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AB 1632 Nuclear Power Plant Assessment

Overview of Draft Study Plan

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Overview of Draft Study Plan

- Five technical assessments to be performed:
 - Seismic vulnerability (Task 2)
 - Plant aging vulnerability (Task 3)
 - Impact of major disruption (Task 4)
 - Impact of nuclear waste accumulation (Task 5)
 - Other policy issues (Task 6)
- Identifies representative studies to be used in the assessments

Key Areas of Investigation

- How vulnerable are SONGS and Diablo Canyon to long-term disruptions due to earthquakes, tsunamis, or aging-related plant degradation?
- What are the potential impacts of an extended outage?
 - System reliability
 - Replacement power availability
 - Environmental and economic impacts of replacement power
- What are potential state and local impacts from the accumulation of nuclear waste at existing reactor sites?

Task 2: Seismic Vulnerability

Key Questions:

- ❑ What magnitude earthquake or tsunami could plants sustain without significant repairs?
- ❑ How large an event can be expected?
- ❑ What are potential reliability impacts of events of different magnitudes?

Task 2: Seismic Vulnerability

Areas of investigation:

- Current scientific understanding of seismic faults in SONGS and Diablo Canyon areas
 - Implications of thrust faulting vs. slip/strike faulting
- Seismic design elements for major plant components
- Impact of seismic and tsunami events on critical plant components
 - Time to repair or replace components
 - Cumulative plant damage for a given event
- Probability of ground motion levels exceeding limits of key plant systems and structures

Task 3: Plant Aging

Key Questions:

- ❑ Will reliability deteriorate as plants age?
- ❑ What is current degradation state?
- ❑ Are there conditions at the plants that might support or interfere with reliable plant operations?
- ❑ Are there likely to be long-term outages at California plants as a result of incidents at other aging plants?

Task 3: Plant Aging

Areas of investigation:

- ❑ Historical plant performance and extended plant outages
- ❑ Degradation of major plant components
- ❑ Trends in radioisotope detection
- ❑ Safety culture and maintenance practices at the plants
- ❑ Implications of replacing retiring workers on plant performance, safety, and reliability
- ❑ Potential repercussions of major event at another plant

Task 4: Impacts of a Major Disruption

Key Questions:

- How reliable have California's nuclear plants been?
- What would be the impacts of a long-term outage at one or both plants?
- Is replacement power available and deliverable?
- What are potential implications of extending plants' licenses given uncertainty regarding future costs and reliability?

Task 4: Impacts of a Major Disruption

Areas of investigation:

- Reliability of Diablo Canyon and SONGS
- Impacts of a major disruption on
 - Electric system reliability
 - Transmission system
 - Planning reserve margins
 - Public safety
 - Economy
 - Environment
- Cost and availability of replacement power
- Economic implications of license extensions

Task 5: Nuclear Waste Accumulation

Key Questions:

- How much nuclear waste is accumulating in California?
- What are the plans for that waste?
- What are the implications of keeping waste on site?
- What are the implications of removing the waste (i.e., transport risk)?
- What is the likelihood that the federal government will remove the waste?

Task 5: Nuclear Waste Accumulation

Areas of investigation:

- Nuclear waste quantities at SONGS and Diablo Canyon
- Interim on-site spent fuel storage
 - Spent fuel capacity
 - Costs vs. awards for damages in lawsuits against DOE
 - Seismic and security risk
 - Impacts on land use, coastal access, and property values
- Spent fuel transport plans, costs, and risks
- Status of federal repository and reprocessing programs

Task 6: Other Policy Issues

Key Questions:

- What would be the economic and environmental implications of replacing the nuclear plants with alternative baseload power sources?
- Are there viable options for replacement power?

Task 6: Other Policy Issues

Areas of investigation:

- Potential options for baseload power replacement
- Life cycle costs and environmental impacts of nuclear power vs. alternative baseload power sources
 - Once-through cooling
 - Greenhouse gas emissions
- Escalating costs for fuel, security, and personnel at nuclear power plants
- Local economic impacts of nuclear plants compared to alternative power plants
- Costs and benefits to state and local governments of license extensions for SONGS and Diablo Canyon