

Hawaiian Electric Companies' Proposed PSIP Revision Plan

*Comments Regarding the Commission's Initial Statement of Issues;
Responses to the Commission's Observations and Concerns;
and a Proposed PSIP Revision Plan*

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Hawaiian Electric
Maui Electric
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Preface

The Hawaiian Electric Companies respectfully submit this Proposed PSIP Revision Plan to comply with Order No. 33320 issued by the Hawai'i Public Utilities Commission on November 4, 2015 in Docket No. 2014-0183.



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I. Introduction

OUR SHARED VISION AND COMMON GOALS

The Hawaiian Electric Companies' mission is to provide innovative energy leadership for Hawai'i by empowering our customers and communities with affordable, reliable clean energy. We will plan to achieve a Renewable Portfolio Standard (RPS) of 100% at the most reasonable cost.

No single party can realize this future for Hawai'i. Indeed, we seek a shared vision with our customers, regulators, policy makers, and other stakeholders to achieve this energy future for all of Hawai'i.

Toward that end, and as directed by the Commission, the Companies submit this work plan for revising and updating our Power Supply Improvement Plans (PSIPs). Our objectives mirror that of the Commission: to create well-reasoned and well-considered power supply improvement plans for each of our operating utilities that provide the strategic context to inform important near-term decisions about resource choices, to develop long-term goals, and to investigate additional efficiencies in our power system.

In addressing the issues raised by the Commission in Order No. 33320 and developing supplemented, amended, and updated PSIPs, we intend to engage the parties and participants in this docket (collectively the "Parties") as well as other stakeholders to solicit valuable input that can be incorporated into our own analysis and planning. We will also update our plans in light of recently enacted legislation and other developments.

Resource planning is especially challenging in our dynamic energy environment. Our updated PSIPs will enable informed decision making in the short term while preserving long term optionality. We seek a balanced resource mix that best serves all of our

I. Introduction

Our Shared Vision and Common Goals

customers. Our goal is to develop a plan to reach 100% RPS while maintaining system security—reliability and resiliency—at the lowest reasonable cost to customers.

The Hawaiian Electric Companies value the opportunity to have an open and transparent dialogue with the Commission, the Parties, stakeholders and our customers about our collective energy future.

This filing comprises the following chapters, which respond to the directives stated in Order No. 33320:

Chapter 1: Introduction: An overview of this filing, and a summary of the strategy and content for the updated PSIPs.

Chapter 2: Comments Regarding the Initial Statement of Issues: Our responses to the Initial Statement of Issues.

Chapter 3: Preliminary Responses to the Observations and Concerns: Our understanding of and responses to the eight Observations and Concerns discussed in the Order.

Chapter 4: Proposed PSIP Revision Plan: Our proposed work plan and schedule to supplement, amend, and update the PSIPs; provisions to work with the Parties; a timeline for filing an interim PSIP update, participating in stakeholder and technical conferences; and endeavoring to file updated PSIPs as directed.

Chapter 5: Additional Considerations: Our understanding and discussion about updated planning assumptions, input from the Parties, and other process considerations.

THE ONGOING PROCESS OF RESOURCE PLANNING

The 2014 PSIPs represented the Companies' efforts to deliver a comprehensive long-term plan for meeting the State's renewable energy goals, while minimizing the cost to our customers. The 2014 PSIPs represented practical and implementable plans based on what was known at the time. However, power system planning is an ongoing process and much has transpired since we filed the 2014 PSIPs.

We integrated far more rooftop photovoltaics (PV) in 2015 than was contemplated in the PSIPs. We have modified our power plants and our operating practices to increase operating flexibility.

As approved by the Commission, we have begun implementing 137 MW of utility-scale renewable projects on O'ahu scheduled to be online by the end of 2016. The Commission has also completed Phase I of the Distributed Energy Resources (DER) docket, which resulted in modified rules and options that promote a sustainable and more equitable increase in rooftop PV. We have also proposed a Community Based Renewable Energy program for those customers that cannot or do not want to install PV on their roofs, as well as proposed several new and revised rate schedules, including time of use (TOU) and electric vehicle (EV) rates.

Fossil fuel prices have fallen (although long term price outlook is unclear). Technologies and markets have continued to develop. Laws have changed. Most notably, Act 97, which modified the RPS law by setting a target of 100% within 30 years, became law after we filed the 2014 PSIPs. Consistent with ongoing and prudent resource planning, we agree that these events need to be evaluated in developing updated PSIPs.

This planning process has already begun.

We fully recognize that there are different views of how to best achieve our collective energy future. In our updated PSIPs (to be filed on April 1, 2016), we intend to consider and fully evaluate multiple alternative plans, present well-analyzed and strategically considered analyses that compare and contrast various options for the future, and quantify the costs and identify the risks and uncertainties associated with any given course of action.

We will also develop a recommended plan among alternative plans and explain the basis for our selection, balancing customer cost, RPS goals, and maintaining the reliability and resiliency of the electric grid—all of which is vital to the economic well-being of the State.

2. Comments Regarding the Initial Statement of Issues

The Commission opened Docket No. 2014-0183 to review the 2014 PSIPs. The ultimate objective is to determine a reasonable power supply improvement plan for each of the Companies that can serve as a strategic basis and context to inform important pending and future resource acquisitions and system operations decisions.

The Companies fully understand and support the Commission's stated objectives and Initial Statement of Issues. Toward that end, we will focus, with all available resources, on developing supplemented, amended, and updated PSIPs that build on constructive input from the Parties and that follow the Commission's guidance.

CONTEXT AND MEANINGFUL ANALYSIS, PLANS, AND ACTIONS

The first issue in the Initial Statement of Issues in Order No. 33320 reads:

Whether the PSIPs, as amended and updated in this proceeding, provide useful context and meaningful analysis to inform major resource acquisition and system operation decisions and identify well-reasoned and adequately-supported plans and actions that will result in reliable energy services, meeting State clean energy requirements, while ensuring that costs and rates will be reasonable.¹

The Companies will conform with the Commission's perspective on the purpose of the PSIPs as defined in Order No. 33320.

- The PSIPs will include long-term analysis of the integrated grid systems to better evaluate specific, prudent near-term capital investments and other decisions.

¹ Order No. 33320 at 138.

