STATEMENT OF BARBARA BYRON
CALIFORNIA ENERGY COMMISSION

TO THE U.S. DEPARTMENT OF ENERGY
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT
REGARDING THE DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENTS, INCLUDING FOR THE NEVADA RAIL TRANSPORTATION CORRIDOR, FOR A GEOLOGIC REPOSITORY FOR THE DISPOSAL OF SPENT NUCLEAR FUEL AND HIGH-LEVEL RADIOACTIVE WASTE AT YUCCA MOUNTAIN, NEVADA

Presented at the Public Hearing
In Reno, Nevada
November 19, 2007

Good Afternoon. On behalf of the State of California, I would like to thank the Department of Energy (DOE) for the opportunity to appear today regarding the proposed Yucca Mountain high-level radioactive waste repository program. My name is Barbara Byron and I am the Nuclear Policy Advisor for the California Energy Commission. I also co-chair the Western Interstate Energy Board High-Level Waste Committee and coordinate the California Nuclear Waste Transport Working Group. My comments today focus on the significant issues and concerns regarding the potential environmental impacts to California from the proposed repository at Yucca Mountain and the need to analyze them in a publicly recirculated Draft Supplemental Environmental Impact Statement (SEIS).

Over the past two and a half decades, California has provided input into the federal nuclear waste management and transportation programs. Moreover, in 1989, 1995, 2000, and 2006, the California Energy Commission, on behalf of California agencies, testified before DOE and/or provided written comments highlighting major deficiencies in DOE's analyses under the National Environmental Policy Act (NEPA) regarding the potential impacts in California from the proposed repository.

In 2000, California agencies completed an extensive review of DOE's Draft EIS. Thirteen California agencies with regulatory authority and/or expertise in transportation, water quality, hydrogeology, and other environmental areas of concern participated in this review. In summary, California's review concluded that the Proposed Action described in the Draft EIS will cause significant impacts to California and that DOE's environmental assessment of the repository project was seriously deficient both procedurally and substantively under NEPA.

Major deficiencies identified included DOE's failure to: (1) provide an adequate scoping process, (2) provide a complete and accurate project description, (3) fully disclose potential transportation impacts and groundwater impacts in California, (4) fully evaluate reasonable alternatives, (5) provide adequate notice

of public hearings to affected California communities, (6) perform a comprehensive assessment of potential impacts to the affected environment, and (7) adequately evaluate potential environmental consequences from the alternatives of the proposed action. Unfortunately, major deficiencies in DOE's evaluation of the environmental impacts from the repository project persist. In fact, the three Draft SEIS documents and their proposed Transportation, Aging and Disposal (TAD) canister system and description of the alternate rail corridors to Yucca Mountain have only increased the uncertainties and concerns regarding the potential impacts in California from the proposed repository.

In light of these major deficiencies in the Draft SEIS, DOE should issue a revised Draft SEIS for public review before developing a Final SEIS. The purpose of NEPA is to ensure that decision makers and the public are fully informed and have full access to information regarding the potential environmental impacts from proposed actions. Clearly, when the deficiencies of the environmental impact analyses are so severe, the NEPA documents cannot be finalized until these inadequacies are corrected and the public is provided an opportunity to review and comment on the complete analysis.

I would like now to focus my remarks on a few of the areas of concern regarding the Draft SEIS.

Incomplete Evaluation of Potential Impacts in California and Inadequate Public Notice

First, DOE has not met the requirements under NEPA to fully assess and disclose all potential impacts of the project and provide adequate notice to the communities that would be affected. The Draft SEIS provides superficial and incomplete discussion of the potential transportation and groundwater impacts in California. It therefore fails to fully analyze and consider the project's impacts in our state.

A major flaw in DOE's analysis is that it has yet to identify the rail, truck and/or barge routes for these expected shipments of spent nuclear fuel. Identifying likely routes is essential to a complete analysis. California has four operating commercial nuclear power reactors (Diablo Canyon Units 1 and 2, San Onofre Generating Station Units 2 and 3) and three shut-down commercial nuclear power reactors (Rancho Seco, Humboldt Bay, and San Onofre Unit 1), as well as research reactors throughout the state storing spent fuel. In addition to shipments from these reactors, a significant portion of the high-level waste and spent fuel shipments from reactors located outside California could be routed through California enroute to Yucca Mountain. For example, DOE estimates that using the Mina rail corridor could result in 21% of the total rail shipments to Yucca Mountain being routed through California (1,963 shipments). If the Mina rail route is selected, there likely will be shipments of spent fuel through Sacramento, and possibly shipments from Oregon and Washington, over the

Union Pacific Rail Line over Donner Summit to Reno. Similarly, the proposed Caliente rail corridor could result in a significant number of rail and/or truck shipments from reactors in southeastern states being transported through Barstow and southeastern California.

