



Hawai'i Natural Energy Institute Research Highlights

Energy Policy & Analysis

Support of Integrated Grid Planning

OBJECTIVE AND SIGNIFICANCE: In 2018, under guidance from the Hawai'i Public Utilities Commission (PUC), the Hawaiian Electric Company (HECO) initiated the Integrated Grid Planning (IGP) process to determine the types of resources and grid services the utility should invest in over the coming years to meet the goals of legislatively mandated Renewable Portfolio Standards. A Technical Advisory Panel (TAP) was established to provide a third-party, technical, and unbiased review of HECO's modeling and analysis efforts to ensure that the best tools and methodologies are being used. The TAP consists of experts from around the country including members from national laboratories, industry groups, and other utilities. Based on direction from PUC Order No. 36725, *Providing Guidance on the IGP*, HNEI chaired the IGP's TAP from its inception in 2018 to October 2021 and continued to stay engaged in the TAP throughout 2022-2024.

In 2025, HECO released its annual update to the IGP and continued to pursue resource procurement for Stage 3 solar, battery storage, and thermal resources as identified in the plan. In addition, in the second half of 2025, HECO and the PUC initiated the next IGP planning cycle to take place over the next three to four years. HNEI continues to participate in the planning process via the TAP.

KEY RESULTS: HNEI's involvement in the IGP and its previous leadership role in the TAP helped to

ensure that HECO is moving forward in addressing grid issues related to increasing amounts of renewable energy, which includes both distributed behind-the-meter (BTM) generation, utility-scale generation, and utility-scale and BTM storage. The TAP provides HECO with independent and technical oversight from outside experts, helping ensure that the utility is using industry-accepted methods, inputs, and assumptions.

Key activities of the TAP have focused on assisting HECO in revising their approaches to analysis. These have included advice in regard to the suite of tools and process for integration of those tools and methodologies. HNEI and its subcontractor Telos Energy developed a modeling framework (Figure 1) which was adopted as the IGP modeling framework by HECO. HECO also adopted probabilistic modeling methods first implemented by HNEI to quantify the resource adequacy of future proposed systems and leveraged HNEI's experience when reviewing the proposed energy reserve margins and associated reliability metrics.

BACKGROUND: By Order No. 35569, issued on July 12, 2018, the PUC opened the instant docket to investigate the IGP process (Docket #2018-0165, Instituting a Proceeding Order No. 30725 to Investigate Integrated Grid Planning). Pursuant to Order No. 35569, the Companies filed their IGP Workplan on December 14, 2018. The Workplan described the major steps of the Companies' proposed IGP process, timelines, and the methods the

