to coastal flooding and erosion hazards beyond its design capacity, or else would require protection by replacing or expanding the existing San Onofre shoreline armoring. In either situation, retention of the ISFSI beyond 2051 would have the potential to adversely affect marine and visual resources and coastal access.

UNLAWFUL INDEMNIFICATION

67. In order to induce the CC Commissioners to grant the unlawful permit which the CC members knew to be unlawful, Edison agreed to indemnify the CC Commissioners to indemnify and hold harmless the Commission, its officers, agents, and employees with respect to the Commission's approval of the project against any and all liability.

68. The indemnity agreement is void because it violates Cal Civ. Code § 2773 prohibition of indemnification agreements for acts known by such person at the time of doing it to be unlawful.

THE ADMINISTRATIVE DECISION

69. The administrative decision in issuing the October 6, 2015 permit was the result of arbitrary or capricious action by the Coastal Commission or an officer of the Coastal Commission acting in his or her capacity.

70. Petitioners have no further administrative remedies in that the decision is final upon its issuance.

71. Petitioners do not have a plain, speedy or adequate remedy in the law.

72. Petitioners seek judicial review because:

- There has been a prejudicial abuse of discretion in that the Commission has not proceeded in a manner required by law;
- The Commission has proceeded in excess of its jurisdiction;
- The decision by the Commission to issue the permit is not supported by the record or the findings;
- No substantial evidence supports the permit;
- Petitioners were denied due process of law in the proceedings.

73. Attorney's fees are proper to Petitioners pursuant to California Code of Civil Procedure § 1021.5 and/or Government Code § 800.

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WHEREFORE PLAINTIFFS PRAY FOR THE FOLLOWING RELIEF

1. For a writ of mandate vacating the order of the California Coastal Commission issuing to Southern California Edison under Application NO. 9-15-0228

2. For a declaration that the Permit issued by the California Coastal Commission to Southern California Edison under Application NO. NO. 9-15-0228 was issued in excess of the Coastal Commission authority under law and is declared null and void.

3. For attorney's fees according to statute;

4. Costs; and

5. For all other relief the Court deems proper.

AGUIRRE & SEVERSON, LLP

Dated: November 3, 2015

Michael J. Aguirre, Esq.,
Attorneys for Petitioners

VERIFICATION

I am a petitioner in this proceeding. The facts alleged in the above petition are true of my own knowledge.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Date: 11/3/2015

Petitioner
Citizen's Oversight, Inc.

Date: 11-03-15

Petitioner
Patricia Borchmann

Statement of

Geoffrey H. Fettus
Senior Attorney
Natural Resources Defense Council, Inc.

"Update on the Current Status of Nuclear Waste Management Policy."

Before the

Congress of the United States
House of Representatives
Committee on Energy and Commerce
Subcommittee on Environment and the Economy
2125 Rayburn House Office Building



May 15, 2015

Natural Resources Defense Council, Inc.
1152 15th St. NW, Suite 300
Washington, D.C. 20005
Tele: 202-289-6868
gfettus@nrdc.org

Introduction

Mr. Chairman and members of the Subcommittee, thank you for providing the Natural Resources Defense Council, Inc. (NRDC) this opportunity to present our views at this hearing to update the current state of nuclear waste management policy.

NRDC is a national, non-profit organization of scientists, lawyers, and environmental specialists, dedicated to protecting public health and the environment. Founded in 1970, NRDC serves more than one million members, supporters and environmental activists with offices in New York, Washington, Los Angeles, San Francisco, Chicago, Bozeman, Montana, and Beijing. We have worked on nuclear waste issues since our founding, and we will continue to do so.

After nearly 50 years of effort, the federal nuclear waste program in this country has failed to deliver a final resting place for highly toxic, radioactive waste that will be dangerous for millennia. Over the years, there have been numerous efforts to attribute the failure of the repository program to certain Senators, to Nevada Governors of both parties, to U.S. Nuclear Regulatory Commission (NRC) Commissioners, and even to the public for failure to accept its part in disposing of nuclear waste. All of this is wrong. Failure cannot be laid at the feet of any one person or entity or the public. Rather, the reasons are multiple and some are detailed in the Final Report of President Obama's Blue Ribbon Commission for America's Nuclear Future (BRC).[1]

In brief, several agencies (including the U.S. Environmental Protection Agency (EPA), the U.S. Department of Energy (DOE), the NRC, and the U.S. Department of Justice (DOJ)) and Congress repeatedly distorted the process for developing licensing criteria for a proposed repository. In each instance, detailed later in this testimony, such action was done so as to weaken environmental standards rather than strengthen them, and always to ensure the site would be licensed, no matter the end result. Rather than learn from this past, we fear Congress could now plow ahead with revanchist attempts wasting millions of dollars to reopen the now-defunct Yucca project, or create an interim spent nuclear fuel storage facility, policies that ensure failure. The BRC

[1] President Obama's "*Blue Ribbon Commission on America's Nuclear Future - Report to the Secretary of Energy, January 31, 2012*" (hereafter "*BRC Report*" or "*Final Report*").

recommendations, though only partially adequate to the task, point a way forward with adherence to: the need for geologic repositories; a science driven process for setting standards; and, most importantly, a focus on consent-based agreements between federal and state partners.

In NRDC's view, it is the partnership between federal and state partners that is key to arriving at state consent to host any amount of permanent nuclear waste disposal. To avoid continuing the contentious stalemate over nuclear waste management, we will conclude our testimony by offering five recommendations for how to finally move forward and get out of the present malaise.