Repository shipments using the Mina rail route or Caliente rail route could impact major cities in California including Sacramento, San Diego, Los Angeles, San Bernardino, San Luis Obispo, Fresno, Bakersfield and Barstow. An estimated 7.5 million people live within a mile of the likely rail routes in California and over 1,400 schools and 130 hospitals are located within a mile of these routes.

And yet, DOE has failed to notify these potentially affected metropolitan areas and communities along shipment corridors in California regarding plans to transport spent fuel and high-level radioactive waste through their communities. Communities likely to be affected by such shipment impacts have received inadequate or no notice of DOE's analyses of the project and, therefore, miss opportunities for public input. Without this information these communities have no way of knowing that they will be impacted by decisions being made regarding the Yucca Mountain project and do not have access to the information needed for their participation in the NEPA process.

In the past decade, DOE has held only two public hearings in California: one in 1999 in Lone Pine and a second hearing in 2000 in San Bernardino, although additional hearing locations were requested. DOE is holding only one hearing on the Draft SEIS in California (Lone Pine), despite requests to conduct public hearings in other areas in California likely to be heavily impacted by the proposed project.

Inadequate Evaluation of Transportation Impacts in California

Instead of providing more clarity and description of the routes and transportation modes to be used, the Draft SEIS raises additional transportation uncertainties. The overall treatment of spent nuclear fuel and high-level radioactive waste transportation in the Draft SEIS is deficient. Since 1989 the State of California has urged DOE to identify the national highway, railway and barge shipping routes for transporting the thousands of tons of high-level waste from reactor locations throughout the country to the proposed repository. However, the transportation analyses provided in Volume I, Chapter 2 and in Appendix G of the Draft SEIS do not identify routes to be used. The failure to identify these transportation routes effectively keeps federal, state and local jurisdictions from identifying potentially hazardous conditions along these routes and evaluating the potential for exacerbating the consequences from an extreme accident or terrorist attack.

Using estimates from the Draft SEIS, if the Caliente rail corridor is constructed and used, approximately 755 rail casks would be transported through California

(8% of total shipments) and 857 truck casks (32% of total). If the Mina rail corridor is constructed and used, an estimated 1,963 rail casks (21% of the total) and 857 truck casks (32% of the total) would be transported in California. Nevada's spent fuel transportation experts have estimated a potential for larger numbers of rail cask shipments to Yucca Mountain through California for both the Caliente and the Mina rail routing options (as many as 4,400 rail casks or 45% of the total shipments).

In addition, the Draft SEIS ignores the potential for rail shipments on the BNSF railroad to San Bernardino and the potential for large numbers of barge shipments and truck shipments in California, depending upon which routes and shipment modes are selected. For example, Nevada's spent fuel transportation experts have estimated a potential for approximately 300 rail casks on about 300 barges for shipments from Diablo Canyon to Port Hueneme. The Final EIS in 2002 for the repository estimated the potential for 121-132 barge shipments from Diablo Canyon to Port Hueneme. Nevada's transportation experts also estimate the potential for large numbers of legal-weight truck shipments through California if no rail access to Yucca Mountain is developed (over 24,000 shipments or approximately 45% of the total).

The implications for California are significant, considering the large number of potential shipments by truck, rail and/or barge, and the cities and communities impacted on the long transportation corridors throughout California. For example, California's emergency response training and equipment needs to prepare for these shipments and measures necessary to ensure their uneventful, safe transport (e.g., shipment inspections and escorts) will be significant. This is particularly true for major urban areas such as Sacramento, Fresno, Bakersfield, and Los Angeles, and major rail hubs in California, such as Barstow and San Bernardino. Significant coordination will be required for the large number of emergency care facilities, emergency centers, fire stations, and police stations located near possible rail routes in California.

There also is a risk of a major, possibly extended, disruption of transportation systems, e.g., rail ways, rail hubs, and major interstates, should a major accident occur along any of California's major transportation corridors. In addition, the Draft SEIS states, for the first time, that truck shipments could be done using "overweight" truck shipments without addressing specifically what that entails or any of the implications or impacts of such shipments. The Draft SEIS should fully evaluate these impacts.

