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Comment Received From: Ryan Senneff
Submitted On: 3/11/2026
Docket Number: 26-BUSMTG-01

Public Comment Request Support for AB 2647 â€“ CEC-March 12, 2026

Dear Clerk of the Board,

I am writing to formally notify the board of my intention to provide public comment on a non-agenda item during the California Energy Commission meeting scheduled for March 12, 2026.

I plan to speak in support of AB 2647 (Calderon). My testimony will focus on the technical role of advanced nuclear energy as a "Clean Firm" power source necessary to achieve Californiaâ€™s 2045 net-zero goals, as well as the potential for community-led infrastructure integration.

In preparation for my comments, I have attached a Technical Fact Sheet and a Summary Report regarding advanced nuclear safety and grid integration. I respectfully request that these materials be included in the public record and, if possible, made available to the Commissioners for their review prior to the session.

Please let me know if there are any specific protocols or time limits I should be aware of beyond the standard public comment procedures.

Thank you for your time and assistance.

Sincerely,

Ryan Senneff
ryansenneff@gmail.com
(626) 629-0691

Additional submitted attachment is included below.

"Good morning, Chair and Commissioners. My name is Ryan Senneff, a resident of Glendora, CA. I am here today to urge this board to support **AB 2647** (Calderon), which modernizes California's approach to advanced nuclear energy."

"Our state is striving for 100% clean, carbon-free electricity by 2045. However, as we rely more on intermittent solar and wind, we face a 'reliability gap.' Without 'clean firm' power, we remain dependent on natural gas to stabilize the grid, which conflicts with our climate and health goals."

"AB 2647 allows us to evaluate advanced nuclear technology, such as small modular reactors. These are not the reactors of the past. They use passive safety—relying on gravity and physics rather than pumps and complex electronics. They are compact, land-efficient, and can be integrated into existing industrial sites, protecting our open spaces while providing the consistent, carbon-free baseload we need to keep the lights on."

"This bill doesn't mandate new construction—it simply opens the door to science-based evaluation. Supporting AB 2647 shows that this board is committed to a resilient, affordable, and truly carbon-neutral California. Thank you for your time."

Respectfully Submitted,

Ryan Senneff

(626) 629-0691

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Technical Report: Strategic Integration of Advanced Nuclear Technology to Achieve California's 2045 Net-Zero Goals

To: California Energy Commission (CEC)

From: Ryan Senneff (ryansenneff@gmail.com)(626-629-0691)

Date: March 11, 2026

Subject: Technical Justification for AB 2647 (Calderon) and the Role of Advanced Nuclear in SB 100 Compliance

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1. Executive Summary

California's mandate to achieve 100% clean, carbon-free electricity by 2045 (SB 100) requires a diversified portfolio of "Clean Firm" power sources. As the state increases its reliance on intermittent renewable energy (solar and wind), the need for high-availability, dispatchable, and emission-free baseload power becomes critical for grid stability. **AB 2647** provides the necessary legislative framework to modernize California's nuclear moratorium, enabling the assessment and potential deployment of advanced nuclear technologies—ranging from microreactors and SMRs to medium and large-scale reactors—that offer enhanced safety, reduced waste, and superior operational flexibility.

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2. The Role of "Clean Firm" Power in Grid Reliability

Modeling indicates that achieving 100% carbon-free electricity is technically feasible but relies on the deployment of 25–40 gigawatts of "Clean Firm" resources. Unlike intermittent renewables, advanced nuclear reactors provide consistent, 24/7 output with a high capacity factor, reducing the need for redundant storage or over-building of solar/wind capacity.

- **Dispatchability and Load Following:** Advanced reactor designs, including Small Modular Reactors (SMRs), can maneuver output to complement variable renewable generation. Larger reactors provide the heavy rotating mass (inertia) necessary to stabilize grid frequency, acting as a "shock absorber" during rapid changes in supply or demand.
- **Grid Resilience:** By providing localized, "Energy Island" capabilities, these systems can maintain power to critical infrastructure—such as water pumping stations and transit hubs—during regional transmission failures or extreme weather events.

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3. Technical Advancements: Safety and Versatility

The advanced reactors proposed for consideration under AB 2647 differ fundamentally from legacy light-water reactors. They incorporate passive safety features that eliminate reliance on powered systems to prevent accidents.

