SENATE COMMITTEE ON ENERGY, UTILITIES AND COMMUNICATIONS
Senator Steven Bradford, Chair
2023 - 2024 Regular

Bill No:	AJR 18	**Hearing Date:**	8/13/2024
Author:	Davies		
Version:	5/9/2024 Introduced		
Urgency:		**Fiscal:**	No
Consultant:	Nidia Bautista		

SUBJECT: Spent nuclear fuel: storage

DIGEST: This measure urges the U.S. Congress to prioritize fulfilling the federal government's legal and contractual obligation to provide a home for spent nuclear fuel currently stored at sites in California and 33 other states. Furthermore, this measure urges the U.S. Congress and the United States Department of Energy (DOE) to take action to permit the relocation of the spent nuclear fuel in California and elsewhere to consolidated interim storage and ultimately a permanent repository.

ANALYSIS:

Existing law:

1) Establishes, under federal law, the U.S. Nuclear Waste Policy Act of 1982 (NWPA) which :

   a) Establishes a comprehensive federal program for the safe, permanent disposal of radioactive wastes.
   b) Requires the federal government to take possession of and permanently dispose of spent nuclear fuel generated at civilian nuclear reactors.
   c) Supports the use of deep geological repositories for the safe storage and/or disposal of radioactive waste. Establishes procedures to evaluate and select sites for geologic repositories and for the interaction of state and federal governments.
   d) Directs the DOE to consider Yucca Mountain, Nevada as the primary site for the first geologic repository.
   e) Prohibits the DOE from conducting site specific activities at a second site unless authorized by the U.S. Congress.

f) Establishes a commission to study the need and feasibility of a monitored retrievable storage facility. (U.S. Nuclear Waste Policy Act of 1982 (42 U.S.C. §10101, *et seq.*)

2) Prohibits any nuclear fission thermal power plant requiring the reprocessing of fuel rods from being permitted unless the federal government has identified and approved, and there exists a technology for the construction and operation of, nuclear fuel rod reprocessing plant. Prohibits any nuclear fission thermal power plant from being permitted unless the U.S. through its authorized agency has approved and there exists a demonstrated technology or means of high-level nuclear waste. (Public Resources Code §§25524.1-25524.2)

3) States that the citizens of California should be protected from exposure to radiation from nuclear facilities. (Public Utilities Code §8321, *et seq.*)

4) Requires the California Energy Commission (CEC) to assess existing scientific studies to determine the vulnerability of very large generation facilities (1,700 megawatts (MW) or greater) to major disruptions due to aging or major earthquake and the resulting impacts on reliability, public safety, and the economy. Requires the CEC, in the absence of a long-term nuclear waste storage facility, to assess the potential state and local costs and impacts associated with accumulating waste at California's nuclear power plants. (Public Resources Code §25303)

This measure:

1) Makes numerous findings and declarations concerning the spent nuclear fuel stored onsite at reactors in California and other states, the growth of spent nuclear fuel, the failure of the federal government to address nuclear waste, the more than a decade since the Blue Ribbon Commission issued its final report, and various costs associated with nuclear waste.

2) Urges the U.S. Congress to prioritize fulfilling the federal government's legal and contractual obligation to provide a home for spent nuclear fuel currently stored at sites in California and 33 other states.

3) Urges the DOE to take action to permit the relocation of the spent nuclear fuel in California and elsewhere to consolidated interim storage and ultimately a permanent repository.

Background

Nuclear power in California. California was an early pioneer in nuclear energy generation. The state was home to the nation's first civilian nuclear power plant and the first "commercial" nuclear power plant to provide electricity to the public when the Santa Susana Experimental Station in Ventura County, a joint program of the U.S. Atomic Energy Commission and Atomics International, came online in April 1957. The small 6.5 MW research and development facility supplied power to the neighboring City of Moorpark, within the utility service territory of Southern California Edison (SCE). In October 1957, Pacific Gas & Electric (PG&E) and General Electric Company began operating Vallecitos Nuclear Power Plant, a 30 MW power plant, the nation's first to supply power in MW. Both facilities stopped electricity generation to the electric grid within 10 years, February 1964 and December 1967, respectively. Neither is known to be storing nuclear spent fuel on-site.

