TESTIMONY OF

ROBERT J. HALSTEAD

ON BEHALF OF THE STATE OF NEVADA

BEFORE THE SUBCOMMITTEE ON ENVIRONMENT AND CLIMATE CHANGE

COMMITTEE ON ENERGY AND COMMERCE

UNITED STATES HOUSE OF REPRESENTATIVES

HEARING ON

"CLEANING UP COMMUNITIES: ENSURING SAFE STORAGE AND DISPOSAL OF SPENT NUCLEAR FUEL"

JUNE 13, 2019

Chairman Tonko, Ranking Member Shimkus, and Members of the Subcommittee, thank you for the opportunity to participate in this hearing on the storage and disposal of spent nuclear fuel. I am Robert J. Halstead, Executive Director of the Nevada Agency for Nuclear Projects. The Agency is part of the Office of Governor Steve Sisolak. The Agency is vested by state law to carry out the duties and responsibilities imposed on the State of Nevada by the Nuclear Waste Policy Act (NWPA), as amended. The Agency's primary responsibility is to oversee and evaluate the U. S. Department of Energy's (DOE) programs to characterize, license, construct and operate a geologic repository at the proposed Yucca Mountain site in southern Nevada. I hire and supervise consultants and scientists who oversee DOE's activities involving the Yucca Mountain site. I have worked in the nuclear waste policy field for 40 years.

Governor Sisolak has stated his position on Yucca Mountain in a letter to the Chairman and Ranking Member of the Energy and Commerce Committee: "The State of Nevada opposes the project based on scientific, technical, and legal merits. I am totally opposed to any legislative effort to restart the Yucca Mountain project. As you and your members know, under the Nuclear Waste Policy Act of 1982, only the governor is empowered to consult with the federal government on matters related to the siting of a nuclear waste repository." Governor Sisolak's letter is Attachment 1 to my testimony.

Agency staff and consultants have thoroughly reviewed H.R. 2699, the Nuclear Waste Policy Amendments Act of 2019. Governor Sisolak concludes, based on our analysis, that "H.R. 2699 would do nothing to repair the central failing of the current federal law. In 1987, Congress substituted political science for earth science and selected Yucca Mountain in Nevada as the only site for repository development. H.R. 2699 would not only continue this failed policy; it would seriously weaken Nevada's

current due process rights to challenge documented safety concerns and adverse environmental impacts in the legally-mandated licensing proceeding." Our revised comments are Attachment 2.

Yucca Mountain is an unsuitable site for a Geologic Repository

The primary objective of HR. 2699 is to restart the forced siting of a repository at Yucca Mountain by requiring DOE and the U.S. Nuclear Regulatory Commission (NRC) to resume the adjudicatory portion of the NRC licensing proceeding under expedited rules and schedules. The State of Nevada opposes H.R. 2699 because it ignores the facts about Yucca Mountain. The site is unsuitable for a geologic repository because of its geology and hydrology, its proximity to military aircraft training and testing facilities, and its distance from existing mainline railroads. DOE's license application submitted to the NRC in 2008 cannot overcome the deficiencies of the site.

Nevada's opposition to DOE's license application is driven by technical deficiencies in DOE's repository engineering design. The proposed repository emplacement drifts would be located in fractured rock above the water table and would inevitably leak dangerous radionuclides into the groundwater, where they would be transported to an aquifer. Water from this aquifer is used for a variety of purposes, including drinking water, agriculture, food processing, and Native American religious ceremonies. DOE's proposed waste packages (the so-called transportation, storage and disposal containers or TADs), a critical element of DOE's license application, are now obsolete by utility standards. The spent fuel canisters from all U.S. reactors are a different design, and U.S. reactors are not going to adopt DOE's TAD design. DOE's proposed thermal loading scheme (intended to drive water away from the waste packages by heating the waste emplacement tunnels to the boiling point of water for a thousand years) has never been demonstrated and cannot be proved in licensing. DOE's proposed installation of tens of thousands of titanium drip shields (weighing 5 tons each) to protect the waste packages from corrosive infiltrating water relies on yet to be developed technologies, and may not prevent contamination even if perfectly installed. These highly speculative titanium drip shields are estimated to cost $8 billion to $20 billion.

DOE will bear a heavy burden of proof in the largest and longest licensing proceeding in the history of the NRC. Moreover, DOE will face extraordinary difficulties obtaining water permits from the State of Nevada for repository construction; obtaining water permits and rights-of-way for construction of a 300 mile railroad across a national monument and active grazing lands; and imposing over flight restrictions

on military aircraft using the airspace above the repository surface facilities and adjacent lands currently used by the US Air Force.

Considering these technical and legal complexities, and the eight year lull in licensing activity, it would take 20-25 years before spent nuclear fuel or high-level radioactive waste could be received at the proposed Yucca Mountain repository. DOE and NRC preparation for resumption of licensing could require 18 months or more; the licensing proceeding for a construction authorization, and expected litigation, could require 96 months or more; construction of facilities and a 300-mile long railroad, licensing for receipt of spent nuclear fuel, and expected litigation, could require 120 months or more. Additional litigation is certain over NRC licensing rules; DOE program implementation; the Environmental Protection Agency (EPA) radiation protection standard; state water permits; railroad alignment selection, right-of-way acquisition and construction; and possibly other matters. These lawsuits could easily add another four to six years.

Nevada's estimates of time required are based on detailed analysis of previous NRC licensing proceedings and related lawsuits. Over these 20-25 years, the restarted repository program would likely require a minimum of $2 billion in average annual appropriations. Insufficient funding by Congress at any stage of licensing, construction and operational testing would delay the beginning of spent fuel receipt from reactors.