- **Passive Safety Systems:** Advanced designs utilize gravity, natural convection, and inherent material properties to cool the core during a total loss of power, ensuring the reactor remains in a safe state without human intervention.
- **TRISO Fuel:** Many advanced reactors utilize Tri-structural Isotropic (TRISO) fuel, which encapsulates uranium in ceramic/carbon layers, acting as miniature, high-temperature-resistant containment vessels that are highly resistant to meltdown.
- **Versatile Applications:** Beyond electricity, these reactors provide high-temperature steam suitable for:
    - **Desalination:** Low-carbon water purification at scale.
    - **Hydrogen Production:** Enabling decarbonization of the industrial and transportation sectors.

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4. Just Transition and Labor

Transitioning California's energy infrastructure must prioritize the workforce. The deployment of advanced nuclear reactors at existing sites offers a high-road strategy for our labor force:

- **Preserving Union Careers:** Advanced nuclear projects can utilize the existing experienced workforce from retiring fossil fuel sites. Because these plants require high-skilled maintenance, engineering, and operations, they offer long-term, high-paying career paths for members of the IBEW and Building Trades.
- **Economic Stability:** Case studies of coal-to-nuclear transitions show that nuclear plants provide significantly higher tax revenue to local counties than fossil fuel plants, sustaining local schools and public services long after the initial construction phase.

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5. Environmental Justice & Benefits

Coastal generating stations are frequently located near disadvantaged communities (DACs) that have historically borne the brunt of pollution.

- **Elimination of Combustion:** Replacing gas-fired coastal power plants with advanced nuclear eliminates 100% of the NO_x, SO_x, and $PM_{2.5}$ emissions that currently contribute to localized respiratory health disparities in fenceline communities.
- **Brownfield Repowering:** SMRs and medium-scale reactors can be sited at existing or retiring fossil fuel locations (e.g., Haynes, Scattergood). This allows the reuse of existing grid interconnection infrastructure, significantly lowering total project costs and minimizing the need to industrialize new land.
- **Community-Centric Outreach:** AB 2647 facilitates a framework where community-led siting and meaningful participation become central to energy planning, moving away from past practices that marginalized fenceline populations.

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6. Regulatory and Policy Implications

AB 2647 does not mandate the construction of nuclear facilities. Rather, it removes the legal barrier that currently prevents the California Energy Commission from certifying new technologies that have been licensed by the U.S. Nuclear Regulatory Commission (NRC) since 2005. This alignment allows California to:

1. Establish a rigorous, science-based review process for advanced technology.
2. Maintain local control over siting and permitting while modernizing environmental standards.
3. Leverage national research and development investments to meet state-specific decarbonization goals.

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7. Conclusion

The integration of advanced nuclear technology serves as a technical lynchpin for SB 100. By removing outdated moratoriums on safe, efficient, and dispatchable energy, California can ensure a reliable, equitable, and affordable transition to a net-zero future. We urge the Commission to support the regulatory flexibility proposed in AB 2647 to facilitate the

comprehensive technical and economic studies needed to secure California's energy future.

Works Cited

- **American Nuclear Society (ANS).** "California bill looks to craft advanced nuclear exception to moratorium." *Nuclear Newswire*, February 2026.
- **California State Assembly.** *AB 2647 (Calderon): Energy: nuclear facilities: advanced nuclear reactors.* Introduced February 20, 2026.
- **Generation IV International Forum (GIF).** "Basis for Safety Approach for Gen-IV Systems." Risk and Safety Working Group, 2023.
- **International Atomic Energy Agency (IAEA).** *Advances in Small Modular Reactor Technology Developments.* 2025 Edition.
- **Nuclear Innovation Alliance (NIA).** "The Case for Advanced Nuclear Energy: Safety and Net-Zero Goals." 2023.
- **The Breakthrough Institute.** "Advancing Nuclear Energy: High-Resolution Nationwide Model of the U.S. Electricity Sector." 2022.
- **U.S. Department of Energy (DOE).** "4 Key Benefits of Advanced Small Modular Reactors." Office of Nuclear Energy, 2026.
- **U.S. Department of Energy (DOE).** "Nuclear-Renewable Hybrid Energy Systems for Desalination and Industrial Processes." Office of Nuclear Energy, 2025.
- **World Nuclear Association.** "Advanced Nuclear Power Reactors." Updated November 2025.

Common Refutations to Nuclear Power

By Ryan Senneff

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What about Nuclear Waste? We still don't have a permanent repository like Yucca Mountain"

Old Reactors only "burn" about 5% of their fuel. AB 2647 (Calderon) supports **Fast Reactors**, including "Fast Neutron-Reactors", that can actually recycle nuclear waste as new fuel. This reduces the radioactive lifespan from 300,000 years down to just 300 years-turning a million year-problem into a manageable industrial one.