Nuclear Waste Status Update

The Barriers to Restarting the Failed Yucca Mountain Process

As a first matter of business, we are aware that the Nuclear Waste Policy Act (NWPA) remains the law governing the disposition of spent nuclear fuel and high-level radioactive waste in the United States and, currently, the NWPA directs that Yucca Mountain be the sole repository for commercial spent nuclear fuel and defense high-level radioactive waste. But the record created by this hearing should fully reflect the story of how multiple actions by EPA, DOE, NRC, DOJ, and the U.S. House and Senate corrupted the process for developing and implementing licensing criteria for the Yucca Mountain repository and ensured the process was unworkable from a technical and institutional perspective. Failure to understand this history dooms any new effort to move forward on nuclear waste.

The Failure of the Repository Program

The history of the nuclear waste repository program is replete with failures and any suggestion that the failed Yucca project can be quickly and easily restarted and brought to a successful conclusion should be dispensed with as folly.

1. The first failed efforts.

In 1957-1958, the U.S. Atomic Energy Commission (AEC) conducted the first site specific study of the disposal of high-level radioactive waste in geologic salt formations at Hutchinson, Kansas. Between 1961 and 1963, the AEC conducted experiments at the Carey salt mine at Lyons, Kansas. In 1970 the AEC, along with the Kansas governor, announced tentative selection of the Carey salt

mine for a demonstration high-level waste repository. Opposition, primarily by the Kansas Geological Survey, concerns over conditions in the mine, the presence of numerous oil and gas wells in the vicinity, and the fact that there was solution mining at an operating adjacent salt mine operated by American Salt Company forced the AEC to abandoned the site by 1972.

Following the demise of the Lyons repository effort, the AEC announced in 1972 that it intended to develop a 100-year Retrievable Surface Storage Facility (RSSF). This proposal was opposed by the EPA and others because in their view it would divert attention and resources from efforts to find a permanent means of geologic disposal. As a consequence of this opposition, the Energy Research and Development Agency (ERDA) gave up its plans for a RSSF in 1975. Between 1975 and 1982, ERDA and the DOE continued to search for potential repository sites in various rock types in the states of Michigan, Ohio, New York, Utah, Texas, Louisiana, Mississippi, Washington, and Nevada. Various degrees of resistance from state and local representatives, combined with geological and technical problems, stalled these efforts to find a repository site. In 1976 President Gerald Ford halted the reprocessing of commercial nuclear fuel. In the following year President Jimmy Carter reinforced the government's ban on commercial reprocessing, and tried to halt the development of commercial breeder reactor development. These actions reinforced the need for prompt development of a geologic repository. While in 1977 ERDA also announced that it would accept custody of commercial spent fuel and store it at Away From Reactor (AFR) storage facilities, this never happened.

2. The IRG Process

By the mid-1970s it had become clear that commercial spent fuel reprocessing was uneconomical, environmentally unsound, and represented a serious proliferation risk. President Gerald Ford refused to subsidize the completion of the Barnwell reprocessing plant, and then President Jimmy Carter pulled the plug on reprocessing. These actions by Presidents Ford and Carter gave a new urgency to finding a site suitable for geologic disposal of both spent fuel and high-level radioactive waste. In the late 1970s President Carter initiated an Interagency Review Group (IRG) process to try to solve once and for all the nuclear waste problem in the United States. The IRG process involved numerous scientists, extensive public involvement, and a consultation and concurrence role for the states. The outcome of the IRG effort was a two-track program. The DOE was tasked

with the responsibility for identifying the best repository sites in the country, and the EPA and the NRC were tasked with developing nuclear waste disposal criteria against which the selection and development of the final repository sites would be judged.

3. The Nuclear Waste Policy Act (NWPA)

In 1982, Congress enacted the NWPA, which embodied in law the principal recommendations that grew out of the IRG process, including a commitment to geologic disposal, two repositories, and characterization of three sites before final selection of the first repository. The NWPA established a comprehensive program for the disposal of spent nuclear fuel and high-level radioactive waste (HLW) from the nation's commercial reactors and nuclear weapons complex. At the time the NWPA was passed nearly 25 years ago, the site selection and development process proposed by the IRG enjoyed fairly widespread support from within the Congress, the environmental community and state governments. By contrast, at this time the U.S. Government has little, if any, support from the State of Nevada, and virtually no public support from the environment and public health community for the proposed Yucca Mountain project.

4. What else went wrong?

Over the last twenty years, a substantial segment of the environmental community has arrived at the judgment that the process of developing, licensing, and setting environmental and oversight standards for the proposed repository has been, and continues to be, rigged or dramatically weakened to ensure that the site can be licensed, rather than provide for safety over the length of time that the waste remains dangerous to public health and the environment. How the Yucca Mountain site was selected and how the environmental standards were set are examples that illustrate this perspective.

a. Site Selection

First, DOE and then the Congress corrupted the site selection process within the NWPA. The original strategy contemplated DOE choosing the best four or five geologic media, then selecting a best candidate site in each media alternative, then narrowing the choices to the best three alternatives, and finally picking a preferred site for the first of two repositories. However site selection guidelines were strongly criticized as DOE was accused of selecting sites that they had

previously planned to pick. In May of 1986 DOE announced that it was abandoning a search for a second repository, and it had narrowed the candidate sites from nine to three, leaving in the mix the Hanford Reservation in Washington (in basalt), Deaf Smith Co., Texas (in bedded salt), and Yucca Mountain in Nevada (in unsaturated volcanic tuff). All equity in the site selection process was lost in 1987, when the Congress, confronted with a potentially huge cost of characterizing three sites, amended the NWPA of 1982, directing DOE to abandon the two-repository strategy and to develop only the Yucca Mountain site. At the time, Yucca Mountain was DOE's preferred site. The abandonment of the NWPA site selection process led directly to the loss of support from the State of Nevada, diminished Congressional support (except to ensure that the proposed Yucca site remains the sole site), and less meaningful public support for the Yucca Mountain project. The situation has only deteriorated since that time.

