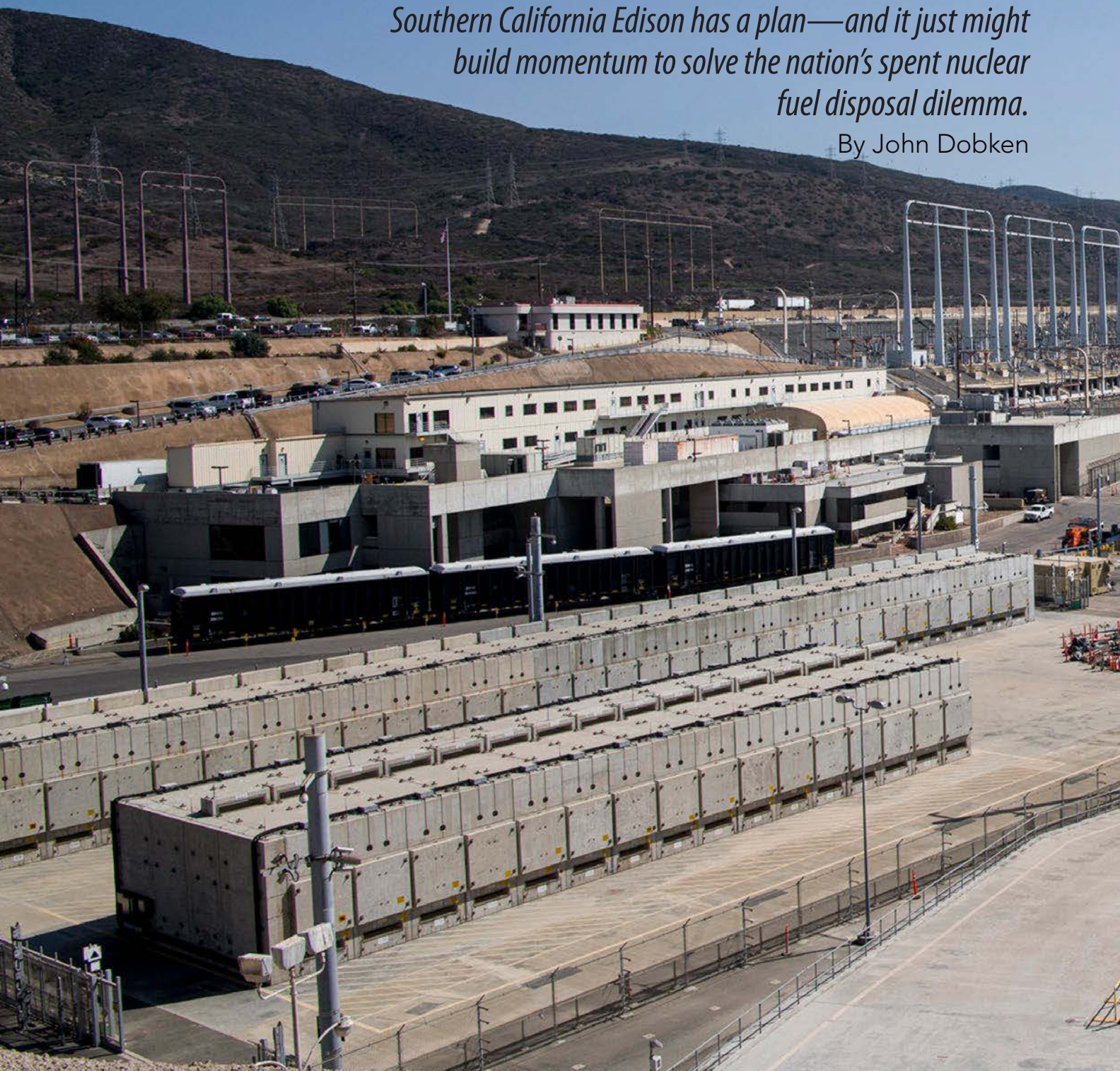


DECOMMISSIONING San Onofre

*Southern California Edison has a plan—and it just might
build momentum to solve the nation's spent nuclear
fuel disposal dilemma.*

By John Dobken



Imagine it's January 1998. A specially equipped train from the Department of Energy rolls up to the San Onofre Nuclear Generating Station (SONGS) to pick up spent nuclear fuel and take it to the Yucca Mountain repository in Nevada. This scene is repeated thousands of times at nuclear plant sites across the U.S. over the ensuing decades. The solution to permanent spent fuel disposal as outlined in the Nuclear Waste Policy Act (and its amendments) is working as intended. The nation's commercial spent fuel is safely isolated deep underground for the long term.

