



# Hawai'i Natural Energy Institute Research Highlights

## Alternative Fuels

### Analysis of LNG Fuel Options in Hawai'i

**OBJECTIVE AND SIGNIFICANCE:** Recent analysis by the Hawai'i State Energy Office (HSEO), combined with policy direction from Governor Green, has prompted an active policy and stakeholder discussion regarding the potential role of liquefied natural gas (LNG) in Hawai'i's energy transition. The State's study concluded that LNG may offer both economic and environmental benefits and outlined a proposal to repower existing generating units and develop LNG import infrastructure and new or repowered generation on an accelerated timeline.

To support informed decision-making on these issues, the Hawai'i Energy Policy Forum, managed by HNEI, is convening key legislative leaders, HSEO, and a diverse group of electric sector stakeholders to facilitate discussion of the potential role LNG should in the State's energy future. In parallel, HNEI has initiated a technical review of the related HSEO study and produced independent quantitative analysis to identify critical issues related to the report's assumptions and underlying drivers that may affect the projected costs and benefits of LNG deployment in Hawai'i.

**KEY RESULTS:** HNEI's analysis indicates that, under specific sets of assumptions and market conditions, LNG has the potential to provide economic benefits for Hawai'i's ratepayers and to reduce emissions relative to existing petroleum-based fuels. These outcomes are highly sensitive to fuel-price dynamics, global economic factors, infrastructure timing, post-2045 firm power assumptions, and system-level interactions, underscoring the need for careful evaluation as well as utilizing pragmatic assumptions.

**BACKGROUND:** In January 2025, HSEO released the "Alternative Fuels, Repowering, and Energy Transition Study," which evaluated multiple fuel options for the electricity sector and concluded that developing LNG import infrastructure and transitioning certain generators to LNG would best support the State's cost and emissions reduction goals. The study found that "LNG emerged as the near-term fuel with the potential to cost-effectively reduce the State's greenhouse gas emissions during the transition to economy-wide decarbonization in 2045, but more analysis is needed to quantify a range of potential benefits and to identify how those benefits can be maximized to residents at the

appropriate level of infrastructure buildout." Building on this assessment, Governor Green signed a Clean Energy Memoranda to expand collaboration with JERA, a Japanese energy developer, and proposed a two-billion-dollar investment in LNG import facilities and new power generation assets.

**PROJECT STATUS/RESULTS:** Given these developments, HNEI conducted an independent technical review of the HSEO study in the second half of 2025 and developed alternative grid modeling to test sensitivities related to fuel costs, infrastructure timelines, renewable deployment, and system reliability risks.

HNEI's analysis is intended to provide a detailed and impartial review of the assumptions underpinning HSEO's "Alternative Fuels, Repowering, and Energy Transition Study," with the goal of supporting informed dialogue and decision making regarding the potential adoption of LNG in Hawai'i's electric sector. To meet this objective, HNEI has developed a comprehensive and flexible analytical framework capable of evaluating a wide range of LNG transition pathways and quantitatively evaluating the assumptions that most strongly influence projected benefits.

The HNEI technical analysis is based on a suite of hourly production-cost simulations covering the period from 2030 through 2045. These simulations model system operations under various load, fuel, repowering, and renewable-energy trajectories. Complementing this modeling foundation is an interactive scenario tool that allows decision makers to adjust variables such as delivered fuel prices, repowering technologies (combined cycle and combustion turbines), fuel options for existing and future units (LNG, low sulfur fuel oils (LSFO), or ultra-low-sulfur diesel (ULSD)), the sequencing and timing of repowering activities, and the capital cost assumptions for new LNG and power generation infrastructure. This combination of high-resolution operational modeling and adjustable scenario parameters enables exploration of a diverse set of system configurations and fuel-mix strategies.

During this process, HNEI identified several assumptions within the HSEO study that the HNEI team believes merit more comprehensive

examination and community discussion before significant policy or investment decisions are made. These include:

- The feasibility of completing LNG import infrastructure and Phase 1 repowering activities by 2030;
- Reliability risks associated with delays in repowering generating units;
- Uncertainty regarding the relative price stability of LNG compared to oil in global energy markets;
- Development and load forecasts;
- Potential cost escalation for construction, repowering projects, and LNG import facilities; and
- Post-2045 fuel assumptions.

HNEI is currently coordinating with HSEO, the Governor’s Office, legislative committees, the Division of Consumer Advocacy, Hawaiian Electric, and other stakeholders to support an informed and technically grounded discussion at the upcoming Hawai‘i Energy Policy Forum briefing.

HNEI will publish its findings and a summary of stakeholder perspectives in early 2026 to support ongoing deliberations about Hawai‘i’s energy transition strategy.

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