b. Radiation Standards

Radiation standards, the second track of the NWPA process has, if possible, fared worse. Section 121 of the NWPA of 1982 directs EPA to establish generally applicable standards to protect the general environment from offsite releases from radioactive materials in repositories, and directs the NRC to issue technical requirements and criteria. Unfortunately, it has been clear for years that the projected failures of the geologic isolation at Yucca Mountain are the determining factor in EPA's standards. EPA repeatedly issued standards that are concerned more with licensing the site than establishing protective standards. EPA's original 1985 standards were vacated in part because the EPA had failed to fulfill its separate duty under the Safe Drinking Water Act, 42 U.S.C. §300h, to assure that underground sources of water will not be "endangered" by any underground injection. *Natural Resources Defense Council v. Environmental Protection Agency* (NRDC v. EPA), 824 F.2d 1258 (1st Cir. 1987).

EPA's second attempt to at setting standards that allow for a projected failure of geological isolation was again vacated, this time by the United States Court of Appeals for the D.C. Circuit. The D.C. Circuit found that EPA's Yucca Mountain rule (and the corresponding NRC standard), which ended its period required compliance with the terms of those rules at 10,000 years was not "based upon or consistent with" the recommendations of the National Academy of Sciences ("NAS") as required by the 1992 Energy Policy Act and therefore must be vacated. *Nuclear*

Energy Institute, Inc. v. EPA, 373 F.3d 1251 (2004). Giving significant deference to the agency, the D.C. Circuit did not vacate EPA's strangely configured compliance boundary for the Yucca Mountain site. See this map of EPA's compliance boundary, https://www.nrdc.org/media/docs/020506b.pdf, (inside the oddly drawn line, the repository need not protect water quality and radiation can leak in any amount). The dramatically irregular line that represents the point of compliance has little precedent in the realm of environmental protection, and its shape is perhaps more reminiscent of gerrymandered political districts. Rather than promulgate protective groundwater standards, EPA pieced together a "controlled area" that both anticipates and allows for a plume of radioactive contamination that will spread several miles from the repository toward existing farming communities that depend solely on groundwater and perhaps through future communities closer to the site.

EPA's next proposed and revised rule, issued in 2005, retained the 15 millirem/year and groundwater standards for the first 10,000 years, but then establishes a 350 millirem/year standard for the period after 10,000 years and does away with the groundwater standard entirely. This two-tiered standard failed to comply with the law and fails to protect public health, especially if the repository's engineered barriers were compromised earlier than DOE predicts. On October 15, 2008, EPA published the final version of its revised Yucca Mountain rule in the Federal Register ("2008 Yucca Mountain rule," 73 Fed. Reg. 61255-61289). The 2008 Yucca Mountain rule's two-tiered individual protection annual dose standard establishes an initial 15 millirem first-tier limit, but weakens that limit to 100 millirem in the period after 10,000 years, when EPA projects peak dose to occur. Again, peak dose could occur significantly earlier if engineered barriers fail earlier than DOE and EPA have projected.

In any event, the final status of EPA's most recent two-tiered rule remains fundamentally uncertain. In an action pending in the District of Columbia Circuit (*State of Nevada v. Environmental Protection Agency*, No. 08-1327, consolidated with No. 08-1345), Nevada has challenged EPA's 2008 Yucca Mountain rule as once again failing to honor EPA's statutory duty to protect public health and safety, and to proceed consistently with the National Academy of Science's recommendations.

The Current Status of Nuclear Waste Management & Disposal

Despite lots of press about the NRC staff's issuance of the latest volume of its Safety Evaluation Report (SER) and its favorable conclusion that the Yucca Mountain repository could proceed to a licensing hearing (not that it would necessarily license the repository, as that would be making a mockery of its hearing process), there are dozens of issues likely to be litigated at great length. One in particular is premised entirely on DOE's design for titanium drip shields that are supposed to sit over each of the thousands of waste canisters in Yucca Mountain's underground tunnels to keep out corroding water. Although DOE included the drip shields as part of the repository design, and NRC has accepted them for license-review purposes, there is no plan to design, license, pay for, and much less install the shields until at least 100 years after the waste goes in. This unacceptable state of affairs is detailed by former NRC Commissioner Victor Gilinsky at http://thebulletin.org/yucca-mountain-redux7800. Quite simply, Yucca's likely repository configuration doesn't come close to meeting NRC requirements.

This and other issues are anticipated to be vigorously litigated by the State of Nevada, which has filed more than 200 contentions challenging DOE's license application for Yucca Mountain. To put the hearing process in perspective, NRDC is now entering the fifth year of a NRC licensing proceeding where not one party – not industry seeking the license, not NRC Staff, nor the environmental intervenors – have had any interest or taken any steps to functionally prolong or delay the proceeding beyond the rare extension of a short period of time for filing a pleading (something all parties found appropriate and necessary at various points).[2] And in the more than four years of this proceeding, *only three contentions* have been litigated on their merits, not the more than 200 likely to be litigated for the Yucca license if the process were commenced. Any suggestion the Yucca licensing proceeding could easily restart and quickly move to a successful conclusion for permanent disposal is simply a fallacy. And when that inevitable litigation rightly waylays yet another effort at nuclear waste disposal, the damage to the nation's prospects to ever developing a repository may be permanent.

[2] *In the Matter of Strata Energy, Inc*., (Ross In Situ Recovery Uranium Project), Docket No. 40-9091-MLA, ASLBP No. 12-915-01-MLA.