2. Comments Regarding the Initial Statement of Issues

Context and Meaningful Analysis, Plans, and Actions

- The PSIPs will provide context and sound analysis to inform decisive choices and well-considered trade-offs between major inter-related or mutually exclusive resource strategies.
- The PSIPs will provide assurance that the overall cost and rate impacts of system operations and proposed resource acquisitions are reasonable and economically affordable so as to that discourage non-beneficial customer exit.
- The PSIPs will identify risks and uncertainties that inform the issues and trade-offs associated with resource acquisition and system operation decisions.

The PSIPs, then, can serve as a base plan and set of assumptions for further planning and analysis.

The Companies will develop an array of plans that integrate renewable energy to reach 100% RPS while maintaining system security at the lowest reasonable cost. From this array of plans, we will present actionable strategies and implementation plans that attain these goals.

The Companies' updated PSIPs will cover the time period from 2016 through 2045; identify and evaluate the embedded options and trade-offs in the various elements of the plans; provide clear and detailed overview on environmental, reliability, resiliency, cost, and rate impacts; list and measure, through sensitivity analysis, the risks and uncertainties—all to improve the robustness of the PSIPs and enable fact-based decisions in the interest of Hawai'i.

In addition, we will develop a recommended plan including a set of actions that summarize the required next steps necessary to implement the updated PSIPs.

REASONABLE PLAN COMPONENTS

The second issue in the Initial Statement of Issues in Order No. 33320 reads:

Whether the PSIPs for each of the HECO Companies, as amended and updated in this proceeding, includes reasonable plan components as required for HECO in Order No. 32053, including:

- a. Fossil Generation Retirement Plan;
- b. Generation Flexibility Plan;
- c. Must-Run Generation Reduction Plan;
- d. Environmental Compliance Plan;
- e. Key Generator Utilization Plan;
- f. Optimal Renewable Energy Portfolio Plan; and
- g. Generation Commitment and Economic Dispatch Review.²

The Companies attempted to address these seven plans in our 2014 PSIPs. Appendix A of each of the PSIPs contained specific cross references to sections in each PSIP where we presented our analyses and conclusions of these plans.

We will prepare our updated PSIPs based on the directives set forth by Order No. 32053 and Order No. 33320, and on updated conditions and assumptions. We will more clearly present our analyses of these plans in our updated PSIPs. The approach and associated analysis required to develop these component plans is further described in Chapter 4.

² *Ibid.* At 138–139.

OBSERVATIONS AND CONCERNS

The third issue in the Initial Statement of Issues in Order No. 33320 reads:

Whether the PSIPs, as amended and updated, adequately address the Observations and Concerns addressed in this Order in Section VI (*sic*).³

The Commission's Inclinations⁴ articulated a number of strategies related to the generation system that the Commission believes could lower and stabilize the costs of generation. These strategies included:

- Seek high penetrations of lower-cost, new utility-scale resources.
- Modernize the generation system to achieve a future with high penetrations of renewable resources.
- Exhaust all opportunities to achieve operational efficiencies in existing plants.
- Pursue opportunities to lower fuel costs in existing power plants.

The Companies developed the 2014 PSIPs following the above guidance. The 2014 PSIPs showed a transformation of the system's current state into a portfolio of resources in 2030 (the end year of the 2014 PSIPs' analysis) that achieves long-term benefits for our customers and for our State. As a result, the 2014 Preferred Plans included:

- A large portfolio of lower-cost utility-scale renewable energy sources;
- A state-of-the-art energy delivery system (the grid) as the platform for the new energy portfolio and customer options;
- Increased operational flexibility of generation resources;
- Utilization of liquefied natural gas (LNG) to substantially reduce fuel costs and meet environmental regulations; and
- Triple the amount of current levels of distributed generation by 2030.

The results of the 2014 PSIPs included a level of RPS attainment in excess of 65%, and reduced customer bills. These results were the product of extensive analysis of a number of different options including utility-scale renewables, fossil resources (existing and new), various options for future use of independent power producers (IPPs), battery

³ *Ibid.* At 139. The reference appears to be to Section V.

⁴ The Commission's Inclinations on the Future of Hawai'i's Electric Utilities ("Commission's Inclinations") were attached as Exhibit A to Decision and Order No. 32052 in Docket No. 2012-0036.

2. Comments Regarding the Initial Statement of Issues

Observations and Concerns

energy storage, pumped storage hydro, alternative dispatch options for existing thermal generation, LNG, and biofuels.⁵

After reviewing the initial 2014 PSIP filing, the Commission offered eight preliminary Observations and Concerns addressing major components and the overall impacts of the proposed plans:

- #1.** PSIP cost impacts and risks have not been demonstrated to be reasonable.
- #2.** PSIPs do not appear to aggressively seek lower-cost, new utility-scale renewable resources.
- #3.** PSIPs do not adequately address utilization and integration of distributed energy resources.
- #4.** Proposed plans for fossil-fueled power plants are not sufficiently justified.
- #5.** System security requirements appear costly and are not sufficiently justified.
- #6.** Proposed plan for provision of ancillary services lacks transparency and may not be most cost-effective option.
- #7.** PSIP analysis on inter-island transmission lacks sufficient detail.
- #8.** Customer and implementation risks are not adequately addressed.

Chapter 3 details our preliminary responses to these eight Observations and Concerns.

⁵ See, for example, Figure 5-4 on page 5-5 of the Hawaiian Electric PSIP, which depicts many of the options considered to arrive at a Preferred Plan for O'ahu.

3. Preliminary Responses to the Observations and Concerns

The Companies outline our understanding of the Commission's eight Observations and Concerns and set forth our preliminary responses. We will include these eight Observations and Concerns to help us review, supplement, amend, and update the PSIPs.

By April 1, we can accomplish the critical analysis necessary for effective decision making that is most critical for near-term resource options and near-term issues specified in Attachment 1. If more Party and stakeholder analysis is desired, particularly for long-term resource options and long-term issues specified in Attachment 1, we will perform such work after the April 1, 2016 filing.