H.R. 2699 fails to honestly address the cost of Yucca Mountain, and fails to provide a workable funding mechanism for the restarted repository program. The Subcommittee's consideration of H.R. 2699 should begin by reviewing repository costs, starting with the DOE 2008 Total System Life Cycle Cost (TSLCC) Analysis and the 2013 DOE Fee Adequacy Report. We estimate the total future cost of Yucca Mountain would be at least $100 billion in 2019 dollars. Licensing alone would cost $2 billion over 4 or 5 years. DOE studies prepared between 2010 and 2013 estimated that walking away from Yucca Mountain and constructing a repository in salt or shale could save tens of billions of dollars. The Committees on Appropriations in both houses should require an updated estimate of Yucca Mountain costs, and the estimated costs of constructing repositories in other rock types, with alternative repository designs, before appropriating any new funds for Yucca Mountain licensing.

Stranded Spent Nuclear Fuel at Decommissioned and Decommissioning Reactors

The Subcommittee is considering two bills today that would address the adverse impacts on host communities of stranded spent nuclear fuel at decommissioned and decommissioning reactors.

H.R. 2995, the Spent Fuel Prioritization Act of 2019, and H.R. 3136, the Storage and Transportation of Residual and Excess (STORE) Nuclear Fuel Act of 2019 are both intended to address the growing safety and economic concerns of impacted communities. We have not yet had sufficient time to fully evaluate Section 3, Limitation on Collection of Fees and Section 4, Funding in H.R. 3136. But, our preliminary finding is that these two bills, taken together, would be an important step towards implementing the 2012 Recommendations of the Blue Ribbon Commission on America's Nuclear Future, and the 2018 recommendations of the Western Interstate Energy Board, that removal of spent nuclear fuel from shutdown reactor sites be prioritized.

H.R. 3136 would be more effective than H.R. 2699 in expediting removal of stranded fuel from decommissioned and decommissioning sites. Under H.R. 2699, the Monitored Retrievable Storage (MRS) facility could not receive spent fuel before a final NRC licensing decision approving or disapproving Yucca Mountain. H.R. 2699 retains the 10,000 MTHM capacity limit on MRS spent fuel storage until the repository first accepts spent fuel, and limits MRS capacity to 15,000 MTHM at all times. These MRS conditions would severely limit acceptance of spent fuel from currently decommissioned or decommissioning reactors, and could make MRS development unattractive to private companies.

H.R. 3136, combined with H.R. 2995, would be more effective in expediting removal of stranded fuel than resuming the Yucca Mountain licensing proceeding. The earliest realistic date that the proposed Yucca Mountain repository could receive spent fuel from decommissioned and decommissioning reactors would be 20-25 years from now, if ever. Nevada never stopped preparing for the resumption of licensing. Under the leadership of the Nevada Office of Attorney General, Nevada's legal and technical expert team has been in place since 2010 preparing to adjudicate 218 admitted contentions and to submit 30-50 new contentions using state funds appropriated by the Nevada Legislature. Any effort to speed up the process by imposing time limits on licensing, as proposed in H.R. 2699, would almost certainly backfire, increasing costs, increasing safety disputes, and increasing litigation.

An additional consideration is that the spent fuel at shutdown and soon-to-be-retired reactors is being welded into storage canisters that are not compatible with DOE's Yucca Mountain repository design. The spent fuel inside the canisters currently used for dry storage at U.S. reactor sites would need to be repackaged, or the Yucca Mountain waste package design would need to be changed, or a combination of both actions would be necessary, increasing by years the lead time for acceptance of U.S. reactor spent fuel at Yucca Mountain.

Consent-Based Siting for All Nuclear Waste Storage and Disposal Facilities

The State of Nevada supports H.R. 1544, the Nuclear Waste Informed Consent Act, introduced in March 2019 by Representatives Titus, Horsford, and Lee of Nevada. H.R. 1544 would require a written consent agreement between DOE, the repository host state, affected counties, and affected Indian Tribes, prior to construction of a repository. This would extend consent to the State of Nevada for Yucca Mountain. A companion bill, S. 649, was introduced by Senators Catherine Cortez Masto and Jacky Rosen of Nevada. H.R. 1544 and S. 649 provide a basis for amending other bills to create a workable approach to consent-based siting for all U.S. nuclear waste storage and disposal.

The Nevada Commission on Nuclear Projects recommended this approach in 2017: "In the past two Congresses, the Senate Energy and Natural Resources Committee has drafted comprehensive legislation, entitled the Nuclear Waste Administration Act, to restructure the nation's nuclear waste program following the BRC recommendations. This legislation is not acceptable to the State of Nevada because it would continue the status quo regarding Yucca Mountain. It would need to be amended along the lines of the Nuclear Waste Informed Consent Act, introduced by the Nevada congressional delegation."[1]

The Nuclear Waste Administration Act of 2019, S. 1234, would create a new waste management organization called the Nuclear Waste Administration (NWA); direct the NWA to establish a consent-based siting process; and calls for operation of a spent nuclear fuel storage pilot facility by December 31, 2025, an interim storage facility for spent nuclear fuel by December 31, 2029, and a geologic repository by December 31, 2052 [page 64, lines 19-24]. These storage and disposal facilities would be regulated by the NRC, subject to standards established by the EPA S. 1234 could be amended to extend the new consent-based siting process to Nevada regarding Yucca Mountain.