Also ahead is the looming debate over consolidated storage. Just to focus on one of the potential sites, the Waste Control Specialists (WCS) corporation has announced that it will seek to establish "interim" storage site for the nation's commercial spent nuclear fuel at its existing "low-level" radioactive and hazardous waste site in Andrews County, Texas, just across the border from New Mexico's defense waste transuranic repository, the Waste Isolation Pilot Plant (WIPP) and even closer to Urenco's uranium enrichment plant, officially in Eunice, NM. As we understand it, WCS will submit a license application to the NRC sometime in the next two years. In essence, the WCS proposal is to site a dry storage facility containing transport casks (that have also not been licensed yet) containing high-level radioactive waste from reactors across the country. WCS suggests this "interim" site would exist for 60 years, after which the waste could then be moved again to some permanent repository that not only doesn't yet exist, but there isn't even a plan to get there.

There are several problems with this proposal. First, and most obviously from NRDC's perspective, immediately going forward with a consolidated storage proposal before working out the details of a comprehensive legislative path for nuclear waste storage and disposal (and connecting the licensing of storage to the licensing of a permanent repository) entirely severs the link between storage and disposal, and creates an overwhelming risk that a storage site will function as de facto final resting place for nuclear waste. Or, in the alternative and also just as damning, it sets up yet another attempt to ship the waste to Yucca Mountain or even open up New Mexico's WIPP facility for spent nuclear fuel disposal– a site designed and intended for nuclear waste with trace levels of plutonium, not spent fuel (that has already blown plutonium throughout the underground and into the environment, contaminating 22 workers, and is functionally inoperable for years).[3] All of this runs precisely counter to the BRC's admonition that "consent" come first – a potentially ironic turn after decades of promises were delivered to New Mexico that it would never be asked to turn WIPP into a commercial nuclear waste repository.

[3] On February 5, 2014 there was an underground fire at the WIPP facility, precipitating the evacuation of 86 workers underground at the time of the fire, with 13 workers treated for smoke inhalation (seven at the WIPP site and six at the Carlsbad Medical Center). Next, on the night of Friday, February 14, 2014 there was a significant release of radiation to the environment from the facility that has substantially contaminated the underground and affected the health of a number of WIPP employees. *See*, February 5, 2014, Fire - http://www.wipp.energy.gov/Special/AIB%20Report.pdf; *see also*, February 14, 2014 Radiological Release (Phase 1), -http://www.wipp.energy.gov/Special/AIB_Final_WIPP_Rad_Release_Phase1_04_22_2014.pdf.

And that's the beginning of the problems of moving forward with consolidated storage before Congress sets out a comprehensive plan. Others are more practical in nature. In contrast to the defunct Private Fuel Storage (PFS) site proposed in Utah, which actually obtained a NRC license even though nearly every single major Republican office-holder in the state objected to it, the WCS proposal isn't designed as a private site where WCS would negotiate with each nuclear utility to accept its waste. The PFS scheme failed in part because such a private site transfers no liability for the nuclear waste, thus no utility was interested in the retention of the liability– especially as the waste would have to be transported hundreds or thousands of miles. In this instance, as we understand it, WCS will be requesting DOE accept title to the waste and all liability for transportation to Andrews County, Texas. And while WCS states that Andrews County supports the idea, it's not at all clear over the long term whether consensus will include more than the statement of a local governing body. Indeed, Texas and New Mexico will both need to be involved and already there are high-ranking objections from New Mexico. http://www.tomudall.senate.gov/?p=press_release&id=1947.

In contrast to all of this, NRDC suggests a better way forward that includes a pilot program for consolidated storage that does not include severing the link between storage and disposal. *See supra* at 14, 15.

The Trajectory of Senate Nuclear Waste Legislation

On September 12, 2012, NRDC testified before the Senate Energy & Natural Resources Committee on S. 3469, the template for S. 1240, and its current iteration, S. 854.[4] We commended S. 3469's adherence to three principles that, in our view, must be complied with if America is ever to develop an adequate, safe solution for nuclear waste – (1) radioactive waste from the nation's commercial nuclear power plants and nuclear weapons program must be buried in technically sound deep geologic repositories, in which the waste will be permanently isolated from the human

[4] NRDC's testimonies, delivered in 2012 and 2013 to the Senate E&NR Committee, can be found online at http://www.energy.senate.gov/public/index.cfm/hearings-and-business-meetings?Id=228fe2e8-8c9e-4440-b266-1d3885c3fa93&Statement_id=68e04fd7-ad48-4d91-b67f-e3e7c789471b; and http://www.nrdc.org/nuclear/gfettus-13073001.asp.

and natural environments; (2) governing legislation must contain a strong link between developing waste storage facilities and establishing final deep geologic repositories that ensures no "temporary" storage facility becomes a permanent one; and (3) nuclear waste legislation must embody the fundamental concept that the polluter pays the bill for the contamination that the polluter creates.

Unfortunately, the trajectory of legislation in the Senate has been negative, and we opposed last year's S. 1240 (and thus, this year's S. 854) because the bill: 1) severs the crucial link between storage and disposal; 2) places highest priority on establishing a Federal interim storage facility at the expense of getting the geologic repository program back on track; 3) fails to ensure that adequate geologic repository standards will be in place before the search for candidate geologic repositories sites commences; 4) fails to provide states with adequate regulatory authority over radiation-related health and safety issues associated with nuclear waste facilities in their respective states; and 5) fails to prohibit the Administrator (or Board) of a new federal entity overseeing nuclear waste management from using funds to engage in, or support spent fuel reprocessing (chemical or metallurgical).