3. Preliminary Responses to the Observations and Concerns

#1 Customer Rate and Bill Impacts

#1 CUSTOMER RATE AND BILL IMPACTS

Commission’s Observations and Concerns

Observations and Concerns ⁶	Planning & Analysis Considerations	Near Term Issues [2016–2020]	Mid to Long Term Issues [2021–2045]
<p>#1 PSIP Cost Impacts and Risks Have Not Been Demonstrated to be Reasonable.</p> <ul style="list-style-type: none"> ■ Characterization of PSIP costs and rate impacts appears misleading. ■ Rely on uncertain presumed cost-saving measures. ■ Plans require extensive and possibly problematic amounts of capital expenditure. 	<ul style="list-style-type: none"> ■ “All-in” analysis of costs and rate impacts of proposed plans. ■ Present full, clear, forthcoming, unbiased set of metrics to characterize costs and rate impacts of the proposed plans. ■ Explicit consideration of uncertainties in key factors affecting PSIP costs (for example, LNG and renewable costs). 	<ul style="list-style-type: none"> ■ Cost and rate impacts of PSIP near-term actions. ■ Analysis of costs and rate impacts to meet higher 2020 RPS requirements. ■ Cost and rate impacts under alternative assumptions about LNG and renewables. 	<ul style="list-style-type: none"> ■ Cost and rate impacts of mid- to long-term actions to implement cost-effective high renewable strategy to achieve Act 97 RPS requirements.

The Commission states that capital expenditures seem excessively high and early in the Preferred Plans, guaranteeing benefits to the utility while any savings are based on fuel and efficiency saving which occur late in the plan and have less certain outcomes. The Commission desires plans that accelerate savings to customers and increase likelihood of decreased rates and bills. Minimizing and stabilizing rates is the primary consideration in analysis of reasonableness of any utility resource plan. The Commission asserts that the current PSIPs inherently prioritizes the Companies’ financial interests over meaningful reductions in customer rates.

The Companies’ Preliminary Response

The Companies acknowledge and appreciate the Commission’s concerns regarding the various issues raised around the overall cost and potential customer rate impacts illustrated in the PSIPs. We also desire to develop a plan that lowers costs and rates.

We plan to evaluate multiple potential plans and generation mixes to achieve Hawai’i’s energy goals and choose the path that yields the lowest cost impact to the customers while stabilizing long-term rates—consistent with maintaining system security and reliability at or above current levels, and achieving our RPS targets. In addition, the Companies will make evident the inherent tradeoffs required to execute a given plan.

a. HECO Companies’ characterization of PSIP costs and rate impacts appears misleading

To answer the Commission’s concerns around customer rates, we will illustrate the proposed rate impacts both in nominal and real dollar impacts.

⁶ Order No. 33320 at 178.

b. PSIPs rely on uncertain presumed cost-saving measures

The Companies acknowledge the Commission’s interest in considering alternative proposals from the Companies and other Parties that may provide more certain savings to customers more promptly. Consideration of alternative resources, such as utility-scale renewable resources, distributed energy resources, fossil-fueled power plants, demand response (DR), time-of-use (TOU), ancillary services, and inter-island transmission alternatives are discussed in response to Observations and Concerns #2 through #7.

c. Preferred Plans require extensive and possibly problematic amounts of capital expenditure

The Companies recognize that the nature, timing, and magnitude of optimal and reasonable capital expenditures must be justified. For the proposed capital expenditures in the updated PSIPs, we will provide additional detail illustrating use and efficiency of outlined investments, as well as the appropriateness of the timing of these investments. The supporting analysis and evaluation will detail the necessity and affordability of any chosen capital expenditure plan, while validating the Companies’ ability to finance and execute a selected plan. The Commission will have further opportunity to more fully consider specific project economics and timing in each project application.

With concern to fuel savings, we will provide data supporting the path of this volatile commodity inclusive of new data on projected price levels. Additional sensitivity analysis will be performed to further increase the robustness of the plans. These analyses will consider several factors including but not limited to: generation mix, fuel sources, and generation retirement and replacement timing.

#2 TECHNICAL COSTS AND RESOURCE AVAILABILITY

Commission’s Observations and Concerns

Observations and Concerns ⁷	Planning & Analysis Considerations	Near Term Issues [2016–2020]	Mid to Long Term Issues [2021–2045]
<p>#2 PSIP Do Not Appear to Aggressively Seek Lower-Cost, New Utility-Scale Renewable Resources.</p> <ul style="list-style-type: none"> Do not appear to maximize use of cost-effective renewables. Claimed 65% renewable achievement relies on high-cost and uncertain renewable resources. Assumed technology costs and constraints on renewable resources lack justification and appear conservative. Costs to integrate and renewable resources are not clearly addressed. 	<ul style="list-style-type: none"> Optimization of renewable resource portfolio alternatives considering full potential of available renewable resource options without unsubstantiated constraints. Updated technology cost and resource assumptions. Explicit identification and consideration of renewable resource integration costs in the determination of optimal mix of system resources. Explicit identification and considerations of key enabling technologies to support high renewable strategy (for example, bulk energy storage). 	<ul style="list-style-type: none"> Cost-effective integration of approved and pending renewable resources and the DG-PV queue. Identify actions to support acquisition of near-term cost-effective RE projects to meet 2020 RPS. DER system-level hosting capacity analysis. Develop and implement Lana’i and Moloka’i High RE plans. 	<ul style="list-style-type: none"> Develop strategic direction and decision rules for cost-effective high renewable strategy to achieve Act 97 RPS requirements.

Overall the Commission finds the PSIPs do not clearly demonstrate that the proposed renewable generation plan represents a reasonable cost-effective strategy to meet State energy objectives. The Companies have included resources with higher costs and uncertain feasibility (for example, AES 50% biomass, Maui geothermal) at the expense of developing lower cost renewable sources with less developmental risk earlier in the plan. The Commission states that the Companies have not fully leveraged the potential low-cost renewable resources. Additionally large portions of data pertaining to resource availability constraints, technology readiness and operation cost seems outdated or overtly conservative and needs to be reviewed and updated. Furthermore the majority of renewable generation implementation takes place in the latter part of the plan far after substantial investment is made to retire and replace the entire fossil generation capacity for the islands. The commission is looking for a plan that minimizes costs and delivers benefits to customers sooner with high certainty.

The Companies’ Preliminary Response

The Companies recognize the Commission’s concerns regarding the plans’ cost effectiveness for implementing renewable generation on the islands. We plan to review and update analysis where appropriate, and incorporate reasonable and comprehensive data that is or becomes available through our PSIP update process.

⁷ *Ibid.* At 178–179.

3. Preliminary Responses to the Observations and Concerns

#2 Technical Costs and Resource Availability

The Companies plan to provide additional analysis detailing alternative generation mixes, integration costs and implementation timings for the islands. These plans will focus on ensuring cost effective renewable resources use while maintaining the security and reliability of the islands' power systems. In developing these plans, resources that are currently technologically viable will be incorporated in the near-term while allowing the flexibility to incorporate changes in technology or commercial feasibility in the mid and long-term phases of the plans. Sensitivity analyses will also be developed to explore the potential risks and impacts of various resource deployment realizations for each generation class included in the plans.