Governor Steve Sisolak concluded his letter with a pledge: "If your committee is truly interested in fixing our nation's broken nuclear waste program, my staff and I, and Nevada's congressional delegation, would be happy to meet with you and explore constructive alternatives." I hope the Subcommittee and the full Committee will consider my testimony today as a first step in fulfilling Nevada's part of the Governor's pledge.

[1] http://www.state.nv.us/nucwaste/news2017/pdf/nv2017comm_report_final.pdf [p.27]

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Office of the Governor

June 7, 2019

The Honorable Frank Pallone
Chairman, Committee on Energy and Commerce
2125 Rayburn House Office Building
United States House of Representatives
Washington, DC 20515

The Honorable Greg Walden
Ranking Member, Committee on Energy and Commerce
2322 Rayburn House Office Building
United States House of Representatives
Washington, DC 20515

Dear Chairman Pallone and Ranking Member Walden:

As your committee meets next week to discuss the future of high-level nuclear waste storage and disposal in the United States, I write to reaffirm the consistent position of the State of Nevada on the proposed Yucca Mountain Nuclear Waste Repository.

My position, and that of the State of Nevada, remains identical to the position of Nevada's past five governors: The State of Nevada opposes the project based on scientific, technical, and legal merits. I am totally opposed to any legislative effort to restart the Yucca Mountain project. As you and your members know, under the Nuclear Waste Policy Act of 1982, only the governor is empowered to consult with the federal government on matters related to the siting of a nuclear waste repository.

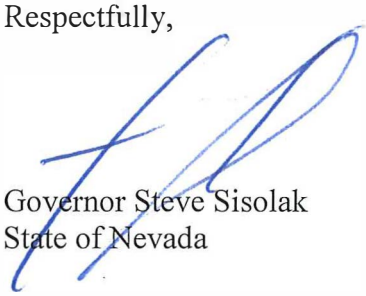
My staff has thoroughly reviewed H.R. 2699, the proposed Nuclear Waste Policy Amendments Act of 2019. H.R. 2699 would do nothing to repair the central failing of the current federal law. In 1987, Congress substituted political science for earth science and selected Yucca Mountain in Nevada as the only site for repository development. H.R. 2699 would not only continue this failed policy; it would seriously weaken Nevada's current due process rights to challenge documented safety concerns and adverse environmental impacts in the legally-mandated licensing proceeding.

This proposed legislation will waste billions of additional ratepayer and taxpayer dollars. Attempting to force an unsafe site on an unwilling state will fail. The proposed legislation only exacerbates the erosion of trust and confidence caused by the federal government's recent secret shipments of weapons-grade plutonium into our state.

I said in my State of the State address in January that not one ounce of nuclear waste will reach Yucca Mountain while I'm governor. I fully intend to keep my promise to the people of Nevada and fight against any attempts to restart the failed Yucca Mountain program. If your committee is

truly interested in fixing our nation's broken nuclear waste program, my staff and I, and Nevada's congressional delegation, would be happy to meet with you and explore constructive alternatives.

Respectfully,



Governor Steve Sisolak
State of Nevada

CC: Nevada Congressional Delegation
Members of the Committee on Energy and Commerce

ATTACHMENT 2

Date: June 9, 2019
To: Office of Governor Steve Sisolak and Nevada Congressional Delegation
From: Bob Halstead, Fed Dilger, & Belinda Evenden, Nevada Agency for Nuclear Projects
Subject: H.R. 2699, Nuclear Waste Policy Amendments Act of 2019 – Revised and Updated Comments

Introduction

On May 14, 2019, Rep. Jerry McNerney [D-CA-09], for himself and 14 co-sponsors, including Rep. John Shimkus [R-IL-15],[1] introduced H.R. 2699,[2] the Nuclear Waste Policy Amendments Act of 2019. H.R. 2699 NWPAA is nearly identical to the discussion draft bill of the same name released by Sen. John Barrasso (R-WY) on April 24, 2019. H.R. 2699 is also nearly identical to the 2018 bill of the same name introduced by Rep. Shimkus, H.R. 3053. The only differences[3] of substance are in Section 604, Office of Spent Nuclear Fuel [pages 49 – 50]. The bill is scheduled for a June 13, 2019 hearing before the House of Representatives Committee on Energy and Commerce, Subcommittee on Environment and Climate Change, and been referred to the Committees on Natural Resources, Armed Services, Budget, and Rules.

Overview

H.R. 2699 would restart the forced siting of a high-level nuclear waste repository at Yucca Mountain in Nevada. It would continue and expedite the primary provision of the Nuclear Waste Policy Amendments Act (NWPAA) of 1987 [42 U.S.C. 10172], which designated Yucca Mountain as the only candidate site to be studied for a geologic repository. The bill includes a consent-based siting process for consolidated interim storage facilities, called "Monitored Retrievable Storage" (MRS) facilities after the original terminology of the 1982 law. The bill directs the U.S. Nuclear Regulatory Commission (NRC) to accelerate the licensing process for Yucca Mountain.

H.R. 2699 also would impact U.S. Department of Energy (DOE) operations in other states. Sec. 604 (b) [page 50] transfers certain DOE defense, demonstration, and research nuclear waste functions to the Director of the Office of Spent Nuclear Fuel. This would significantly impact current DOE facilities and activities in Idaho, New Mexico, New York, South Carolina, Tennessee, Washington, and other states.