In short, and regrettably, it appears that the authors of S. 1240/S. 854 have rejected several key recommendations of the BRC. Instead, the bill wrongly prioritizes the narrow aim of getting a government-run interim spent fuel storage facility up and running as soon as possible – a priority with potential financial benefits for business interests. However, as NRDC noted to the Senate in our testimony in 2013, we do believe the legislative process on nuclear waste management is salvageable, and we look forward to engaging in constructive efforts to address the shortcomings based on sound prescriptions.

NRDC's Prescriptions for Restarting and Forward Progress Towards Achieving Science-Based, Consent-Based Nuclear Waste Disposal Program

The BRC recognized that the 1987 amendments to the NWPA were "highly prescriptive" and "widely viewed as being driven too heavily by political consideration." As detailed earlier, we believe that those observations by the BRC are insufficiently critical assessments, however they make a sound point that goes directly to the fundamental flaw in the NWPA and the current

stalemate – at no point has Nevada consented to accept a potentially endless supply of nuclear waste and indeed, after the past two decades there is a vanishing likelihood the State, no matter the party in power, would ever would consent under any circumstances. So what to do?

NRDC recommends the Energy Committee consider five straightforward steps to re-launch the U.S. nuclear waste disposal program in a manner that finally, once and for all, puts the country on a path to solve the extraordinary challenge of waste that is toxic and radioactive for millennia.

Five Recommendations to Get the Nuclear Waste Program Back on Track

NRDC urges Congress to – (1) recognize that repositories must remain the focus of any legislative effort; (2) create a coherent legal framework before commencing any geologic repository or interim storage site development process; (3) arrive at a consent-based approach for nuclear waste storage and disposal via a fundamental change in law; (4) address storage in a phased approach consistent with the careful architecture of former Senator Bingaman's S. 3469 (introduced in 2012); and (5) exclude delaying, proliferation-driving and polarizing closed fuel cycle and reprocessing options from this effort to implement the interim storage and ultimate disposal missions.

Importantly, our view on each area is premised on a single overarching caution: in order to avoid repeating the mistakes of the last three decades, Congress must create a transparent, equitable process incorporating strong public health and environmental standards insulated from gerrymandering or other distortions in order to ensure, at the conclusion of the process, the licensing of a suitable site (or sites).

Recommendation 1 - Deep Geologic Repositories Are The Solution For Nuclear Waste And Must Remain the Focus

NRDC concurs with members of both parties in the recognition that our generation has ethical obligation to future generations regarding nuclear waste disposal. Adherence to the principle of deep geologic disposal as the solution to nuclear waste is consistent with more than 50 years of scientific consensus and the views of the BRC. No other solutions are technically, economically or morally viable over the long term, and NRDC strongly supports development of a science-based repository program that acknowledges the significant institutional challenges facing nuclear waste

storage and disposal. Thus, we urge an explicit adoption of the first purpose of the Nuclear Waste Policy Act (NWPA), 42 U.S.C. § 10131(b)(1), since the decision to isolate nuclear waste from the biosphere implicates critical issues of security, including: financial security, environmental protection, and public health.

Recommendation 2 – Create A Coherent Legal Framework That Ensures The "Polluter Pays" Before Commencing Any Repository Or Interim Storage Site Development.

To avoid repeating failures of past decades and consistent with BRC recommendations, both the standards for site screening and development criteria must be in final form before any sites are considered. Generic radiation and environmental protection standards must also be established prior to consideration of sites. Further, embedded in S. 3469 is the requirement that the polluters pay the bill for the contamination created. This bipartisan concept has long history as bedrock American law and must remain in full force in any legislation.

Recommendation 3 – Develop A Consent-Based Approach For Nuclear Waste Disposal Through A Fundamental Change In Law.

A central finding of the BRC was the need for a "consent-based, adaptive, and phased approach" for developing geologic disposal options. We agree with the general thrust, but any such "consent-based" process will enjoy a far higher probability of success in concert with a simple, but profound, change in the law. As the BRC's *Final Report* acknowledges, current federal law, including the Atomic Energy Act (AEA), preempts almost all forms of state regulation over a high level radioactive waste facility and, indeed, over regulation of radionuclides in general.

Congress should remove once and for all the AEA's exemptions for radionuclides from our nation's water and hazardous waste laws. These anachronistic nuclear exemptions from environmental law are at the heart of state and public distrust of both government and commercial nuclear facilities. Decades from now the Nation will return to the same predicament we face today (no matter how improved the architecture of any nuclear waste program) unless States are provided with meaningful regulatory authority under existing environmental laws. Therefore, Congress must amend the AEA to allow EPA and States direct authority over regulation, permitting, and operations of nuclear waste facilities.

As this Committee is aware, most federal environmental laws expressly exclude "source, special nuclear and byproduct material" from the scope of health, safety and environmental regulation by EPA or the states, leaving the field to DOE and NRC. In the absence of clear language in those statutes authorizing EPA (or states where appropriate) to regulate the environmental and public health impacts of radioactive waste, DOE thereby retains broad authority over its vast amounts of radioactive waste, with EPA and state regulators then only able to push for stringent cleanups on the margins of the process. Indeed, the BRC Report discusses the State of New Mexico's efforts to regulate aspects of the Waste Isolation Pilot Plant under RCRA as a critical, positive element in the development of the site. *Final Report* at 21.[5] The NRC also retains far reaching safety and environmental regulatory authority over commercial nuclear facilities, with agreement states able to assume NRC authority, but only on the federal agency's terms.

States are welcome to consult with the NRC and the DOE, but the agencies can, and will, assert preemptive authority where they see fit. This has happened time and again at both commercial and DOE nuclear facilities. This outdated regulatory scheme is the focal point of the distrust that has poisoned federal and state relationships involved in managing and disposing of high-level radioactive waste (HLW) and spent nuclear fuel, with resulting significant impacts on public health and the environment.