Each of the potential alternative plans will be evaluated equally against the various criteria laid out by the Commission. A recommended plan will be selected from the alternative plans that provide the greatest benefit to the consumer while securing Hawaii's renewable energy future.

In updating data for operating and implementation cost, the Companies have already received confirmation from the National Renewable Energy Laboratory (NREL) for support. In addition, the Companies plan to leverage the comprehensive NREL)/Open EI database for current cost levels along with the original NREL report (used when developing the 2014 PSIPs) for expected future cost trajectories. NREL will be assisting the Companies' in utilizing the current reliable cost projections for various renewable sources of electricity. These represent an exhaustive list of sources, but the Companies will consider other comprehensive sources that are delivered in a timely fashion by other Parties, or other available sources for the Companies to leverage.

#3 DISTRIBUTED ENERGY RESOURCES INTEGRATION

Commission’s Observations and Concerns

Observations and Concerns ⁸	Planning & Analysis Considerations	Near Term Issues [2016–2020]	Mid to Long Term Issues [2021–2045]
<p>#3 PSIPs Do Not Adequately Address Utilization and Integration of DER.</p> <ul style="list-style-type: none"> ■ Consider full spectrum of DER, including demand response, energy efficiency, electric vehicles, generation and storage. ■ Near-term strategy to utilize DER for ancillary services and reduce generation, transmission, and distribution investment. 	<ul style="list-style-type: none"> ■ Evaluate full spectrum of DER in analysis of optimal resource portfolios. ■ Include DER in overall system optimization instead of “treating DG-PV as an end state”. ■ Explicit consideration of integration costs. 	<ul style="list-style-type: none"> ■ Determine high-value system-level use cases for utilization of DER for near-term applications. ■ Identify cost-effective opportunities to retrofit/upgrade existing DER. ■ Opportunities to aggregate DER to provide locational benefit (e.g., South Maui). 	<ul style="list-style-type: none"> ■ Consider the role and potential contribution of DER resources in high-RPS attainment scenarios.

The Companies understand that the Commission requests additional explanation of the choice of resource mix in the Preferred Plans, specifically related to the role of DER, including demand response, energy efficiency, electric vehicles, distributed generation, and energy storage. DER must be considered as a potential source of grid services to meet system security requirements and as a means to decrease generation, transmission and distribution (T&D) costs. The Commission also requires additional information on the cost-effectiveness and feasibility of different levels of DG in order to determine an optimized level.

The Companies’ Preliminary Response

The Companies will address the Commission’s above concerns by evaluating and documenting the integration of DER in the various resource portfolios.

The Companies will present a range of DER along with specifications of each (integration costs, economics, feasibility, and potential uses) and key decision factors. The Companies will explore multiple alternative options with varying levels of DER. Based on the match of specifications and decision factors, cost-effective DER technologies will be integrated into the resource plans.

Integration of DER in PSIPs requires both DER deployment and suitability for power supply and ancillary services. Thus the analysis will include an assessment of future DER deployment on the various islands based on customer’s choice and an evaluation of those distributed resources for use as power supply and as providers of ancillary services. Understanding the fact that deployment and use are interrelated through economics, the

⁸ *Ibid.* At 179.

Companies will update their DER forecasts based on Phase 1 findings and conclusions in the Commission's Decision and Order No. 33258.

The Companies' thinking on DER integration has evolved since the 2014 PSIPs and the Distributed Generation Integration Plan (DGIP). Through Phase 1 of the DER order techniques and solutions were identified to interconnect more DER without the need for major distribution circuit upgrades. In part this is due to new requirements for inverter performance and identification of the hosting capacity of the distribution circuits. Distribution upgrades at some level will still be required to interconnect more DER above the hosting capacity. With the introduction of new customer options (self-supply and grid-supply) the economics and the attributes of DER resources have broadened, these new options will need to be considered in the analysis as well.

In the DER docket, the Commission has emphasized a move toward a market-based procurement approach for DER in order to drive down costs for all customers. Program and pricing design, as developed in parallel during Phase 2 of the DER docket, will be an important element of the overall solution.

The Companies will integrate the analyses performed in parallel to this proceeding in the DR and DER dockets to further evaluate the feasibility of using DER to provide ancillary services to meet system security requirements. The evaluation will consider new technologies for DER including advanced inverter functions, battery energy storage, DER aggregation, thermal storage, electric vehicle charging to help integrate more renewables and reduce Generation and T&D costs.

Sensitivity analysis will be conducted to determine customer rate impacts for various levels and methods of DER integration in order to demonstrate DER optimization in the plans. The analyses will also incorporate customer costs for DER to capture the total resource costs of the plans in lieu of exclusively utility costs to provide a more comprehensive comparison of plans.

#4 FOSSIL-FUEL PLANT DISPATCH AND RETIREMENTS

Commission’s Observations and Concerns

Observations and Concerns ⁹	Planning & Analysis Considerations	Near Term Issues [2016–2020]	Mid to Long Term Issues [2021–2045]
<p>#4 Proposed Plans for Fossil-Fueled Power Plants are not Sufficiently Justified.</p> <ul style="list-style-type: none"> ■ Fossil generation retirement plan has not been adequately justified. ■ Operational flexibility upgrades. ■ LNG and fuel use strategies. ■ Least-cost security-constrained economic dispatch policies are not sufficiently transparent. 	<ul style="list-style-type: none"> ■ Provide analyses required in Order No. 32053 at 92–93 for a “Fossil Generation Retirement Plan” for each company. ■ Provide analyses required in Order No. 32053 at 101 for a “Generation Commitment and Economic Dispatch Review” for each company. ■ Evaluate fossil generation plans considering alternate LNG price possibilities, and analyses with and without bulk scale and container-scale LNG fuel utilization. ■ Provide explicit identification and quantification of benefits of new, highly-efficient, flexible generating units. 	<ul style="list-style-type: none"> ■ Review Companies’ near-term strategies for cost-effective fossil generation retirements and flexibility improvements. ■ Review Companies’ near-term fuel supply strategies to minimize fuel cost and price volatility risk, including proposed LNG use. ■ Review Companies’ environmental compliance strategies. ■ Review economic dispatch policies for each system and clarify dispatch of units using renewable fuels (Schofield, CT-1, and AES proposal). 	<ul style="list-style-type: none"> ■ Cost-effective fossil generation replacement plan consistent with high renewable strategy to achieve Act 97 RPS requirements. ■ Long-term fuel supply strategy to minimize fuel cost and price volatility risk.