How this works is high-energy neutrons produced in fast reactors allow them to extract 100 times more energy out of the same type of fuel used in water-cooled reactors.

That's because the extra neutrons created during the fission process can convert virtually all of the unused uranium (which makes up about 95% of the fuel in water-cooled reactors) into new plutonium atoms that can easily fission.

This would result in 100 times less uranium required to produce the same amount of energy as water-cooled systems **if** the fuel is continuously recycled in a fast reactor. (Source: U.S Department of Energy)

Spent fuel is also a massive energy asset. Advanced reactors act like a kiln that burns up the long-lived actinides that make traditional waste so difficult to store.

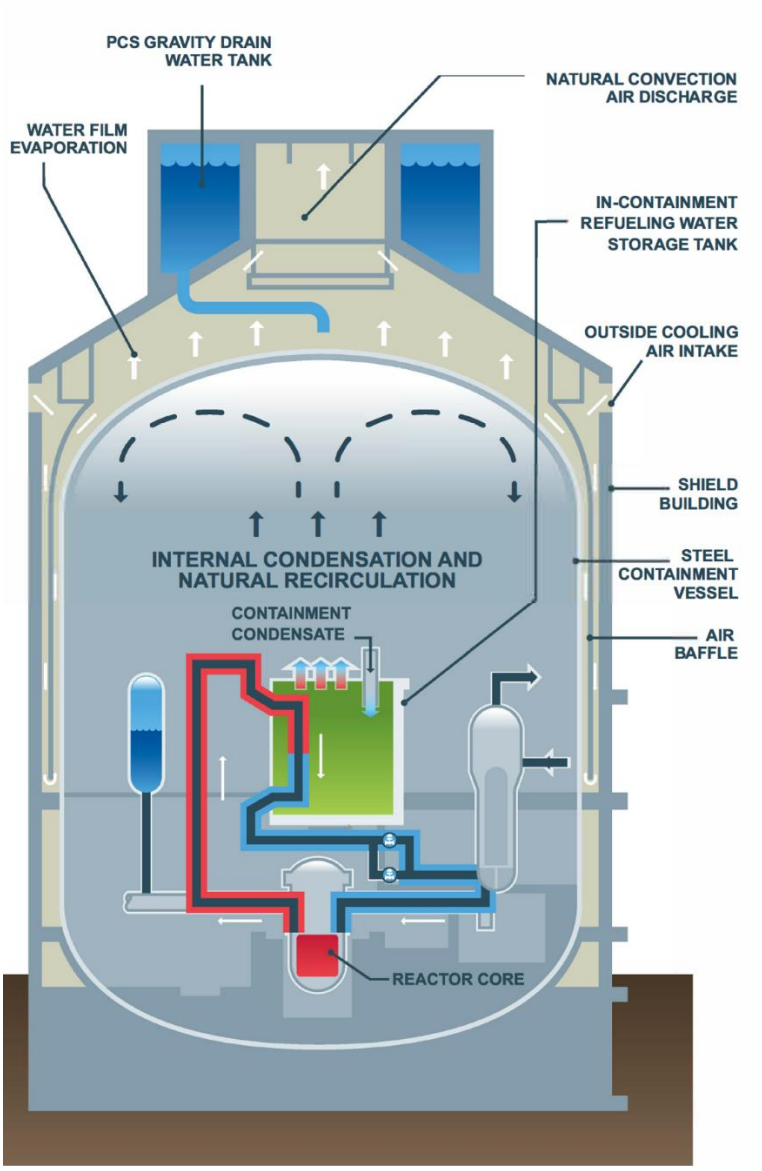
We can't risk another Chernobyl or Fukushima in a populated area like the LA Basin

Advanced reactors use a process known as **Passive Safety.** Unlike older plants that needed electric pumps to stay cool, these designs use basic physics-like gravity or natural convection. IF the power goes out, the reactor cools itself down automatically without any human or computer intervention.

Many advanced designs like Molten Salt Reactors and High-Temperature Gas-Cooled Reactors operate at atmospheric pressure.

This means there is no "pressure vessel" that can burst, fundamentally eliminating the mechanism for a "meltdown" as we traditionally understand it.