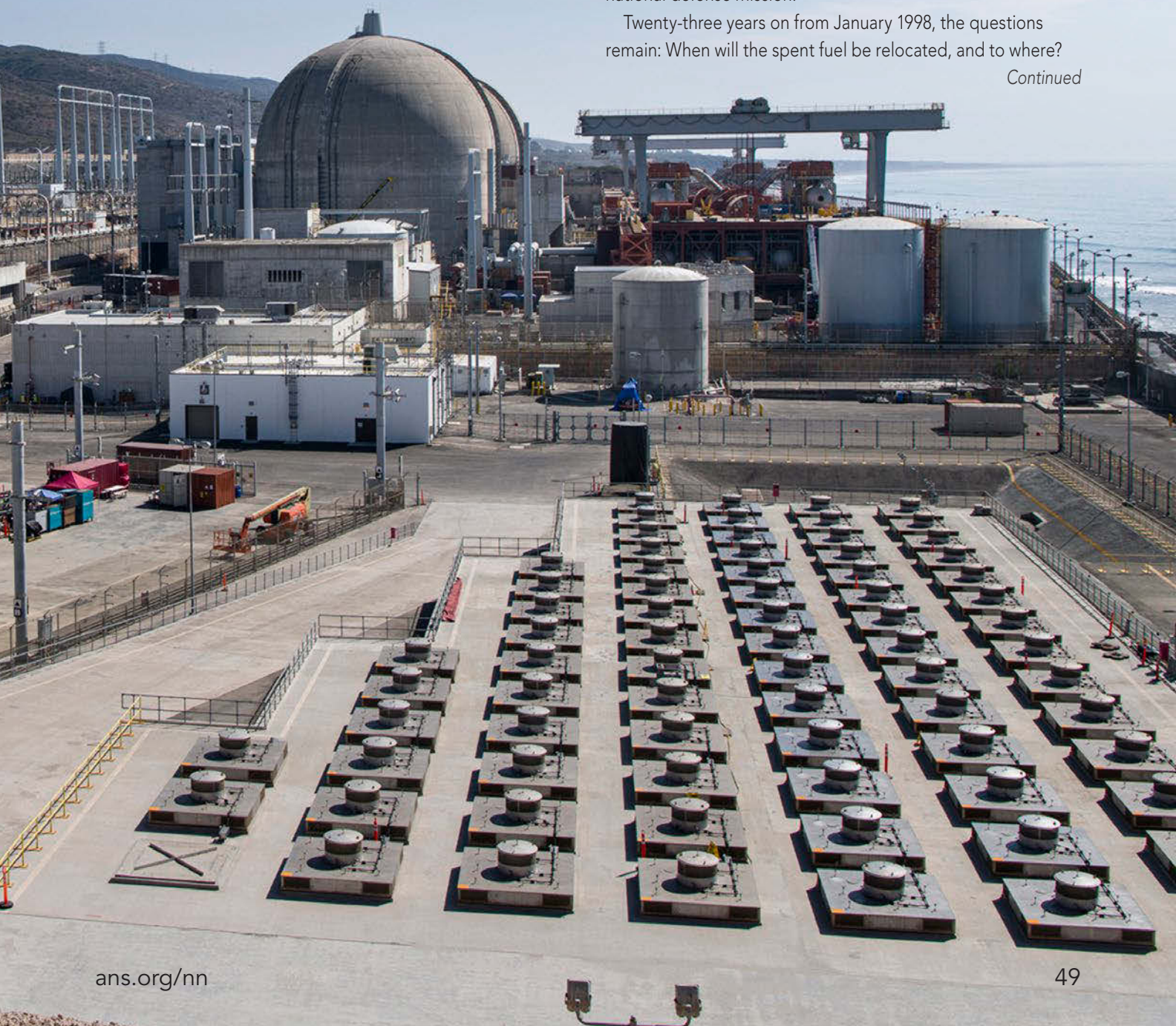
But that is not what happened. Work on Yucca Mountain has been stalled for a full decade, and the organization within the DOE that by law is responsible for managing the spent fuel program has been defunded and disbanded.