The Commission has stated that the PSIPs do not adequately demonstrate that the large restructuring of the fossil generation fleet in the form of conversions, retirements and new assets ensures a reliable and cost-minimizing system; that will allow the integration of more renewables, and is the most cost effective approach given other options. The Commission has raised concerns that the plan relies heavily on the use of LNG for conversion and sees significant risks and uncertainties in the import of LNG and use for electricity generation. This must be considered in the context of economic dispatch policy which needs to demonstrate that it minimizes the cost of fuel expenditures. In addition, the PSIPs must now address the current issues that have arisen out of new legislation and positions from the State administration.

The Companies’ Preliminary Response

The Companies acknowledge the Commission’s concerns around cost associated with the proposed generation asset and grid upgrades. The Companies will provide analyses for various portfolios with different paths to achieving the 100% RPS in 2045. These various generation portfolios will attempt to minimize and justify the customer impact associated with each plan. A specific focus will be applied to avoid the creation of stranded assets as we explore various paths to transform the generation fleet. This will be done while moving towards a generation mix that relies heavily on renewable generation as

⁹ *Ibid.* At 179–180.

mandated by Act 97 and is in accordance with other recently approved regulation and legislation including Act 38.

The Companies will present via analysis several different options for technology upgrades that could increase generation flexibility. This is to contribute to system security and to allow for the greater addition of lower cost renewable generation. Also the Companies will explore alternative timing plans for upgrades and retirements to ensure the proposed plans provide a reasonable total cost impact for the customer.

Where fuel is a significant concern to cost effectiveness the Companies will provide stochastic and/or sensitivity analysis illustrating the range of possibilities for switching from existing fossil generation to alternative fuel sources. These analyses will help identify the plan with the highest likelihood of implementation success and incorporating renewables while minimizing and stabilizing rate impacts for our customers.

Various sensitivities for the underlying fuel commodity trajectories including relevant petroleum-products and LNG will also be assessed, to properly identify tipping bounds. These identified bounds will establish ranges where projected commodity prices either validate or invalidate a proposed investment plan and provide optionality while focusing on minimizing costs. Any plan involving the utilization of LNG as a transitional bridge fuel will be vetted to ensure compliance with all relevant legislation including ACT 38. In addition, contingency plans will be formulated that attempt to address the critical implementation and conversion risks.

In examining marginal cost of generation, current economic dispatch policy will be reviewed and examined to ensure that generation cost is minimized while integrating high levels of renewable generation and maintaining system security.

#5 SYSTEM SECURITY REQUIREMENTS

Commission’s Observations and Concerns

Observations and Concerns ¹⁰	Planning & Analysis Considerations	Near Term Issues [2016–2020]	Mid to Long Term Issues [2021–2045]
<p>#5 System Security Requirements Appear Costly and Are Not Sufficiently Justified.</p> <ul style="list-style-type: none"> ■ Technical bases for requirements is not clearly established and defined in technology-neutral terms. ■ Proposed security and reliability requirements appear costly. ■ Appear likely to limit utilization of and increase costs to integrate renewables. 	<ul style="list-style-type: none"> ■ Determine technology-neutral grid service requirements. ■ Review and evaluate costs of existing must-run system security constraints. ■ Demonstrate proposed security requirements are reasonable, cost-effective, balance system reliability, and provide for utilization of clean energy resources. 	<ul style="list-style-type: none"> ■ Determine grid service requirements for known and likely RE additions on each island system. ■ Identify reasonable, cost-effective near-term system security requirements. 	<ul style="list-style-type: none"> ■ Determine grid service requirements for high renewable penetration strategies.

The Commission requests further clarification and justifications of the system security requirements defined in the PSIPs with special focus on technology-neutrality. The Commission also requires further explanations of the assumptions underlying the contingency requirements, particularly their likelihood. The Commission has also requested an estimate of the combined capital expenditures and operating costs for the proposed security requirements. The regulation requirements and expense must also be more rigorously explained, particularly the accounting of non-coincidence and calculation of individual variable renewable resource requirements.

The Companies’ Preliminary Response

System security requirements depend on both the reliability criteria desired and the system conditions. The system conditions may in turn be affected by which resources are chosen to meet system security requirements. Thus, determining and optimizing the system security is an iterative process. The Companies will define the requirements and analyze the most cost effective way to meet those requirements and maintain power quality through a six-step process:

1. **Establish relevant reliability criteria** that describes the potential consequences of not meeting those criteria.
2. **Describe system conditions under an assumed resource mix** corresponding to the plan.

¹⁰ *Ibid.* At 180.

- 3. Categorize and quantify system security needs.** To categorize and quantify system security needs, the Companies will build upon the work developed in conjunction with the Commission Special Advisor and published in the recent IDRPP Supplemental Report. That report establishes definitions of the required grid services, and it does so in a technology-neutral manner. The services are defined as Inertia, Fast Frequency Response (FFR), Regulating Reserve, Supplemental Reserves, and Capacity. To estimate the quantities of FFR needed, the Companies will apply the methodology developed under the guidance of the IDRPP Special Advisor. The Companies will further refine and apply different methodologies in the time available for estimating the necessary quantities for Regulating Reserves, Supplemental Reserves, and Capacity.

The Companies acknowledge that the Commission and the Special Advisor have expressed concerns about both the definition and calculation of Regulating Reserves, and the equations applied to the quantification of Ramp Rate and 10-minute Non-Spinning Reserves. Largely, these concerns are rooted in the forecasting associated with the production from renewable energy resources. The Companies have articulated current studies underway to examine new forecasting techniques, stochastic modeling, and distributed generation impacts, all of which will help reshape these calculations. The findings will be leveraged as the work is completed.

- 4. Analyze whether the available resources are sufficient to provide the system security requirements** and, if not, what are the capital expenditure requirements and operating costs of the most economical additional resources needed to meet them.
- 5. Evaluate whether costs to support system security can be reduced** through adjustments to the reliability criteria, the resource mix (including enhancements to DR and DER capabilities), and system operations practices; and by identifying risks and tradeoffs. This will involve simulating alternative plans and their unit commitment and dispatch cost implications through modeling. Assumptions regarding resource characteristics will be developed with the DR team and other teams, and clearly documented in the updated PSIPs.
- 6. Identify ways to build flexibility into the resource plan.** The Companies will identify key uncertainties regarding future system conditions and resource options, ensuring that the plan provides enough flexibility to take advantage of opportunities that may arise. (For example, DR and DER provision of ancillary services is largely an emerging technology, but if the potential turns out to be large, it will be important that the ancillary services framework allows it to increasingly substitute for traditional generation to the extent it has lower costs.)