An additional four nuclear power plants were built and operated in the state, each of which is storing varying levels of spent nuclear fuel onsite: the Humboldt Bay Nuclear Power Plant, the Rancho Seco Nuclear Power Plant, the San Onofre Nuclear Generating Station (SONGS), and the only remaining operational nuclear plant in the state, the Diablo Canyon Nuclear Power Plant.

- Humboldt Bay Nuclear Power Plant was a 63 MW plant owned by PG&E that operated from August 1963 to July 1976 and permanently closed in 1983 due to the economics of seismic retrofits following a moderate earthquake from a previously unknown fault just off the coast.

- Rancho Seco Nuclear Power Plant, located 25 miles east of Sacramento, was a 913 MW power plant owned by Sacrament Municipal Utility District (SMUD) that operated from April 1975 to June 1989. The power plant was closed by public referendum.

- SONGs was an over 2,000 MW power plant, located in northern San Diego County, which is jointly owned by SCE (78.2 percent ownership), San Diego Gas & Electric (SDG&E) (20 percent ownership), and the City of Riverside Utilities Department (1.8 percent ownership). The plant began operation with Unit 1 in 1968, which ended in 1992. Units 2 and 3 began operation in 1983 and 1984, respectively. A unit at the plant went offline due to tubing wear issues in January 2012, subsequently, in June 2013, plant owners announced the remaining units at the plant would be permanently retired.

- Diablo Canyon Nuclear Power Plant is a 2,200 MW power plant that began operating in 1985, is located on the coast near San Luis Obispo and owned by PG&E. In June 2016, PG&E announced a joint proposal with some labor and environmental organizations to phase out nuclear power and retire Unit 1 in November 2024 and Unit 2 in August 2025. However, legislation, SB 846 (Dodd, Chapter 239, Statutes of 2022), has authorized a five year extension of each of the units, pending federal licensing, among other requirements.

California adopts a moratorium on nuclear energy. After failed ballot initiative efforts, in 1976, the Legislature and Governor adopted legislation that instituted a *de facto* moratorium on the construction and licensing of new nuclear fission reactors until certain actions are met, including that the federal government implements a solution to radioactive waste disposal. This requirement remains in the statutes (Public Resources Code §25524.2). While the law was challenged, the courts have upheld these provisions, and, as such, the *de facto* moratorium remains in effect.

Spent nuclear fuel. Nuclear fuel rods are ceramic pellets of uranium oxide, about the size of a finger joint, stacked and sealed inside a long metal tube about as wide as a sharpie pen. The space between the pellets and metal tube is filled with helium. "Spent fuel" refers to fuel used in a commercial nuclear reactors that has been removed because it can no longer economically sustain a nuclear reaction. Spent nuclear fuel from power plants can either be processed to recover usable uranium and plutonium, or it can be managed as a waste for ultimate long-term disposal.

Fuel processing is not commercially available in the U.S., as a result, spent fuel is typically held in temporary storage at reactor sites, often beginning in wet storage and then transferred to dry storage casks. Generally, the temporary storage may be available for decades. However, concerns about the safe storage of nuclear waste have prompted communities neighboring nuclear generating facilities to support relocation of nuclear waste and calls for interim and permanent storage. The urgency has been bolstered by natural disasters, including the Fukushima nuclear accident in 2011, where an earthquake and tsunami resulted in electrical grid failure and damaged the power plant. The damage led to the inability to cool reactors after a power shutdown compromised containment and resulted in the release of radioactive contaminants.

Federal government responsibility. Under the NWPA, the federal government has responsibility for the management and permanent disposal of spent nuclear fuel from commercial nuclear reactors, and generators are responsible for bearing the

costs of permanent disposal. The NWPA specifically authorizes and requires the U.S. Secretary of Energy to investigate potential locations for permanent geologic repositories and an interim storage facility and to develop a system to safely transport spent fuel from nuclear power plants to the repository and interim storage facility. The law also established the Nuclear Waste Fund, which consists of fees from owners of commercial nuclear power reactors, to pay for the development of the repositories.