Today, the nation's spent fuel remains at operating and decommissioned nuclear plant sites in temporary storage facilities. In 2003, plant owner Southern California Edison (SCE) began storing spent fuel at SONGS in dry cask storage—robust stainless steel canisters that are designed for on-site storage and off-site transportation. To date, 123 such canisters are at SONGS as part of a system that cools the fuel and protects it in reinforced concrete structures.

While still completely safe, these storage sites at decommissioned plants prevent the land on which they sit from being repurposed for other uses. In the case of SONGS, that means use by the U.S. Marine Corps at Camp Pendleton. In a March 2021 letter, Brig. Gen. Dan Conley called perpetual storage of spent fuel at SONGS “inconsistent with the Marine Corps’ national defense mission.”

Twenty-three years on from January 1998, the questions remain: When will the spent fuel be relocated, and to where?

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Decommissioning and dismantlement at SONGS

On June 12, 2013, SCE formally notified the Nuclear Regulatory Commission that it had permanently ceased operation of SONGS Units 2 and 3 five days prior. The notification, called a certification of permanent cessation of power operations, set the stage for SCE to begin preparations for decommissioning and dismantling the plant.

Decommissioning is a well-defined NRC process that involves safely transferring the spent nuclear fuel into storage, followed by the eventual removal and disposal of radioactive components and materials from the site. Any residual radioactivity is to be reduced in a manner and to a level that is safe for unrestricted use by site employees and the public.

For SONGS, this effort will support the termination of SCE's NRC license and the return of the site to its owner, the U.S. Navy. Dismantlement began in the first quarter of 2020 and will involve the deconstruction of above-grade structures associated with Units 2 and 3 in compliance with NRC requirements, as well as the partial removal of offshore undersea conduits (large pipes) and offshore buoys and anchors. SONGS Decommissioning Solutions is the decommissioning general contractor. The project is expected to create about 600 jobs during the 8- to 10-year dismantlement phase, and the majority of the labor force will be hired locally from the San Diego region.

Water is used for dust suppression as an excavator works to demolish the Unit 2 diesel generator building at SONGS.



A fresh approach

In March, SCE distributed a three-volume set of plans with the intent not just to address the SONGS decommissioning, but possibly to help kick-start the process of solving the entire nation's spent fuel disposal dilemma.

"These plans provide the opportunity to analyze three broad areas related to spent fuel removal," said Doug Bauder, SCE vice president and chief nuclear officer. "First, identifying the pathways, options, and feasibility, both near term and long term, to relocate the fuel off site. Second, the transportation considerations to safely get [spent fuel] from point A to point B. And third, the steps SCE will take to be prepared when the opportunity arises."