#6 ANCILLARY SERVICES

Commission’s Observations and Concerns

Observations and Concerns ¹¹	Planning & Analysis Considerations	Near Term Issues [2016–2020]	Mid to Long Term Issues [2021–2045]
<p>#6 Proposed Plan for Provision of Ancillary Services Lacks Transparency and May Not be Most Cost-Effective Option.</p> <ul style="list-style-type: none"> Have not demonstrated cost-effective ancillary service resource portfolio. Analytical methods appear flawed. 	<ul style="list-style-type: none"> Utilize technology-neutral criteria to evaluate ancillary service resource alternatives. Evaluate and consider potential contributions from all potential sources of ancillary services including DER; demand response, and renewable generation, etc. Utilize modeling and analysis tools and methods that are appropriate and accurately measure ancillary service efficacy and costs. 	<ul style="list-style-type: none"> Review of proposed energy storage resources to determine and demonstrate optimal, cost-effective sizing and utilization strategies. Identify and analyze cost-effective near-term strategies to meet ancillary service needs on each island system. 	<ul style="list-style-type: none"> Determine cost-effective portfolio of ancillary service resources for high renewable penetration strategies.

The Commission requires the Companies to expand the providers of ancillary services to a wider range of alternative sources. The Commission has outlined the need for cost analysis of alternatives to provide ancillary services, including variation in technology and sizing, in order to justify the choices made in the development of the Preferred Plans. Consideration of the potential of wind resources, ICE generation additions, and operating innovations is required. In particular, the Commission requests further detail on the choice of BESS and its proposed use. The Commission also requests further detail on modeling methodology.

The Companies’ Preliminary Response

Similar to the Companies’ response to Issue Concern #5, the Companies will leverage and build upon ongoing work alongside the PUC Special Advisor in response to Docket No. 2007-0341, Order No. 32054. The Companies will integrate these results into the PSIPs, specifically, the quantities and types of cost effective DR resources that can deliver a wide array of ancillary services. These services include fast frequency response, regulating reserves, supplemental reserves, and a variety of load shifting, load building, and capacity services. Forthcoming DR programs—developed in collaboration with the Special Advisor—will make operable and deliver some of these services.

Using avoided-cost methodology, the Companies will estimate the cost of various DR programs. Each program will be priced to be economical, thus the main uncertainty will be surrounding implementation and customer adoption.

The Companies will also be supplementing the analyses by evaluating the benefits of energy storage and fast-starting generating units with additional sub-hourly modeling.

¹¹ *Ibid.* At 181.

#7 INTER-ISLAND TRANSMISSION

Commission’s Key Concerns & Observations

Observations and Concerns ¹²	Planning & Analysis Considerations	Near Term Issues [2016–2020]	Mid to Long Term Issues [2021–2045]
<p>#7 PSIP Analysis on Inter-Island Transmission Lacks Sufficient Detail.</p> <ul style="list-style-type: none"> Consistent consideration of benefits and costs. Disparities with other analyses. 	<ul style="list-style-type: none"> Provide appropriate and consistent consideration of benefits and costs. Consider a full spectrum of costs and benefits. Address and explain the disparities in the various analyses of inter- island transmission submitted to the commission. 	—	<ul style="list-style-type: none"> Evaluate the need and economics of interisland transmission options in high renewable strategy to achieve Act 97 RPS requirements.

The Commission requests more detail on the cost-benefit analysis for the O‘ahu–Maui inter-island transmission, particularly as to why it differs from previous analyses. The Commission seeks to confirm that the analysis took into account the full useful life of the cable, not only its use until 2030. Whether inter-island transmission will be needed to achieve the State’s 100% RPS target must also be assessed.

The Companies’ Preliminary Response

The Companies will provide additional details on the O‘ahu-Maui inter-island transmission analysis, confirming that the analysis has included the full useful life of the cable, including the years beyond 2030. In order to provide a more robust perspective on how the inter-island cable was evaluated, the Companies will provide the supporting analysis and background information related to these calculations.

The Companies will also explicitly compare analysis assumptions with other reports in the cable docket—to the extent those are available—to highlight the differences in assumptions used by various assessments.

Inter-island cable analysis will be put within the context of broader market environment possibilities, for example differing oil prices and DER penetrations.

In light of the 100% RPS goal, we might find it appropriate to investigate several inter-island interconnections. For example, if resource options on one island are more costly or more constrained than on other islands, renewable energy resources from the other islands might be needed to achieve 100% RPS at a reasonable cost. In addition, multi-island grid connections may allow for the maintenance of grid reliability at lower costs than by maintaining reliability through separate, independent island grids. In such

¹² *Ibid.* At 181.

3. Preliminary Responses to the Observations and Concerns

#8 Implementation Risks and Contingencies

a case, the Companies will update and present their assumptions and calculation methodologies for this cost-benefit analysis.

#8 IMPLEMENTATION RISKS AND CONTINGENCIES

Commission’s Key Concerns & Observations

Observations and Concerns ¹³	Planning & Analysis Considerations	Near Term Issues [2016–2020]	Mid to Long Term Issues [2021–2045]
<p>#8 Customer and Implementation Risks Are Not Adequately Addressed.</p> <ul style="list-style-type: none"> Customer impacts and risks of key uncertainties not identified or addressed. Customer risks associated with proposed capital program not identified or addressed. Capital program implementation risks not identified or addressed. 	<ul style="list-style-type: none"> Provide appropriate sensitivity analyses and risk assessments to assess the impacts of principal uncertainties on major decisions. Characterization of project implementation risks, assessment of Companies’ abilities to finance and manage proposed capital expansion program, and measures to insulate customers from implementation risks. 	<ul style="list-style-type: none"> Consideration of uncertainties associated with prices and feasibility of utilization of LNG fuels. Risk assessment of potential for cost overruns in period with rapid capital spending increase. Assessment of financial impact of proposed capital program. 	<ul style="list-style-type: none"> Customer and implementation risk assessment for cost-effective high renewable strategy to achieve Act 97 RPS requirements.