Impasse on a permanent repository. In 1987, Congress amended the NWPA to direct the DOE to focus its efforts solely on a permanent geologic repository at one site: Yucca Mountain, a complex of underground tunnels about 100 miles northwest of Las Vegas, Nevada. The 1987 amendments also precluded DOE from developing a consolidated interim storage facility where commercial spent nuclear fuel from numerous commercial reactor sites could be collected and temporarily stored at a centralized facility designed, constructed, and operated by DOE, until the Secretary recommended to the U.S. President the approval of a site for development of a permanent repository. The state of Nevada, many of its members of Congress, and several Native American tribes with ties to the lands surrounding Yucca Mountain have strongly opposed designating Yucca Mountain as the sole site for a geologic repository. In response to this opposition, the Obama Administration decided not to use the Yucca Mountain site and appointed a Blue Ribbon Commission on America's Nuclear Future to find a solution for permanent storage.

The Blue Ribbon Commission met two dozen times between March 2010 and January 2012 and held five public meetings, in different regions of the country, to solicit feedback for its report. The Blue Ribbon Commission's final report was released in January 2012 and includes findings, conclusions, and recommendations, including calls for a new consent-based approach to siting nuclear waste storage facilities and prompt efforts to develop permanent repository site(s) and consolidated interim storage site(s) for nuclear waste.

More recently, in December 2021, the DOE issued a request for information on using consent-based siting to identify sites for interim storage of spent nuclear fuel. Specifically, the DOE requested comments on the consent-based siting process, removing barriers for meaningful participation, and the role of interim storage as a part of the nation's waste management. Based on the over 200 comments received, in September 2022, DOE identified and published six key steps, including continued development of consent-based processes and continue to implement congressional direction to pursue consolidated interim storage. Additionally, the U.S. House has established a bipartisan Spent Nuclear Fuel Solutions Caucus to address the challenges associated with stranded commercial spent fuel across the

country. The passage of the Consolidated Appropriations Act of 2021 included $27.5 million to fund federal work on consolidated interim storage.

Third time's a charm? AJR 18 reflects a related sentiment to that of AJR 29 (Chavez, Chapter 112, Statutes of 2016) and SJR 23 (Bates, Chapter 76, Statutes of 2016) identical joint resolutions urging the passage of the Interim Consolidated Storage Act of 2015 and calling on the federal government to pursue the prompt and safe relocation of spent nuclear fuel from SONGS to a consolidated interim storage site. However, this measure does not urge any specific federal legislation, and instead urges the 118th Congress and the DOE to take action on the recommendations of the Blue Ribbon Commission, including revisions to the NWPA to permit the relocation of the spent nuclear fuel in California and elsewhere to consolidate interim storage and ultimately permanent repository.

Opposition to consolidated interim storage. Several environmental organizations oppose the language in the resolution supporting development of consolidated interim storage of high-level nuclear waste. Their concerns about consolidated interim storage sites are multifold, specifically: 1) the need to move nuclear waste twice (to consolidated interim, then permanent storage) resulting in increasing the risks of radioactive release during transport; 2) the siting of proposed consolidated interim storage sites have tended to be in communities of color, raising environmental justice concerns; 3) consolidated interim storage reduces the pressure for establishing a permanent deep geological disposal facility; and 4) the consolidated interim storage sites could become permanent rather than interim, leaving high-level radioactive waste abandoned at above-ground storage sites never intended for long-term disposal. Supporters of this measure contend that developing a permanent repository will take many decades, and their communities can not wait until a permanent repository is constructed. They also note that federal law, under the NWPA, allows the DOE to construct one consolidated storage facility with limited capacity, but only after construction of a nuclear waste repository has been licensed. However, it's important to note that the Blue Ribbon Commission recommended a change to the law to allow for one or more interim storage sites independent of the schedule of the permanent repository. This recommendation is also supported by many of the supporters of this measure.

Inclusion of SJR 23? AJR 18 specifically mentions the passage of AJR 29, but does not include mention of SJR 23.

Prior/Related Legislation

AJR 29 (Chavez, Chapter 112, Statutes of 2016) urged the passage of H.R. 3643 and urges the DOE to implement the prompt and safe relocation of spent nuclear

fuel from the SONGS to a licensed and regulated interim consolidated storage facility.