Yucca Mountain Repository & Nevada MRS [Pages 4, 14-29, 46-48]

H.R. 2699 changes the amount of waste that can be stored at Yucca Mountain, beginning the process of making Yucca Mountain the nation's only high-level nuclear waste repository. Section 202 (b)(2)(B) increases to 110,000 metric tons (from 70,000 metric tons) the capacity limit on first repository

[1] Cosponsors are Rep. Scott H. Peters [D-CA-52], Rep. Jeff Duncan [R-SC-03], Rep. Salud Carbajal [D-CA-24], Rep. Debbie Lesko [R-AZ-08], Rep. Lisa Blount Rochester [D-DE-00], Rep. Fred Upton [R- MI-06], Rep. William Keating [D-MA-09], Rep. Rick Allen [R-GA-12], Rep. Michael F. Doyle [D-PA-18], Rep. Joe Wilson [R-SC-02], Rep. Joe Courtney [D-CT-02], and Rep. Troy Balderson [R-OH-12].

[2] Text available at https://www.congress.gov/bill/116th-congress/house-bill/2699/text?r=80&s=1

[3] The only differences of substance are in Section 604, Office of Spent Nuclear Fuel [pages 49 – 50]. H.R. 2699 eliminates the earlier bills' section on Sense of Congress Regarding Storage of Nuclear Waste near the Great Lakes [Sec. 606 in H.R. 3053]. On May 10, 2018, the U.S. House of Representatives passed H.R. 3053, the Nuclear Waste Policy Amendments Act of 2018, by a recorded vote of 340-72.[1] Nevada's four House Members voted against passage. An amendment sponsored by Rep. Dina Titus [D-NV-1], to strike the language of H.R. 3053 and insert language establishing a consent-based siting process for determining a permanent nuclear waste repository, was defeated on a recorded vote of 80-332.[2] The list of all legislative actions is available at: https://www.congress.gov/bill/115th- congress/house-bill/3053/all-actions?overview=closed#tabs On May 14, 2018, H.R.3053 was received in the Senate, read twice, and referred to the Committee on Environment and Public Works. No further action was taken, and the bill expired with the 115th Congress.

emplacements until a second repository is in operation. If this change is permitted, Congress would almost certainly further revise upward or eliminate the capacity limit. Since the U.S. commercial spent fuel inventory already exceeds 80,000 metric tons and the total inventory of spent fuel and high-level waste is projected to grow to about 150,000 by 2050, this change virtually guarantees no second repository would be constructed.

H.R. 2699 would allow the location of a monitored retrievable storage facility in Nevada. Section 101 (b) (1) (B) strikes language in 42 U.S.C. 10161(g) that prohibits siting an MRS in any state where a repository site is under consideration. This provision of the 1987 NWPAA was intended to prevent Nevada from being stuck with both the only repository and an MRS facility. It also was designed to protect Nevada from a scenario in which nuclear fuel and high-level radioactive waste could be shipped to Nevada for surface storage at the MRS and then left permanently in surface storage.

H.R. 2699 would accelerate the NRC licensing process for DOE's Yucca Mountain repository application by providing certain land and water rights to DOE and by expediting the NRC licensing proceeding and changing the licensing procedures.

1. Section 201 would expedite the transfer of federal land interests to DOE from other agencies to give DOE full control of the Yucca Mountain site. Nine of the bill's 50 pages relate to land acquisition in one way or another. The NRC staff's Safety Evaluation Report for Yucca Mountain (NUREG-1949, Vol. 5), published in January 2015 concluded that a construction authorization (CA) could not be issued because DOE had not met the regulatory requirements regarding ownership and control of the land where the repository would be located and certain water rights requirements. The bill is intended to resolve these land control issues, although it would not guarantee water rights, for which a state permit is required.

2. Section 202 (b) would impose a new deadline requiring NRC to approve or disapprove DOE's Yucca Mountain application for a construction authorization within 30 months of enactment (but appears to retain the current provision allowing NRC to request a one-year extension). Other provisions in Section 202 (b) are generally intended to expedite NRC consideration of future DOE license amendments, related infrastructure activities, environmental analyses, and off-site connected actions.

3. Section 601 invites federal agency review of repository regulatory requirements that, while not clearly intended to apply to the construction authorization stage, could significantly impact the second and third stages of the Yucca Mountain licensing proceeding. On one hand, Section 601 (b) confirms that the site-specific Environmental Protection Agency (EPA) radiation protection standard for Yucca Mountain, mandated by the Energy Policy Act of 1992, is the effective standard for a licensing decision by NRC on the Yucca Mountain application for construction authorization. But Section 601 (a) would invite the Administrator of the EPA to change the repository radiation protection standards (40 CFR 197) after NRC construction authorization but before NRC final licensing approval for waste receipt and emplacement; it would also invite NRC to change the repository technical requirements and criteria (multiple barriers, retrieval, monitoring, closure, etc.) before NRC final licensing of Yucca Mountain. This could create a situation in which a future Congress could repeal the site-specific standard requirement for Yucca Mountain, and EPA and NRC could promulgate amended or revised rules for deciding on a license amendment, following construction authorization. This would create a major licensing loophole if new information obtained during construction of Yucca Mountain raises doubts

about final compliance with regulatory standards, and/or result in elimination of requirements for installing engineered barriers, such as the very expensive titanium drip shields.

Nuclear waste transportation through Las Vegas (Section 205) [Page 29] H.R. 2699 would allow DOE to select nuclear waste transportation routes through Las Vegas. Section 205 is deceptively worded to suggest otherwise. DOE's 2008 Final Supplemental Environmental Impact Statement (EIS) for Yucca Mountain proposes a transportation plan that would result in weekly shipments of spent nuclear fuel and high-level radioactive waste through Las Vegas for 50 years or more. Section 205 entrusts selection of routes to avoid Las Vegas to DOE, the same agency that after 20 years of transportation studies, selected a preferred rail route, the Caliente rail alignment that would use the Union Pacific Railroad mainline through downtown Las Vegas, in close proximity to the world-famous Las Vegas Strip. The DOE transportation plan also includes highway routes to Yucca Mountain that would use the heavily traveled Las Vegas Beltway (I-215) for thousands of truck shipments.