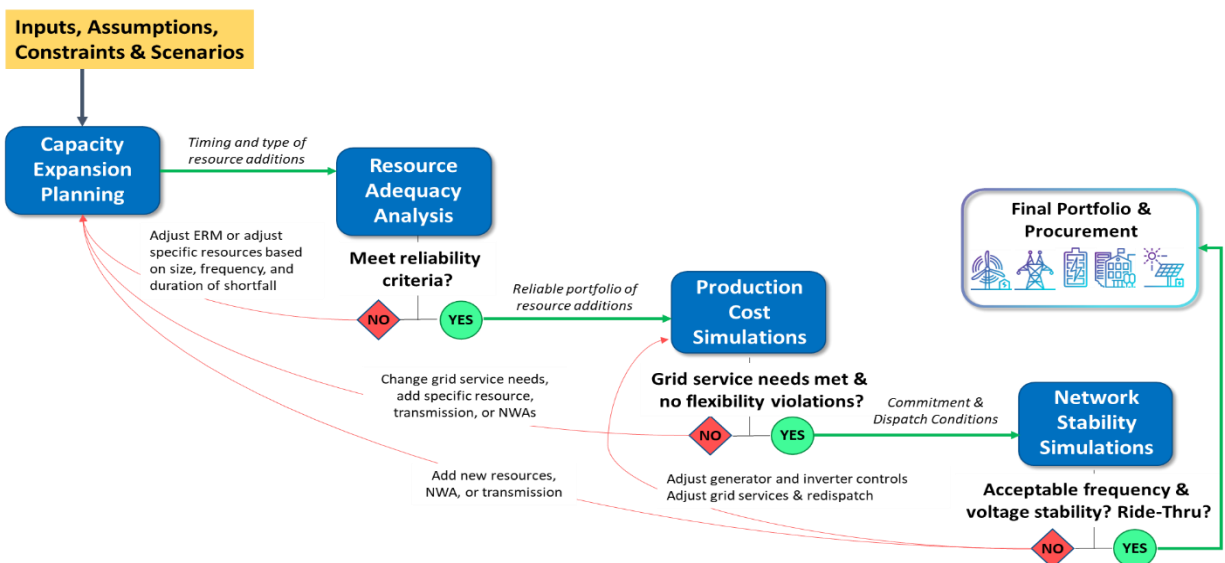


Figure 1. HNEI modeling framework adopted by the IGP.

Companies intend to employ, including various Working Groups. On March 14, 2019, the PUC issued Order No. 36218, which accepted the Workplan and provided the Companies with guidance on its implementation.

PROJECT STATUS/RESULTS: Throughout 2020-2023, HECO continued to develop its IGP, working in consultation with stakeholder groups and the TAP. Throughout that period, HNEI continued to play a very active role in all aspects of the IGP process and TAP providing regular suggestions, independent modeling assessments, and written comments in the PUC docket. At the end of 2023, the final IGP was submitted by HECO, with an annual update filed in 2024.

During 2024, the PUC made final orders on the IGP filing, as well as proposed actions for future IGP planning cycles. The PUC also formally accepted HECO's IGP in 2024, authorizing the utility to proceed with resource procurement activities outlined in the Preferred Resource Portfolio.

In 2025, HECO issued its first annual update to the IGP. This update included revised project timelines, modifications to anticipated replacement resources, and updates to offshore wind planning assumptions in response to evolving policy guidance and emerging federal leasing considerations.

Throughout 2025, HNEI remained actively engaged in the IGP process, focusing on monitoring ongoing developments and supporting the refinement of planning assumptions. The project team reviewed HECO's IGP Annual Update report, along with filings in related regulatory dockets, including those concerning rate design, electric vehicle integration, Stage 3 resource procurements, and the utility's Pathways to Net Zero study. HNEI reviewed these materials to assess consistency with prior system modeling and to identify areas where underlying assumptions, resource capabilities, or forecast conditions may have changed in ways that affect long-term system planning. These reviews ensured a clear understanding of how evolving resource portfolios, load forecasts, and customer programs may influence grid needs in the next planning cycle.

The utility also initiated the next IGP cycle in the second half of 2025, began early scoping activities, stakeholder engagement, and methodological refinements intended to incorporate lessons learned from the initial cycle. As this new cycle progresses, HNEI continues to support the development of robust analytical frameworks, improved data inputs, and enhanced evaluation methods that will guide resource planning decisions through the end of the decade.

In parallel, HNEI conducted detailed assessments of other major planning efforts underway in the state, including the Hawai'i State Energy Office's Decarbonization Study and the Alternative Fuels Study. Both analyses provide important context for long-term generation planning, fuel strategy, and the assumptions which will inform future capacity expansion and system modeling exercises.

HNEI also expanded its participation in statewide planning by serving on the advisory panel for the Hawai'i Electric Reliability Administrator (HERA), initiated by the PUC in 2025. This role provides additional visibility into system performance, emerging reliability challenges, and new processes that will intersect with the next IGP cycle.

Recognizing the rapid evolution of planning practices nationally, HNEI continued to review IGP methodologies across North America to identify best practices and analytical tools that may be applicable to Hawai'i. These insights support ongoing collaboration with HECO to strengthen future planning frameworks.

Looking ahead to the 2026 IGP cycle, HNEI anticipates close engagement in the development and vetting of updated inputs and assumptions—particularly those related to changes in federal tax incentives, offshore wind planning, liquefied natural gas (LNG) considerations, and other emerging factors—which will shape the state's long-term energy strategy.

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