SJR 23 (Bates, Chapter 76, Statutes of 2016) urged Congress to pass the Interim Consolidated Storage Act of 2016 H.R. 4745 and the DOE to implement the prompt and safe relocation of spent nuclear fuel from SONGS to a licensed and regulated interim consolidated storage facility.

AJR 57 (Longville, Chapter 128, Statutes of 2000) memorialized to the President of the U.S. and Congress to take appropriate action necessary: (1) to direct the DOE not to transport shipments of high-level radioactive waste and spent nuclear fuel from other states through California to the proposed Yucca Mountain repository; and (2) to created, with regards to high-radioactive waste and spent fuel originating within the state, appropriate procedures to minimize the risk of an accident and to provide emergency response assistance to local communities, particularly the County of San Bernardino.

FISCAL EFFECT: Appropriation: Fiscal Com.: No Local:

SUPPORT:

Association of California Cities-Orange County
Bay Area Council
California Building Industry Association
California Business Properties Association
California Business Roundtable
California Manufacturers & Technology Association
City of San Clemente
Fission Transition
Inland Empire Economic Association
Los Angeles Area Chamber of Commerce
Orange County Business Council
Orange County Coastkeeper
Orange County Taxpayers Association
San Onofre Nuclear Generating Station Community Engagement Panel
Southern California Leadership Council
Spent Fuel Solutions
Western Electrical Contractors Association
An Individual

OPPOSITION:

Activist San Diego
California Coastal Protection Network
CleanEarth4Kids.org
Climate Resolve
Coalition for Nuclear Safety
Committee to Bridge the Gap
Ecological Options Network
Environmental Working Group
Gender & Radiation Impact Project
Live to a Healthy 100
Nuclear Hot Seat
Physicians for Social Responsibility, San Francisco Bay Area
Physicians for Social Responsibility, Los Angeles
San Clemente Green
San Luis Obispo Mothers for Peace
The Samuel Lawrence Foundation
Three Mile Productions

ARGUMENTS IN SUPPORT: Spent Fuel Solutions (SFS), a coalition formed of 250 local governments, elected officials, utilities, environmental, Native American, labor and business organizations, to advocate for policy changes to secure federally licensed offsite storage and disposal solutions for spent nuclear fuel, states:

> The federal government has failed to fulfill its legal and contractual obligation to assume title, liability and transportation of spent nuclear fuel from plants across the U.S. as it was required to beginning in 1998. As a result, approximately 86,000 metric tons of spent fuel is now stranded at 76 nuclear power plant sites across the country. Effectively advocating for federal action will require strong demonstrations not only from coalitions like ours, but also from state governments. That is why we believe AJR 18 is critical because it will prioritize the relocating of the spent fuel from San Diego, San Luis Obispo, Sacramento and Humboldt counties, which have become de facto permanent storage sites without community consent. While these communities are the most directly impacted, the federal government's inaction has significant financial costs that affect all Californians. Nuclear utility customers have pre-paid $46 billion toward the disposal of spent fuel, including $2 billion from California customers. U.S. taxpayers have also paid $10.6 billion in damages over the last 24 years to cover costs of on-site

spent fuel storage, and these costs could eventually reach more than $30 billion. Federal action on this issue is long overdue.

ARGUMENTS IN OPPOSITION: The Environmental Working Group and Committee to Bridge the Gap, joined by other environmental organizations, express support for the main thrust of the resolution calling for a permanent repository, but they oppose language in the resolution calling on consolidated interim storage sites for high level nuclear waste. The organizations' opposition to consolidated interim storage sites are multifold, specifically: 1) the need to move nuclear waste twice (to consolidated interim, then permanent storage) resulting in increasing the risks of radioactive release during transport; 2) the siting of proposed consolidated interim storage sites have tended to be in communities of color, raising environmental justice concerns; 3) consolidated interim storage reduces the pressure for establishing a permanent deep geological disposal facility; and 4) the consolidated interim storage sites could become permanent rather than interim, leaving high-level radioactive waste abandoned at above-ground storage sites never intended for long-term disposal.

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