H.R. 2699 does not require DOE to select routes to avoid Las Vegas; it says DOE "should consider" such routes "to the extent practicable." There is no evidence in past DOE transportation studies that avoiding Las Vegas would be either practicable or practical. If it was easy, DOE would have already selected routes that would avoid Las Vegas.

H.R. 2699 has no enforcement mechanism for transportation routing decisions, other than the statement "It is the sense of the Congress that" DOE should do something, and the threshold definition of that something is that DOE "should consider" such routes. The relevant case law on previous enactments of similar statutory language indicates the bill's "should consider" language only means that DOE should consider avoiding Las Vegas.

Host State/Community Benefits Agreements (Title IV) [Pages 31-39]
H.R. 2699 ignores Nevada's long-standing position that no amount of monetary benefits can compensate for the coerced selection of an unsafe site. Sections 402 and 403 falsely promise direct payments to the State of Nevada and to local and tribal governments that cannot be guaranteed by law. Education benefits and benefits from future reprocessing are falsely promised in Sections 405 and 406.

Section 402 (a) promises the State of Nevada $15 million per year before waste receipts, a one-time payment of $400 million upon first receipt, and $40 million annually thereafter.[4] No guarantees or enforcement mechanisms are provided for these promised benefits payments or the promised preferences regarding future federal projects, education grants, and contracts.

If H.R. 2699 moves forward, the entire subject of benefits payments will require full explanation in committee reports. When this bill language was considered in the House last year, the House Rules Committee required revised language (in italics) be added: *''(c)Payments by Secretary.*—The Secretary shall make payments to the State of Nevada under a benefits agreement concerning a repository under section 170 from the Waste Fund. *The signature of the Secretary on a valid benefits agreement under this subtitle shall constitute a commitment, but only to the extent that all amounts for that purpose are*

[4] There is no provision for adjusting benefits payments to reflect inflation over the 100-year period of operations. The CPI increased from 99.6 in 1983, to 215.3 in 2008, an increase of 116 percent. The base year for the CPI is 1982-1984 = 100. The U.S. Department of Labor Bureau of Labor Statistics (BLS) calculates the CPI on a monthly basis. The Federal Reserve Bank of Minneapolis publishes a summary of the annual CPI since 1913, updated quarterly, at https://minneapolisfed.org/community/financial-and-economic-education/cpi-calculator-information .

provided in advance in subsequent appropriations Acts, by the Secretary to make payments in accordance with such agreement.''

The Rules Committee explained: "CBO [the Congressional Budget Office] determined that the NWPA needed to be amended with this clarifying language to assure that the Federal government would not be held legally liable if benefits funding is not appropriated because of a contractual obligation by the Department of Energy."

H.R. 2699 does not address the amounts of funding that would be needed for participation in licensing. Federal funding for State, local, and tribal government participation in the NRC licensing proceeding and oversight and monitoring of the DOE program must be provided from the Nuclear Waste Fund and cannot be considered a benefit.

H.R. 2699 ignores potential adverse economic impacts that could result from developing Yucca Mountain or any other repository site, including uncertainty about compensation (for example, limitations on liability for damages caused by DOE contractors), and reduction in property values near transportation routes resulting from stigma and perception of risk.

H.R. 2699 states that acceptance or use of economic benefits by Nevada "shall not be considered to be an expression of consent, express or implied, to the siting of repository in such State."

Interim Storage (Title I) [Pages 3-14]

H.R. 2699 Title I Monitored Retrievable Storage (MRS) would amend the current statutory basis [42 U.S.C. 10161] for consolidated interim storage, to authorize DOE to take title to commercial spent nuclear fuel at MRS facilities. It would allow DOE to begin development of one such facility, or acquire rights to utilize one MRS developed by a private company, prior to final NRC action on the Yucca Mountain license application. The bill creates a consent-based siting process for MRS facilities, requiring approval by the host state Governor, any affected unit of local government, and any affected Indian tribe. The bill authorizes a minimum of $50 million for MRS development for FY 2020, 2021, and 2022; and 10 percent of Waste Fund appropriations for FY 2023, 2024, and 2025. The bill authorizes benefits payments to host states (in consultation with local governments) totaling $5 million per year before waste receipts and $10 million per year thereafter. The bill retains the 1987 revocation of MRS sites in the State of Tennessee, including Oak Ridge. [42 U.S.C. 10162(a)]

However, Section 107 of H.R. 2699 [page 14] imposes severe licensing conditions. The MRS could not receive spent fuel before a final NRC decision approving or disapproving the Yucca Mountain license application. Moreover, H.R. 2699 retains the 10,000 MTHM capacity limit on MRS spent fuel storage until the repository first accepts spent fuel, and limits the capacity to 15,000 MTHM at all times. These conditions would severely limit the ability of the MRS to accept spent fuel from currently shutdown or decommissioning reactors. These conditions could make MRS development unattractive.