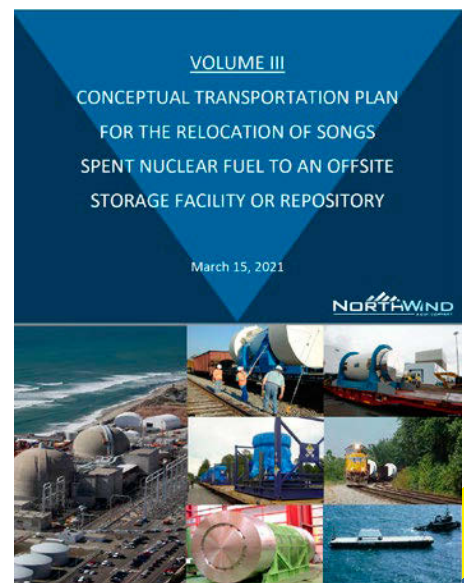
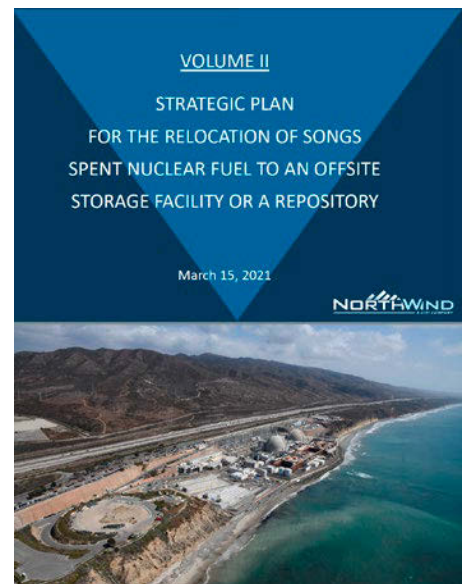
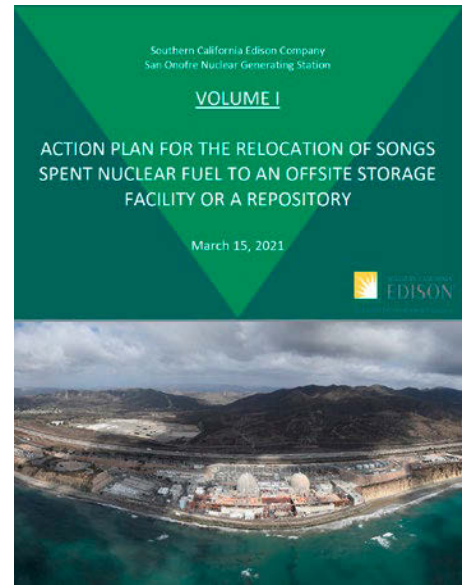
To accomplish the task, SCE consulted some of the country's leading subject matter experts. In June 2019, SCE retained North Wind, Inc., which worked with SCE and its experts team to support the assessment of off-site alternatives and author the plans. The experts team included chair Tom Isaacs, a former director of the DOE's Office of Policy, and Allison Macfarlane, a former NRC chairman. In addition, dozens of stakeholders from the local community and region were interviewed as part of the process.

"The team members brought together a variety of experiences in dealing with the challenges of nuclear waste management," said Joe Hezir, principal of EJM Associates, an energy industry advisory group founded by former energy secretary Ernest Moniz. "They worked intensively to apply their respective areas of expertise and experience to create a viable and durable blueprint for disposition of the SONGS spent fuel."

The team created three plans: the Action Plan, the Strategic Plan, and the Conceptual Transportation Plan.

The Action Plan lays out near-term measures that SCE and San Onofre's co-owners will take to advance off-site relocation of the spent fuel and to be prepared to move the fuel should an opportunity arise. The Strategic Plan identifies and analyzes a range of alternatives for spent fuel removal while making clear the challenges and needed actions for those alternatives to be realized. The Conceptual Transportation Plan focuses on specific steps and strategic considerations in planning for and executing the shipment of spent fuel from San Onofre to an off-site location, assumed to be in the southwestern United States.

These plans were developed to be flexible and can be adopted by other nuclear power plants. "SCE's commitment to act on the analysis in the Strategic Plan and accompanying Conceptual Transportation Plan may very well be the catalyst needed for this country to finally solve its dilemma around the storage and disposal of spent nuclear fuel," Hezir said.



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A two-pronged approach

In coming up with the three plans, the SCE experts team found that the most viable solution to the nation's spent fuel problem is the development of a federally supported interim storage site, coupled with the development of a permanent repository. The reason for this is timing. Even if Congress acts soon to restart work on a permanent repository—at Yucca Mountain or elsewhere—it will take several decades before a site is licensed and ready to receive spent fuel. An interim ground-level storage facility can be sited, licensed, and constructed in much less time than a deep geologic repository. This allows for spent fuel to be moved from multiple decommissioned sites such as SONGS decades sooner and co-located for greater efficiency.

Hezir explained that there are other reasons for a two-pronged approach as well, such as trust.

“Any community, state, or tribe considering hosting a consolidated interim storage facility wants to ensure their site does not become a de facto permanent facility,” he said. “If work is progressing toward a permanent repository, it is likely to reassure a potential host that [their] site is indeed an interim one.”