If EPA and the states had full legal authority and could treat radionuclides as they do other pollutants under environmental law, clear cleanup standards could be promulgated, and we could be much farther along in remediating the toxic legacy of the Cold War. Further, we could likely avoid some of the ongoing legal and regulatory disputes over operations at commercial nuclear facilities. Any regulatory change of this magnitude would have to be harmonized with appropriate NRC licensing jurisdiction over facilities and waste and harmonized with EPA's existing jurisdiction with respect to radiation standards: but such a process is certainly within the capacity of the current federal agencies and engaged stakeholders. Some states would assume regulatory jurisdiction over radioactive material, others might not. But in any event, substantially improved clarity in the regulatory

[5] The BRC Report omits discussion of the fierce effort New Mexico waged to obtain RCRA authority over the site.

structure and a meaningful state oversight role would allow, for the first time in this country, consent-based and transparent decisions to take place on the matter of developing storage sites and geologic repositories.

In short, removing the ability of the United States to unilaterally break the terms of the contract, as was suggested in the Bingaman legislation (S. 3469), could potentially give a state some measure of comfort that the agreement it had painstakingly negotiated will hold fast. But there would be nothing stopping Congress from revisiting this law, ratifying the consent agreements with conditions, and thereby removing whatever meaningful restraint a state might assert. Thus, ultimately what is offered as a thoughtful contract provision could be rendered inoperable, and could eviscerate a state's protection against altered, less favorable terms.

Therefore while S. 3469 sought to address this issue, it did not go far enough. By contrast, NRDC's prescription ending the anachronistic AEA exemptions solves the matter of meaningful state oversight and does not carry with it substantial likelihood of congressional terms and modifications exacted from states years into a good faith negotiation on a site. Indeed, while it would be possible for a future Congress to revisit the AEA and re-insert exemptions from environmental law, it would have to do so in a manner that would remove overdue jurisdictional authority from all states (or Congress would have to single out one state for special treatment). The difficulty of prevailing over the interest of all 50 states rather than simply amending legislation that affects the interests of just one state should be apparent.

Recommendation 4 – Address Storage In A Phased Approach Consistent With The Careful Architecture Of S. 3469.

Efforts to initiate a temporary storage facility must be inextricably linked with development of a permanent solution. This linkage, which is a crucial guard against a "temporary" storage facility becoming a permanent one, should guide the legislative process. Consistent with the BRC's findings, a case can only be made for interim storage if it is an integral part of the repository program and not as an alternative to, or de facto substitute for, permanent disposal.

Rather than prematurely bypassing a careful process that can arrive at protective, environmentally sensible and scientifically defensible solutions, NRDC urges spent fuel storage efforts to focus on vigorous efforts by industry and by appropriate regulatory authorities to ensure that all near-term forms of storage meet high standards of safety and security for the decades-long time periods that interim storage sites will be in use. While NRDC can agree with the overall concept of consolidated interim storage for a measured amount of spent fuel that meets strong safety criteria (moving fuel from seismically active areas, for example) and removing the stranded fuel from decommissioned plants, we can only do so after the introduction of a phased approach, as the general architecture of S. 3469 suggests, but is unfortunately dispensed with in the current iteration of the Senate bill.

The only situation where NRDC sees merit in a pilot project(s) is to address the current total stranded spent fuel at the closed reactor sites, accommodated in a hardened building at one or more sites that follows the example of the Ahaus facility in Germany. Potential volunteer sites that have already demonstrated "consent" are operating commercial reactors. Far less of the massive funding that would be necessary in the way of new infrastructure would be required and the capacity for fuel management and transportation is already in place, along with consent necessary for hosting nuclear facilities in the first instance.

Recommendation 5 – Exclude Unsafe, Uneconomic Closed Fuel Cycle And Reprocessing Options From This Effort.

S. 3469 wisely resisted inclusion of support for reprocessing, fast reactors, or other closed fuel cycle options. Consistent with BRC Findings, there are "no currently available or reasonably foreseeable" alternatives to deep geologic disposal. As Senator Bingaman noted, "even if we were to reprocess spent fuel, with all of the costs and environmental issues it involves, we would still need to dispose of the radioactive waste streams that reprocessing itself produces and we would need to do so in a deep geologic repository."

Conclusion

There is one area where we certainly agree with every member of the Subcommittee. The history of the federal nuclear waste program has been dismal. But decades from now others will face the

precise predicament we find ourselves in today if Congress tries to ram through unworkable solutions contentiously opposed by States, lacking a sound legal structure of science-based foundation, and devoid of public understanding and consent. The current efforts to quickly open Yucca Mountain and an interim storage facility simply will not work. Unless Congress fundamentally revamps how nuclear waste is regulated and allows for meaningful State oversight by amending the AEA to remove its express exemptions of radioactive material from environmental laws, we're doomed to repeat this dismal cycle until a future Congress gets it right.

Thank you again for this opportunity and I am happy to answer any questions.

David G. Victor
Chairman, SONGS Community
Engagement Panel
David.victor@ucsd.edu

11 September 2015

Board of Supervisors
County of San Diego
1600 Pacific Highway
Room 335
San Diego, CA 92101

Re: Agenda Item for 15 September Board meeting: Advocating for the Removal and Relocation of Spent Nuclear Fuel from the San Diego Region

To the Board,

Thank you for the opportunity to comment on this agenda item. For the last 18 months I have served as Chairman of the Community Engagement Panel (CEP)—a group of 18 volunteers drawn from the many communities around the San Onofre nuclear plant. Convened by Southern California Edison, the CEP is designed to open a conduit between Edison and these communities—in part to help Edison make the local communities more aware of how the decommissioning at San Onofre will proceed and to also help Edison become better aware of the concerns and views of the communities. We are independent and advisory.