Moreover, should an accident or terrorist attack occur along certain segments of possible routes in California, the resulting fires could exceed the limits of the spent fuel package performance requirements. For example, two recent major highway accidents on California highways (one in the Bay Area and one in Santa Clarita tunnel fire) are being investigated to determine whether these accidents may have resulted in conditions, in particular fire temperatures and fire durations,

which approached or exceeded the limits of packaging performance requirements. The potential for highway and rail accidents resulting in severe conditions is particularly significant in California considering that nearly half of the 16 historical severe accident scenarios that were examined in the National Academy of Sciences' 2006 study on spent fuel transport safety occurred in California. These accidents included extreme truck fires in highway tunnels, train derailments, and a rail accident involving a gas pipeline rupture. The Draft SEIS should examine credible accident scenarios especially those which could exceed packaging performance standards.

The National Academy of Sciences study recommended that detailed surveys of transportation routes for spent fuel be done to identify potential hazards that could lead to or exacerbate extreme accidents involving very long duration and fully engulfing fires and further recommended that steps be taken to avoid or mitigate such hazards. To be comprehensive, the Draft SEIS should identify the likely shipping corridors and include route-specific analyses that identify potential hazards along shipment routes. It is vital that the risk analyses should include the potential consequences of a severe accident or terrorist attack involving extreme, long duration fire conditions that exceed package performance limits. It is equally important that the Draft SEIS should consider the impact of human error as well as the potential for unique local conditions to exacerbate the consequences of accidents or terrorist attacks.

The Draft SEIS does not consider worst case accidents because such combinations of factors were considered "not reasonably foreseeable". Yet, the Draft SEIS acknowledges that clean-up costs after a very severe transportation incident involving a repository shipment resulting in the release of radioactive material could range from $300,000 to $10 billion. Having identified the upper range of clean-up costs, the Draft SEIS should evaluate the impacts from a credible worst case transportation accident or terrorist attack that led to the high cost estimate.

Uncertainties and Concerns about DOE's Proposed TAD System

The Draft SEIS proposes the use of a new canister system called the "Transportation, Aging, and Disposal" (TAD) canister to minimize handling of spent fuel at the repository by having waste loaded at the reactor sites in welded TAD canisters. Under DOE's Proposed Action, up to 90% of spent fuel would be loaded into TAD canisters at reactors and welded shut. The remaining approximately 10 percent of spent fuel would be shipped to the repository by over-weight trucks. TAD canisters would be inserted into large transportation casks at the reactor sites and shipped by rail to Yucca Mountain for storage and "aging" before disposal underground. These TADs would be large (hold up to 10 MTU) and heavy (weigh up to 180 tons). At about 25 reactors which lack rail access at the reactors, TADs would be moved by barge or heavy haul truck to rail (for example, Diablo Canyon in northern California). The design for the TAD

canister is not complete and it is unclear how the TAD system will interface with the multi-purpose canister system used for spent fuel storage at many reactors.

Use of the TAD canister system will significantly increase workers' radiological exposure and the risks associated with handling bare spent fuel assemblies, and loading and welding canisters at reactor sites (routine exposures and accidents). There also are potential problems regarding acceptance of the TAD canisters at the repository and the potential return of rejected TADS to originating sites. For a complete analysis, the Draft SEIS should thoroughly assess the TAD system regarding its risks and impacts to workers, the surrounding communities, the environment, and the populations in transit (along highways and/or railways at or near reactor sites). In addition, the Draft SEIS should analyze how the TAD system will interface with the dry cask storage system at reactor sites. All four California commercial reactor sites (Diablo Canyon, San Onofre, Rancho Seco, and Humboldt Bay) may have specific problems with the proposed TAD system, since all of these plants are either planning to transfer or have transferred all or a portion of their spent fuel into dry cask storage.

The Draft SEIS also should assess how the TAD system would work at decommissioned reactors where the spent fuel handling equipment and facilities have been removed and no longer remain onsite. All of the spent fuel at Rancho Seco, which is in the final stages of decommissioning, has been transferred into dry storage using multi-purpose canisters. The Draft SEIS should evaluate how the TAD system would work at decommissioned reactors, where spent fuel handling equipment and facilities have been dismantled and removed from the site. The Draft SEIS also fails to identify the party or parties responsible for building the facilities needed to house the spent handling operations and fails to fully evaluate the costs, liability, and impacts associated with transferring spent fuel into TADs at reactor sites. The Draft SEIS should clarify and analyze these aspects of the TAD system and the financial arrangements for paying developing the TAD repackaging system at reactor sites. The Draft SEIS should also evaluate the alternatives if the TAD system does not prove to be suitable, for example, due to its costs, risks, and impacts.