Working toward building community consent for such a facility is also an important aspect of the challenge ahead. The 2012 report from the Blue Ribbon Commission on America's Nuclear Future summed it up this way: “Any attempt to force a top-down, federally mandated solution over the objections of a state or community—far from being more efficient—will take longer, cost more, and have lower odds of ultimate success.”

Tom Isaacs, who helped develop the Blue Ribbon Commission report and served as chair of the SCE experts team, said that a win-win-win situation is possible where the interests of the local host community, the state, and the federal government can align to the benefit of each constituency.

“It has to be a relationship that can stand the test of time as it will be many decades for such a facility to be sited, licensed,

built, operated, and ultimately closed,” Isaacs said. “Politics, values, economics, and more will change over such time frames. So, it won't be easy, straightforward, or quick.”

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Changes needed

To make both an interim facility and a permanent facility a reality, Isaacs and Hezir say that structural changes are needed at the federal level, primarily through the legislative process.

“We need federal legislation to establish a new single-purpose, preferably independent, waste management organization responsible for managing the U.S. spent nuclear fuel and high-level radioactive wastes with reliable funding,” Isaacs said. “Nuclear utility customers have prepaid more than \$40 billion for the disposal of spent fuel, and they deserve a solution.”

Hezir said that can happen, but there needs to be a groundswell of voices demanding change. “New national policy and legislative action is clearly needed,” he said. “If the local governments, communities, nuclear utilities within California, and the state itself can join what we see as a growing motivation for action nationwide, it could result in a national legislative agenda to restart the federal waste management program.”

A coalition for action



What became clear to SCE during development of its plans is that SCE cannot solve this problem alone. Thus, along with the distribution of the plans, SCE announced the formation of a coalition, Action for Spent Fuel Solutions Now.

Members of the coalition have joined forces to advocate for federal legislation, appropriations (funding), administration policies, and programs that can advance both federal permanent disposal and federally supported off-site interim storage.

The coalition is cochaired by Orange County supervisor Lisa Bartlett and San Diego County supervisor Jim Desmond. Members from the business, labor, Native American, and environmental communities, as well as local governments and local residents, have signed on to support the coalition's mission.

Bartlett led an effort in April to bring a resolution of support for the coalition before the Orange County Board of Supervisors. The vote was unanimous in favor. The same was true for the San Diego County Board of Supervisors, which passed a support resolution by a 5–0 vote in August. The City of Riverside, the City of San Clemente, and the Capistrano Unified School District Board of Trustees have passed similar resolutions.

"I am honored to serve as cochair of Action for Spent Fuel Solutions Now, and proud to have the support of my colleagues on the Orange County Board of Supervisors, as we take on the monumental task of breaking through the stalemate and stimulating action by the federal government to fulfill its obligation and deliver a solution," Bartlett said.

Bartlett and cochair Desmond sent a letter to energy secretary Jennifer Granholm in May, seeking the opportunity to partner on solutions and thanking the secretary for prioritizing the spent nuclear fuel storage issue. During Congressional testimony in early May, Granholm said that the DOE was "moving forward" to develop an approach to find a consent-based interim storage facility with hopes to announce next steps "in the coming months."

Like other complex policy issues, the process will take time. SCE and coalition members urge action now to eventually bring about needed change. Hezir said the signs are there that momentum on the issue is growing, including new legislation, Congress appropriating funds to the DOE for interim storage work, and encouraging comments from Granholm on the issue.

"These initial actions create an opportunity for a coalition effort to step up action by the federal government," Hezir said, "and there is no time to lose as any pathway is likely to take decades to implement."

Homefield advantage

While the coalition is gaining support from area organizations, local residents can also play a key role in making sure the issue stays top of mind with federal officials by joining the effort.

"It's those community voices that we really believe will be powerful, and effective, in drawing attention to this issue at the Congressional level," said Caroline Choi, Edison International and SCE senior vice president for corporate affairs and Edison coalition representative. "Local communities can generate the momentum needed to help us all realize the vision of trains rolling off site with canisters of spent fuel." ☒

*Learn more about how spent nuclear fuel
is stored safely at SONGS by visiting
SONGScommunity.com.*

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is the public information officer for SONGS.*