Most of the conversations at the CEP have focused on the same issue you are addressing next week. What will be done with the spent fuel? I write to share with you what we have learned about this question as it may have large implications for what the Board writes not only in the letter contemplated by this agenda item but future board actions as well.

Many people have been surprised and concerned that even as the plant is dismantled that the fuel will remain at the site within our communities for the indefinite future. The reasons for this stalemate are well explained in your agenda item. The Federal Government had planned to remove spent fuel from reactors and store it permanently at Yucca Mountain. For various reasons, the Yucca mountain option has been slow to materialize and may never become available. That strategy by the federal government never contemplated any alternatives. Without Yucca we are stuck with the spent fuel.

We in the CEP have also learned about an intriguing opportunity to get around the Yucca problem. Several private companies along with communities in other states are creating facilities for "consolidated interim storage (CIS)." The idea is to move

spent fuel from sites like San Onofre into a central location far from population centers and then store it there until a permanent repository becomes available.

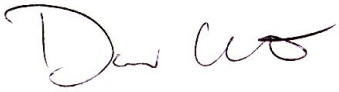
When you send your letter to the Department of Energy urging prompt relocation of the spent fuel it could be helpful to identify the need for DOE not just to focus on permanent repositories but also to offer its support to CIS. The Secretary of DOE has indicated his broad support for this option in part because DOE has large quantities of military nuclear waste that it must store. And there is an office inside DOE that is actively working in this area. But DOE would benefit from knowing about the growing local support for making CIS a reality. We have discussed this extensively at the CEP and the tenor of our conversations has been very supportive of CIS. The CEP is now canvassing a large number of other local groups to gauge their support as well.

Making CIS a reality may require changes in federal legislation to address topics such as funding—the nuclear industry has paid into a trust fund to cover the cost of storage, but there are ambiguities about how much (if any) of those funds can be used for CIS. It could be helpful to signal in your letter the need to look closely at legislative action. Frankly, Congress has not focused much on this topic and it would be helpful if California's delegation were more involved.

Finally, in the CEP we have discussed extensively the possible role for actions within the State of California. We have learned that CIS is a good idea in principle but that there are many important regulatory, political and financial details that remain to be worked out. For example, earlier efforts to create CIS facilities foundered on the lack of viable routes and strategies for transportation. Fixing that problem will require efforts not just at the federal level but also within the State and at the county level. We have learned that there could be an important role for the State of California to look at this range of topics and develop a strategy to help address them—so that CIS can become a reality. I attach a CEP memo that offers more detail on that issue, and in your letter it could be useful to indicate the need for the State to focus on this topic. Some members of the Assembly and Senate delegations from around San Onofre are aware of this issue, but across those legislative bodies awareness is still low.

I would welcome the opportunity to discuss these issues with you further and to offer any support where I or other members of the CEP can be helpful. I also look forward to working with the County as we try to make CIS a reality.

Yours Sincerely,



Attachment: SONGS CEP Memo, 25 August

To: SONGS Community Engagement Panel (CEP)

From: David G. Victor
Tim Brown
Dan Stetson

Re: Moving SONGS spent nuclear fuel: the role of Consolidated Interim Storage (CIS)

Date: 25 August 2015

Summary

This memo explores the options available to the CEP as we consider the question of how to move the spent nuclear fuel from the San Onofre site as quickly as possible. Action at the federal level continues to be an option, but a much more promising option lies with "consolidated interim storage (CIS)." Some private companies, notably in Texas and New Mexico, are already emerging that could take the spent fuel from SONGS and other power plants and store it until a permanent repository, such as Yucca Mountain, becomes available. The CEP has discussed this option extensively and learned that there is substantial and growing grassroots political support for offsite CIS.

Whether CIS becomes reality will depend on a huge amount of political, regulatory and policy spadework. There are questions surrounding transportation routes, funding, and many other topics that could become severe obstacles to making CIS a reality. State-level support for this option will be critical, and this memo suggests that we explore options in Sacramento for creating a select committee in the State Legislature and/or a program at the California Energy Commission (CEC) to develop an interim storage strategy for the state.

In addition, we suggest that CEP members should continue their efforts to reach out to local city councils, other governing bodies, environmental groups and other key stakeholders to build awareness of the importance of CIS for the San Onofre communities and the State of California more generally.

The issues

Over the last 18 months the CEP has devoted a substantial amount of attention to the challenges of storing high-level nuclear waste. Most of the waste generated at the plant during decommissioning is so-called "low level" nuclear waste and will be shipped to permanent repositories. That process is already under way.

But the high-level waste—in particular, the spent fuel rods—seem destined to remain at the site for the foreseeable future. The original "deal" at nuclear plants envisioned that the federal government would charge operators of nuclear power plants for the service of removing the fuel from each site and storing it permanently at a single national repository— currently in the form of Yucca Mountain. For years, the government charged operators for this service—with the money amassing in a trust fund—and began the process of building and licensing Yucca Mountain. Now, due to the political landscape and possible environmental issues, Yucca Mountain may never come to fruition. Indeed, the Department of Energy recognizes this fact and is now developing alternative sites and technologies for the permanent storage of defense nuclear waste that originally was to be stored at Yucca. Meanwhile, nuclear plant operators have successfully sued to stop paying into the trust fund with the understandable logic that they should not be paying the government for a service the government has no practical plan for delivering. Yucca might yet open one day, or it might be dead in the water.