For example, the Westinghouse AP1000 Pressurized Water Reactor pictured below is a great example of Passive Safety systems in action that allow us to turn 50-year old fears into 21st century solutions.



TRANSFER OF REACTOR DECAY HEAT TO OUTSIDE AIR

- AC power is not required for safe shutdown
- Core cooling provided for long-term safe shutdown state: 72 hours without operator action
- The **AP1000**® Pressurized Water Reactor (PWR) is designed so that the core stays inside of the reactor vessel during a severe accident
- The **AP1000** PWR incorporates 60 years of operational lessons-learned
- After 72 hours with some operator actions to transfer water, core cooling and containment cooling are maintained indefinitely
- The **AP1000** PWR Spent Fuel Pool Cooling System is capable of providing cooling for spent reactor fuel indefinitely, with minimal need for operator action

(Source: Westinghouse Nuclear)

"Nuclear is too expensive and takes too long. Solar and batteries are cheaper right now."

Solar is cheap when the sun is out, but **'Clean Firm'** power (power that's there at 2 AM) is expensive. To reach 100% clean energy with just batteries, we'd have to overbuild the grid by 300%. Advanced nuclear is the cheapest way to provide that 24/7 baseline, especially when you factor in the **$2/kg hydrogen** it produces as a byproduct."

Traditional plants were bespoke "megaprojects." Small Modular Reactors (SMRs) are built in factories like airplanes, which drives down costs through "economies of series" rather than "economies of scale."

"Does spreading this technology also mean the creation of more nuclear weapons in an already chaotic world?"

AB 2647 focuses on domestic energy security. Many advanced designs use 'High Assay Low-Enriched Uranium' or "HALEU" fuel or molten salts that are physically and chemically extremely difficult to divert for weapons use. We are building the **Gold Standard** for safe, civilian power.

HALEU

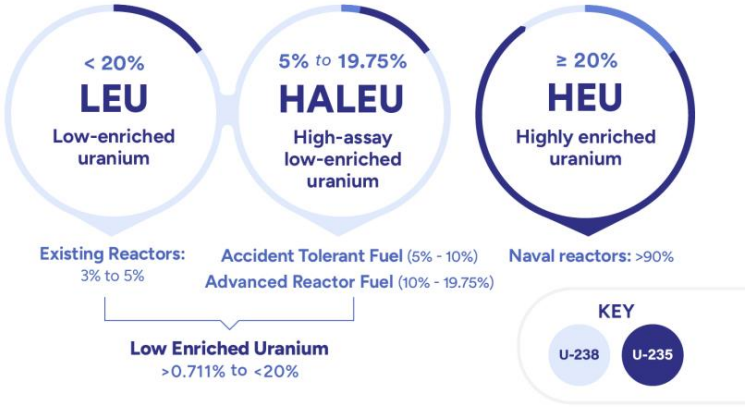
High-Assay Low-Enriched Uranium

What is it?

Uranium enriched between

5% and 19.75%

in uranium-235 — the main fissile isotope that produces energy during a chain reaction.



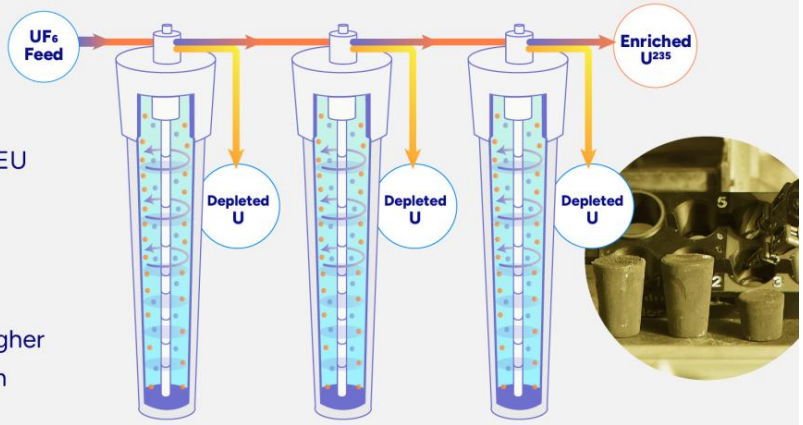
How is it made?

Chemical Processing

Recycle used goverment-owned HEU and downblend to HALEU

Enrichment

Gas centrifuges separate uranium isotopes by weight to produce a higher percentage of U-235 in the uranium



What are the benefits?

- Smaller designs
- Longer operating cycles
- Increased fuel efficiency
- Less waste