Program Funding (Title V) [Pages 39-46]

Before turning to the H.R 2699 funding provisions, it is useful to review repository costs. Our starting point is the DOE 2008 Total System Life Cycle Cost (TSLCC) Analysis[5] and the 2013 DOE Fee Adequacy

[5] DOE, OCRWM, *Analysis of the Total System Life Cycle Cost of the Civilian Radioactive Waste Management Program, Fiscal Year 2007*, DOE/RW-0591, Washington, DC (July 2008). http://www.state.nv.us/nucwaste/news2018/pdf/FY_2007_TotalSystemLifeCycleCost_Pub2008.pdf

Report.[6] We estimate $100 billion in 2019 dollars to be the future total cost of Yucca Mountain. That includes $2 billion over 4-5 years just for licensing.[7] DOE studies prepared between 2010 and 2013 estimated that walking away from Yucca Mountain and constructing a repository in salt or shale could save tens of billions of dollars.[8] The Energy and Commerce Committee should require an updated estimate of projected Yucca Mountain costs, and the estimated costs of constructing repositories in other rock types, with alternative repository designs, before making final decisions regarding H.R. 2699.

The most recent DOE nuclear waste fund audit report (November 2018)[9] says the revenue balance in the Nuclear Waste Fund (NWF) was $41.9 billion on September 30, 2018, and that the fund earned $1.5 billion in interest during FY 2018. The 2018 audit report provides an overview of the accounting procedures under which the NWF operates, the statutory provisions governing congressional appropriations for the NWF, and estimates DOE's outstanding liabilities due to partial breach of the Standard Contract with nuclear utilities, which obligated DOE to begin disposing of spent nuclear fuel on January 31, 1998 ($28.1 billion).[10]

In June 2018 the Agency prepared detailed comments on the identical provisions of H.R. 3053 using information provided in the House Committee Report, the House Rules Report, and the CBO 10-year cost analysis. The House Committee Report stated that the purpose of Title V is to reform portions of the financing mechanism "to more equitably treat ratepayers, provide certainty to DOE's program management, and make it easier for Congress to appropriate Nuclear Waste Fund money for its intended purposes, without taking resources away from other priority programs across the Federal government." [p. 34]

Additional information is available in OCRWM, *Summary of Program Financial and Budget Information* (January 1, 2010). http://www.state.nv.us/nucwaste/news2018/pdf/ocrwm-budget-summary.pdf

[6] DOE, *Nuclear Waste Fund Fee Adequacy Assessment Report* (January 2013). http://www.state.nv.us/nucwaste/news2018/pdf/11-1066-2013-01_18.pdf

[7] We start with the $82.64 billion future cost in 2007$, and increase by 21% to reflect the estimated increase in the CPI to 2019, resulting in a $99.99 billion cost. The CPI increased 18 percent between 2007 and 2017, at an annual average rate of about 1.6 percent. The TSLCC estimated DOE licensing costs of $1.66 billion in 2007$. NRC recently estimated licensing costs at $330 million. The 2008 TSLCC is the source for the commonly cited $96 billion (2007$) total cost for the Yucca Mountain repository project: historical costs of $13.54 billion (2007$) plus future costs of $82.64 billion (2007$).The DOE 2008 TSLCC Analysis provides detailed estimates, in constant 2007 dollars, of past nuclear waste program costs (1983-2006) and projects nuclear waste program costs (2007-2133). DOE uses same year constant dollars to remove the effects of inflation [TSLCC, 2] Separate defense appropriations would pay approximately 20 percent of the program cost for disposal of defense HLW and DOE-owned SNF. [TSLCC, 32-33] DOE would need ten years and $13.51 billion (2007$) to obtain a construction authorization and license to receive radioactive materials from the NRC, and complete required construction before receiving SNF and HLW. Even with historically low inflation, the CPI increased 18 percent between 2007 and 2017, at an annual average rate of about 1.6 percent. DOE would require $32.55 billion (2007$), or $1.3 billion (2007$) per year, for the next 25 years of repository construction and operations. Even if the inflation rate was low by historical standards, about 1.6 percent per year, DOE still would need to request an appropriation of about $1.5 billion in the first year of full operations. If inflation continued at only 1.6 percent per year, by Year 25, the DOE annual appropriations request could be $2.0 billion. If the inflation rate was the same as between 1983 and 2008, DOE would need to request about $2.7 billion for Year 25.

[8] "The direct repository costs in the UFD study is compared to an adjusted YM TSLCC values of $51.3B ($97.0 B less $45.6B). A relative cost scaling factor for each of the alternative repository concepts is presented in Table 4-1. Overall the alternative repository concepts range from about half the cost of the YM repository (established by the lost cost for either a bedded salt repository or an open mode shale repository) to about 80% higher than the YM repository (established by the high cost for the shale enclosed repository). These factors are for the direct repository costs only. Transportation, consolidated storage and used fuel packaging/repackaging costs as required for an integrated SNF management system architecture are not included." Page 76. Salt repository compared to Yucca Mountain: Low Cost Scenario, 51.3 - 24.3 = 27.0 Billion less expensive; High Cost Scenario, 51.3 - 39.4 = 11.9 Billion less expensive. Shale repository compared to Yucca Mountain: Low Cost Scenario, 51.3 - 25.5 = 25.8 Billion less expensive; High Cost Scenario, 51.3 - 38.7 = 12.6 Billion. See Table 4-1, page 77. DOE, *Nuclear Waste Fund Fee Adequacy Assessment Report* (January 2013). http://www.state.nv.us/nucwaste/news2018/pdf/11-1066-2013-01_18.pdf.

[9] https://www.energy.gov/sites/prod/files/2018/11/f58/DOE-OIG-19-08_0.pdf

[10] See especially the summary of finances as of September 30, 2018, on page 7; legislative background on page 16; and accounting policies on pages 17-18.