Concerns about the Possible Use of State Route-127

California officials have expressed concern about DOE's possible use of State Route (SR)-127 in southern California for shipments from eastern states to the proposed repository. This road is the major access route to the Death Valley National Park and is not approved for highway-route-controlled quantity shipments, such as spent nuclear fuel. However, there are limited southern access routes to Yucca Mountain. Concern in California increased with DOE's decision to reroute through California via SR-127 a major portion of DOE's nuclear waste shipments to and from the Nevada Test Site. Beginning in January 2000, DOE began using SR-127 for a major portion of thousands of low-level radioactive waste shipments to NTS. Later DOE transported transuranic

waste shipments on SR-127 from NTS to WIPP, although there were shorter, more direct routes in Nevada. Senators Dianne Feinstein and Barbara Boxer, the California Congressional chairs Sam Farr and Jerry Lewis, Inyo and San Bernardino Counties, and the Cities of Needles and Barstow strongly objected to rerouting these shipments from eastern states through California over greater distances. Concerns about the use of SR-127 for Yucca Mountain shipments include its road conditions, periodic flash floods, seasonal peaks in tourists (Death Valley National Park has approximately 800,000 to 1.25 million visitors each year), the scarcity and remoteness of emergency responders in the region, and the impacts on the road from increased heavy truck traffic. If DOE contemplates using SR-127 as an access route for spent fuel shipments by truck to the repository, the Draft SEIS should carefully assess the risks and potential impacts, including the impacts from heavy trucks needed for repository construction and operation and rail construction.

Inadequate Evaluation of Potential Groundwater Impacts and other Environmental Impacts in California

California agencies, in a comprehensive review of the Draft EIS, in 2000 found serious deficiencies in DOE's evaluation of groundwater and transportation impacts in California. California agencies identified potential groundwater impacts in the Death Valley region, impacts on wildlife, habitat and public parks, as well as transportation impacts in California from the repository. DOE is fully obligated under NEPA to provide a complete evaluation and disclosure of these impacts and provide adequate notice to the communities potentially affected by the proposed project. Groundwater flowing beneath Yucca Mountain discharges in springs to the south, including Furnace Creek Springs in Death Valley, California. This is a potential pathway for radioactive contaminants that may leak from the waste packages in the repository to reach these springs in Death Valley. The Draft SEIS should better characterize regional hydrogeology in the Amargosa and Death Valley areas to evaluate groundwater flow and evaluate the potential impact from radionuclide contaminant migration toward aquifers in California. Further, the Draft SEIS should propose mitigation measures, for example, a monitoring program to detect potential radionuclide migration from the repository into California aquifers.

Inadequate Analysis on the Socio-Economic Impacts to Inyo County

The DOE considers Inyo County outside of the "region of influence" for socio-economic impact analysis under NEPA. We strongly disagree with this conclusion, as the repository is approximately 15 miles from the Inyo County line and the boundary for Death Valley National Park. As mentioned, this Park has approximately 800,000 to 1.25 million visitors each year, many of whom are foreign tourists. The County relies heavily on tourism revenues from the Park, as well as other regional attractions. Inyo County is concerned about reduced tourism revenues, as well as decreases in real and business properties, from

repository operations and the transportation of nuclear waste through the County. Therefore, Inyo County should be considered within the "region of influence" for socio-economic impact analysis because of the proximity to the repository site. The Draft SEIS should evaluate the socio-economic impacts to Inyo County from the proposed repository.

In addition, the Draft SEIS should address the high level of uncertainty regarding the performance of the proposed engineered and geologic barriers in permanently isolating the nuclear waste. Included in the assessment should be the possible effects of potential long-term climate changes. Finally, the Draft SEIS should describe and fully analyze the potential impacts from the proposed repository, including transportation and groundwater impacts as well as impacts on wildlife, natural habitat and public use parks in California.

Conclusion

In conclusion, because we have found the Draft SEIS to be significantly lacking and that DOE has not conducted a thorough analysis of potentially significant impacts to California in several areas, we respectfully urge DOE to take three additional steps: (1) augment its NEPA analyses in the areas we have identified, (2) recirculate for public review another revised Draft SEIS, and (3) expand the public notice to include all of the California communities that face potentially significant impacts from the proposed project at Yucca Mountain.

That concludes my remarks. I would like to thank you again for the opportunity to present our views.