That leaves us in the communities surrounding San Onofre in a difficult situation. We have looked closely at the technologies that will be used to store the fuel in dry casks on site. Those technologies are robust, but they need short and long term oversight and we have a good process in place for ensuring that the appropriate oversight is in place.[1] It makes little sense for San Onofre and the growing number of other decommissioning sites to leave fuel on site for the long haul, even after major decommissioning has been completed. People want the spent fuel moved out of their community.

Proposals for CEP Action

Over the last year we have seen a seismic shift in how the United States might store spent fuel. Two major companies have announced plans to build CIS facilities—one in West Texas and the other in southeastern New Mexico. Plans for yet more facilities may emerge as well. In addition, the Department of Energy has signaled that it too, favors CIS as a practical way to store spent fuel. The DOE has done this even as they continued with efforts to bring the beleaguered Yucca Mountain permanent repository online. New legislative proposals that are supportive of CIS, including legal reforms needed to help pay the cost for CIS, are advancing in both the House and the Senate.

The CEP has discussed these developments several times, and the tenor of our discussions has been highly supportive. Done well, CIS could allow SONGS to move spent fuel out of our community.

[1] David G Victor, "Safety of Long-Term Storage in Casks: Issues for San Onofre," Report of the Chairman of the Community Engagement Panel of the San Onofre Nuclear Generating Station, 9 December 2014. Songscommunity.com

The CEP discussions have also made it clear that CIS won't happen automatically. Many other reactors have spent fuel that can be stored at these sites, and failure to offer practical solutions to a host of problems, such as transport of the spent fuel out of California, could make CIS impractical for us.

The discussions we have had within the CEP point to three concrete sets of actions.

First, we should continue the process of building grassroots political support for CIS. This requires continuing the efforts to pass city council and other resolutions in communities around the plant—and to ensure that those resolutions are supportive of a prompt movement of spent fuel from SONGS. It also requires canvassing major stakeholders, including environmental and consumer groups, to solicit their support and to explain why CIS is important.

Second, we should work with Sacramento to ensure California and possibly the entire west coast get ready for CIS. At present, the debate around nuclear waste in California has mostly focused on lamenting the lack of a serious federal policy. We must help Sacramento understand that there are now alternatives that could be feasible in the right regulatory and political environment. The discussions within the CEP and with experts on CIS policy and regulation strongly suggest that we in the San Onofre communities could do all the needed spadework ourselves. Many of the issues revolve around state regulation and we need a state-based strategy. Building that strategy will require an organization that is well-linked to the relevant state regulatory bodies yet also has analytical capabilities and experience with developing politically viable and technically-informed policy strategies. It may be important to pursue efforts that build awareness and support within the California legislature. To do that we need to engage the key Senators and members of the Assembly.

It may be useful to gain the support of the California Energy Commission (CEC) to do a strategic regulatory analysis that could lay the groundwork to make CIS a reality. Doing that would require answering a series of questions—some technical and others political. The CEC is uniquely qualified to answers these questions:

- What would be appropriate sequencing of shipments—which waste should be shipped first and what should be left on site longer?
- If problems arise with the use of NWF funds to pay for transport and interim storage how could state regulators and trust fund administrators backstop contributions from in-state reactors?
- What kinds of test shipments and activities will be needed to certify that rail and road transport systems are licensed and adequately regulated? If the storage facility is located in another state—for example, Texas—what kinds of bilateral regulatory cooperation would be needed so that testing regimes developed in one jurisdiction would be recognized in another (e.g., Arizona and New Mexico)? How should California engage effectively with other groups, notably the Western Interstate Energy Board (WIEB), that have already done extensive work in this

area so that private developers see an effective but favorable regulatory environment rather than a discouraging cacophony of state rules?

- As sites are developed in other states should California or Californian operators of nuclear sites contribute to testing and development of those sites?
- Can California credibly defer to the NRC to regulate shipments, as currently required under federal law, or would the state impose other rules and regulations?
- Do state agencies (including the CEC) need additional authority from NRC or other federal bodies in order to advance a state-led effort to advance consolidated interim storage.
- Do the states need to develop a CIS Engagement Agreement that would demonstrate their commitment to the idea as well as establish responsible agencies, clear lines of communication and common objectives?
- Can California delegate to the US Department of Transportation (DoT) to develop transport routes and the needed consent from the communities along those routes? Or should California itself—either at the state level or through the counties that do something to jump start or oversee that process?

Private firms that are developing (or considering) consolidated interim storage see the waste in California as a huge opportunity. To encourage a private interim solution to our waste problem, we need credible answers to these types of questions above. The CEP would want to work with others—including BPC and Western Interstate Energy Board (WIEB) as well as the CEC—to help articulate a full list of questions needing addressed. The CEP discussions suggest, that when the time is right, we should invite representatives from these firms to visit the CEP and talk about their plans with the public.

Third, we should consider what might be done at the federal level. So far, the CEP has not had much discussion of this topic and there may be little that we can actually do. We should track the legislation moving through Congress. As we develop support for CIS we should brief our DC representatives to make them aware of the importance of CIS for California. We should be supportive and inviting of the DOE efforts to make CIS a reality and help them where we can—including with invitations to the head of the DOE effort (John Kotek) to visit the CEP. We will need advice on whether there is more that can and should be done in DC.

We have a strong interest in demonstrating credibility and interest to as many consolidated interim storage facilities as possible. So far there may be at least two projects at various stages of preparedness—the PFS facility and now the Waste Control Specialists facility in Andrews County along the Texas/New Mexico Border—with perhaps several others to appear in the coming years. For us, there is good news with competition in the industry and options for policy makers—so that, unlike Yucca mountain, we are not held hostage to problems at one site.