Our examination of Title V last year and this year reveals no basis for concluding that this bill would establish a workable mechanism for funding the high-level nuclear waste program, either over the first ten years after enactment, or over the 120-to-130-year operating life of the proposed Yucca Mountain repository. Neither the House Committee Report nor the CBO analysis [included in the Committee Report at pages 44-57] provided a life-of-operations, year-by-year forecast of nuclear waste program expenditures and income, comparable to the future income and disposal cost estimates reported in DOE's 2008 Total System Life Cycle Cost (TSLCC) Analysis[11] and the 2013 DOE Fee Adequacy Report.[12]

The DOE 2008 TSLCC Analysis provides detailed estimates, in constant 2007 dollars, of past nuclear waste program costs (1983-2006) and projects nuclear waste program costs (2007-2133). DOE uses same year constant dollars to remove the effects of inflation. This report is the source for the commonly cited $96 billion (2007$) total cost for the Yucca Mountain repository project: historical costs of $13.54 billion (2007$) plus future costs of $82.64 billion (2007$). [p. 2] The DOE analysis indicates that about 80 percent of these costs are for disposal of commercial spent nuclear fuel (SNF) and high-level radioactive waste (HLW) and would be paid by appropriations from the Nuclear Waste Fund. Separate defense appropriations would pay approximately 20 percent of the program cost for disposal of defense HLW and DOE-owned SNF. [Pp. 32-33]

The DOE 2013 Fee Adequacy Report provides historical data on past utility payments into the Nuclear Waste Fund (NWF) and projected future payments in constant 2012 dollars based on assumptions about the amount of nuclear-generated electricity annually. DOE projected future fee income would total $20.5 billion (2012$). [p. 25] But a Federal court decision in 2014 ordered DOE to suspend collection. Utility payments totaled $765 million in 2012 and were projected to average about $730 million (in 2012$) per year over the next decade (2013-2022). Looking at actual U.S. nuclear net electric generation[13] (around 780-800 million megawatt hours per year, despite recent plant closures) the NWF would have received $700-750 million per year between 2014 and 2018 if the fee had been reinstated.

Section 501 would continue suspension of DOE collection of utility fees until after a final NRC decision on the Yucca Mountain construction authorization (CA). No new utility payments would be coming into the NWF during the licensing proceeding, which could cost $2 billion or more over 4-5 years. Program funds during this period would be requested from Congress annually by the Administration, through the current politically-charged appropriations process. After the CA decision, program funds would remain reliant upon on the current appropriations process, although DOE could now resume collection of utility fees, and the collected fees classified as "discretionary accounts" would presumably be more readily available for appropriation.

The DOE 2008 TSLCC year-by-year future cost estimates provide a basis for evaluating the funding that would be needed for the actions proposed in the bill. First, the 2008 TSLCC analysis indicates DOE would need ten years and $13.51 billion (2007$) to obtain a construction authorization and license to receive radioactive materials from the NRC, and complete required construction before receiving SNF and HLW.

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[11] DOE, OCRWM, *Analysis of the Total System Life Cycle Cost of the Civilian Radioactive Waste Management Program, Fiscal Year 2007*, DOE/RW-0591, Washington, DC (July 2008).
http://www.state.nv.us/nucwaste/news2018/pdf/FY_2007_TotalSystemLifeCycleCost_Pub2008.pdf
Additional information is available in OCRWM, *Summary of Program Financial and Budget Information* (January 1, 2010).
http://www.state.nv.us/nucwaste/news2018/pdf/ocrwm-budget-summary.pdf

[12] DOE, *Nuclear Waste Fund Fee Adequacy Assessment Report* (January 2013). http://www.state.nv.us/nucwaste/news2018/pdf/11-1066-2013-01_18.pdf

[13] https://www.eia.gov/todayinenergy/detail.php?id=38792

All repository program funding during this period would be requested by the Administration and appropriated by Congress, using the 80/20 percent commercial-defense cost sharing formula. The annual Administration requests would need to reflect inflation. Even during the recent period of historically low inflation, the CPI increased 18 percent between 2007 and 2017, at an annual average rate of about 1.6 percent.

Second, the 2008 TSLCC analysis indicates DOE would require $32.55 billion (2007$), or $1.3 billion (2007$) per year, for the next 25 years of repository construction and operations after SNF and HLW receipts begin. Even if the inflation rate was low by historical standards, about 1.6 percent per year, DOE still would need to request an appropriation of about $1.5 billion in the first year of full operations. If inflation continued at only 1.6 percent per year, by Year 25, the DOE annual appropriations request could be $2.0 billion. If the inflation rate was the same as between 1983 and 2008, DOE would need to request about $2.7 billion for Year 25.

Finally, Section 501 (a) could create political controversy by the vague manner through which it directs the Secretary of Energy to conduct a new repository lifecycle cost analysis and develop a new utility fee collection program based on the findings of that analysis. This provision intentionally "does not address whether DOE can begin assessing the fee prior to NRC's final decision" the House Committee Report on H.R. 3053 explains in a footnote. [fn. 69, p. 35] Other intentionally vague provisions regard the collection of interest on fees paid and renegotiation of the Standard Contract. [Fn. 71-74, p.36] The Secretary is authorized to resume collection of fees but is not required to resume collection of fees. The amount of fees that can be collected annually could apparently vary from fiscal year to fiscal year. Could such a vaguely defined new fee collection program, worth up to $1 billion (or possibly more) per year, be established without political controversy, if not political interference? Would fee collection be resumed at all?

The House Committee Report on H.R. 3053 says that Title V is intended to provide predictable funding and sufficient funding for all authorized uses under the NWPA. "The availability of funding is central to the program's success." [Committee Report, p. 34] The Energy and Commerce Committee must take a hard look at Title V. Does it assure funding predictability or sufficiency, or does it create multiple new funding uncertainties? Does it guarantee future program funding outside of the annual appropriations process? Future utility fee collections and renegotiation of the Standard Contract are expected but not required. Because of these uncertainties, the long-term costs of the program mandated by Title V are unknown, and perhaps unknowable.

The High-Level Nuclear Waste Program Generally (Title VI) [Pages 49-51]

Section 604(a) renames DOE's managing entity for the entire federal high-level nuclear waste program as the Office of Spent Nuclear Fuel (OSNF), and transfers to OSNF responsibility for all federal spent nuclear fuel and high-level radioactive waste activities.[14] H.R. 2699 takes a completely different approach to program management, than does S. 1234, the Nuclear Waste Administration Act, which would remove the civilian spent nuclear fuel program from DOE. S. 1234 would create a new stand-alone federal agency to manage the waste program. H.R. 2699 ignores past recommendations by the Nuclear Energy Institute, the 2012 recommendation of the Blue Ribbon Commission (BRC) on America's Nuclear Future, and the recommendation earlier this year in the Stanford University Reset Report, that the program be removed from DOE and transferred to a federal-chartered corporation or a utility

[14]At present the Office of Civilian Radioactive Waste Management (OCRWM) is the managing entity for the federal nuclear waste program [42 U.S.C. 10224]. http://uscode.house.gov/view.xhtml?req=(title:42%20section:10224%20edition:prelim)

owned management entity. There was little if any specific discussion of this matter during House Subcommittee and Committee hearings, and no discussion of alternative means of managing the program in the Committee Report[15] on H.R. 3053. The Energy and Commerce Committee should take a hard look at alternative ways of improving program management before deciding to keep the program in DOE and to vastly increase the OSNF nuclear waste responsibilities and powers.

And H.R. 2699 does vastly expand the nuclear waste responsibilities and powers of the new OSNF. Section 604 (b) would transfer to the OSNF Director all nuclear waste functions currently assigned to one or more Assistant Secretaries of Energy by 42 U.S.C 7133(a). The responsibilities transferred include:

1. the establishment of control over existing government facilities for the treatment and storage of nuclear wastes, including all containers, casks, buildings, vehicles, equipment, and all other materials associated with such facilities;
2. the establishment of control over all existing nuclear waste in the possession or control of the government and all commercial nuclear waste presently stored on other than the site of a licensed nuclear power electric generating facility, except that nothing in this paragraph shall alter or effect title to such waste;
3. the establishment of temporary and permanent facilities for storage, management, and ultimate disposal of nuclear wastes;
4. the establishment of facilities for the treatment of nuclear wastes;
5. the establishment of programs for the treatment, management, storage, and disposal of nuclear wastes;
6. the establishment of fees or user charges for nuclear waste treatment or storage facilities, including fees to be charged government agencies; and
7. The promulgation of such rules and regulations to implement the authority described in this paragraph, except that nothing in this section shall be construed as granting to the Department regulatory functions presently within the Nuclear Regulatory Commission, or any additional functions than those already conferred by law.

The Energy and Commerce Committee should take a hard look at the pros and cons of consolidating all DOE defense waste facilities and activities within the Office that has primary responsibility for the nation's civilian spent nuclear fuel before approving such a major change in policies and day-to-day operations.

While retaining the current requirement that the President appoint the OSNF Director with the advice and consent of the Senate, section 604(b) would limit the President's ability to remove the Director (only for "inefficiency, neglect of duty, or malfeasance in office"), and require a report to Congress explaining the reason for such removal. Aside from changing the name of the managing entity, the major difference between H.R. 2699 and H.R. 3053 is elimination of the proposal to allow the Director to serve two 5-year terms instead of serving at the pleasure of President. This change somewhat lessens the concerns we have expressed previously, but the question must still be asked: Would these restrictions on the President's powers to remove the Director create a new Nuclear Waste Czar?

Section 603 would expand the allowable uses of financial and technical assistance provided by the OSNF under the NWPAA Section 180c to States and Indian tribes affected by nuclear waste transportation to a repository or MRS facility. Otherwise the bill is silent regarding the radiological and social impacts of transporting spent nuclear fuel and high-level radioactive waste. The BRC, based on the National

[15] https://www.congress.gov/congressional-report/115th-congress/house-report/355/1?overview=closed

Academy of Sciences 2006 report, recommended that 13 specific measures be adopted before the commencement of shipments to federal facilities, for the purposes of enhancing safety, security, and public acceptance. The potential shipping routes to Yucca Mountain identified by DOE in 2008 would affect 44 states and the District of Columbia and traverse 330 congressional districts.

Need for Additional Clarification Regarding Sections 504 and 606 [Pages 44-46, 51-52]

Additional analysis is needed to clarify the implications of Section 504 to create Offsetting Collections and Section 608 regarding PAYGO Scorecards. These provisions dramatically change the program funding process, but it is not clear that they will resolve the program's long-term funding difficulties.

Stranded Nuclear Waste Task Force (Section 608) [Pages 52-53]

Stranded nuclear waste is primarily spent nuclear fuel stored in dry casks or spent fuel pools at nuclear facilities that have been decommissioned or are in the decommissioning process. H.R. 2699 directs the Secretary of Energy to establish a Stranded Nuclear Waste Task Force that would report to Congress within 180 days on existing public and private resources and funding for affected communities, and on immediate and long-term economic adjustment plans tailored to the needs of each affected community. This is a good idea, and should be expanded to additionally consider nuclear facilities as soon as they have been identified as possible candidates for early retirement. It is such a good idea one must ask why the Secretary of Energy is not already doing this under existing authority.