The Commission asserts that the PSIPs do not adequately account for the significant amount of uncertainty and risk embedded in the plan. The plans also do not provide sufficient documentation and/or sensitivity analysis for the impact of potentially unfavorable outcomes around these uncertainties. Additionally the PSIPs now need to consider and update the impact of new political and economic realities (including the passage of Act 97) which have material impacts to the current PSIP forecasts. Finally, the PSIPs do not currently illustrate contingency plans given the possibility of these issues or unfavorable outcomes.

The Companies’ Preliminary Response

The Companies acknowledge and understand the Commission’s concerns regarding the innate uncertainties and underlying assumptions in the PSIPs. The Companies will provide analyses for various generation portfolios with different paths to achieving the 100% RPS in 2045. The risks and uncertainties of various assumptions will be addressed through sensitivity analyses.

The Companies will perform stochastic analyses with respect to the specific concerns related to the impacts of the timing and availability of LNG imports, and impacts of changes in relative LNG and petroleum fuel prices. We will consider the impacts of technology improvements, cost reductions, and availability of renewable resources (as described in response to Concern #2 through #7). We will update the PSIPs to reflect

¹³ *Ibid.* At 181–182.

3. Preliminary Responses to the Observations and Concerns

#8 Implementation Risks and Contingencies

changes that occurred in the political, regulatory, and economic spheres since the filing of the 2014 PSIPs and measure their impact on the plans.

The Companies understand that increases in customer bills carries certain risks, including incremental grid defections. We will explore the causes and impact of larger and smaller customer grid defections, and evaluate these reasons to better understand the underlying risks and to potentially formulate contingencies for maintaining our customer base and rate stability where possible. We will consider the drivers of increased customer bills which include, but are not limited to, elevated fuel costs and overall capital outlay associated with the implementation of the plan. We will holistically examine the process of obtaining and managing various sources of capital to ensure the lowest portfolio cost while minimizing financing risk.

4. Proposed PSIP Revision Plan

As requested by the Commission, the Companies developed their Proposed PSIP Revision Plan documenting the work plan and schedule to supplement, amend, and update the PSIPs by April 1, 2016.

PROPOSED PSIP REVISION PLAN DIRECTIVES

Our proposed PSIP Revision Plan complies with the four main directives stated in the Order:

1. Schedule and work plan to supplement, amend, and update the PSIPs.
2. Provisions to receive, consider and, as appropriate, incorporate information, comments, and analyses filed by the Parties.
3. A timeline that includes an interim PSIP update on or before February 15, 2016.
4. A filing, by April 1, 2016, of supplemented, amended, and updated PSIPs with a planning horizon of 2045.

The updated PSIPs will address the Observations and Concerns and the Initial Statement of Issues identified in this Order; address the observations, concerns, considerations, and issues identified in Attachment 1; and address other issues uncovered in our planning and analyses. Development of the updated PSIPs will include changes in modeling methods, assumptions, and constraints, as well as additional analytical support for several aspects included in the PSIPs.

PSIP WORK PLAN

The purpose of the updated PSIPs is to provide technically sound and economically feasible analyses of several possible paths forward with respect to achieving the energy policy goals of the State of Hawai‘i.

The analyses will support the Companies’ plans to achieve a 100% RPS by 2045. We will strive to make the analysis clear when documenting our methods, assumptions, and data sets. We will strongly encourage input from stakeholders.

The Companies have observed a number of different visions among various stakeholder groups regarding the proper path forward to achieve the State’s energy policy goals. The work plan includes provisions for investigations and analyses of several different options.

Under this framework, we intend to produce a plan that is supported by the analyses and results.

At the end of our analysis, we intend to present:

- Actionable strategies and implementation plans, including the optimal mix of resources.
- Financial impacts of the plan on our customers, including rate and bill impacts.
- An analysis of risks and uncertainties associated with the resource plan.

The process of developing resource plans is iterative and the Companies recognize that these plans are a starting point for Hawai‘i and not the end of planning for the future because the future holds many uncertainties. This will require testing of a substantial number of resource options and operational strategies. We intend to inform this work with stakeholder input.

PSIP ANALYSIS FRAMEWORK

The Companies have designed a framework and corresponding work plan to address the Commission’s eight Observations and Concerns. Figure 1 highlights the interdependencies among the various Observations and Concerns that we will focus on when developing our detailed analysis.

PSIP Framework to Address Observations and Concerns

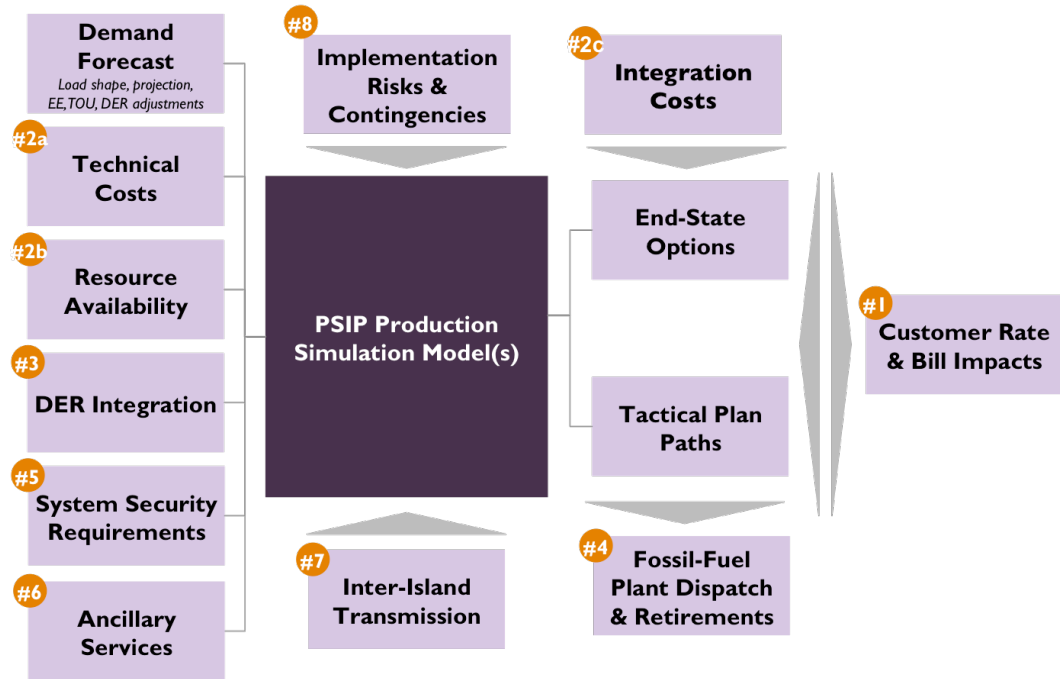


Figure 1. PSIP Framework to Address the Observations and Concerns

Key Elements of the PSIP Framework

Key elements of the PSIP framework are:

- Customer rate and bill impacts that results from the various resource plans.
- Demand forecast including the gross demand, the load shape adjusted for energy efficiency (EE), electric vehicles (EVs), and time-of-use (TOU) impacts.
- Technical cost assumptions covering capital costs, operating & maintenance costs location specific load factors and fuel price projections.
- Resource availability of various resource options.
- System security requirements to maintain a reliable grid for all customers.
- DER integration of legacy NEM PV, self-supply, grid-supply customer options and other DER alternatives.
- Ancillary services provided by a portfolio of resources and not just utility resources.
- Integration costs related to the integration of various resources both on utility-scale and distributed levels.
- Renewable portfolios to achieve the RPS goals.
- Inter-island transmission assessment to evaluate the costs and benefits of interconnecting the islands.
- Options and sensitivities related to the mix of resources and the uncertainties and risks of various input variables like fuel cost, resource availability and timing of options including utility and customer costs.

Evaluation Metrics

When developing and evaluating plans toward recommending actionable strategies and implementation plans, the Companies will employ the following evaluation metrics:

- Year over year utility revenue requirements, customer bills, and rate impacts.
- Total capital requirements (including the Companies' capital costs, IPP capital costs, and customer-incurred capital costs).
- Costs for system security and ancillary services.
- Must-run generation requirements.
- Reliability metrics (such as reserve margin, loss of load probability-LOLP and adequacy of supply-AOS)
- Environmental compliance.
- RPS and State energy policy compliance.
- Implementation risks.

INPUTS TO THE PROCESS

The Companies intend to incorporate stakeholder input to the greatest extent possible, within the time frames established, to inform the assumptions, methods, and evaluation metrics to arrive at a recommended course of action.

We have reached out to several organizations with unique industry expertise regarding their independent participation in the PSIP technical conferences with the Parties and providing independent technical analyses to help address issues of concern for the updated PSIPs. To date, we have received affirmative indications for providing support from:

- State of Hawai‘i Department of Business Economic Development and Tourism (DBEDT)
- Hawai‘i Energy
- National Renewable Energy Laboratory (NREL)
- Hawai‘i Natural Energy Institute (HNEI)
- Electric Power Research Institute (EPRI)

DBEDT has offered to:

- Suggest options for the Companies and all participants to consider.
- Provide objective points of reference to facilitate discussion and, where possible, drive consensus.
- Provide inputs, analyses, and observations regarding key assumptions and methods to be used in updating the PSIPs.
- Review and provide constructive feedback on results and key findings.

Hawai‘i Energy has offered to help develop ranges or scopes of demand-side management (DSM) and conservation levels by year for our planning.

In addition to these entities, the Companies welcome and actively seek to obtain input from the Parties and other stakeholders regarding the assumptions, methods, and evaluation metrics. In the interest of time, we would like to proactively solicit from other parties information that they believe would be helpful to us in preparing the PSIPs. Toward that end, we are proposing to schedule stakeholder and technical conferences (see “Proposed Filing and Stakeholder Engagement Schedule” on page 31 for details).

In their January 15, 2016 filing, the Companies encourage the Parties to provide constructive inputs related to the Commission’s Observations and Concerns, supplemented with appropriate quantitative justification, methodology, assumptions, and information sources that can apply to the creation of actionable updated PSIPs. This

input can be particularly impactful to our analyses. The Companies will incorporate input submitted by the Parties to the extent that time allows.

We have compiled a list of high priority inputs to the Observations and Concerns that we require for our analysis.

Observations and Concerns	Input Required for our Analysis
#1. PSIP cost impacts and risks have not been demonstrated to be reasonable.	<ul style="list-style-type: none"> ■ Appropriate metrics for measuring the financial impacts to customers. ■ Appropriate tradeoffs between capital investment (by the Companies, third parties, and customers) and fuel savings ■ Appropriate metrics for measuring utility performance in providing the platform that supports energy efficiency, DER, and other customer initiatives ■ Range of appropriate resource plans and sensitivities that should be analyzed in the updated PSIPs. ■ Appropriate screening methodologies for technologies and resource plans.
#2. PSIPs do not appear to aggressively seek lower-cost, new utility-scale renewable resources.	<ul style="list-style-type: none"> ■ Renewable, storage and fossil resource types, capital costs, fixed and variable operations and maintenance costs, and operating characteristics expected to be commercially available, or which can reasonably be expected to become commercially available, through 2045. ■ Feasible capacity potentials (MWs installed) by island. ■ Island specific constraints (if any) considering land availability and technical feasibility of deployment. ■ Development risks, development “no-go” zones by island. ■ Expected costs to integrate renewable resources. ■ Fuel availability and price forecasts until 2045 per type of fuel. ■ Forecasts by year for the use of electricity to support the transportation sector for charging of electric vehicles and for the production of hydrogen (by electrolysis) for fuel cell powered vehicles.
#3. PSIPs do not adequately address utilization and integration of distributed energy resources.	<ul style="list-style-type: none"> ■ DER type and their feasible capacity potentials (MWs installed) ■ Technical feasibility of DER deployment. ■ Forecast deployment levels of alternative DER (for example, self-supply, grid-supply, distributed storage, electric vehicles, etc.) until 2045. ■ Forecast of energy efficiency to meet the 2030 law and assumption thereafter out to 2045. ■ Hawai'i specific DER cost development trajectory until 2045 (in real or nominal dollar terms), including capital costs and fixed and variable O&M costs per alternative DER. ■ Integration costs of DER. ■ Suggested methodologies for the optimization of DER in overall system optimization. ■ Potential DER and demand response aggregation models, including precedents and business models established elsewhere and their applicability to Hawai'i. ■ Potential for mitigating stranded costs and cost subsidization by non-DER customers.
#4. Proposed plans for fossil-fueled power plants are not sufficiently justified.	<ul style="list-style-type: none"> ■ Role of fossil-fueled resources in maintaining reliability, stabilizing costs and supporting higher levels of renewable energy penetration. ■ Important considerations in making fossil-unit retirement decisions.

4. Proposed PSIP Revision Plan

Inputs to the Process

Observations and Concerns	Input Required for our Analysis
#5. System security requirements appear costly and are not sufficiently justified.	<ul style="list-style-type: none"> ■ Methodologies and metrics for determining technology-neutral and cost-effective system security requirements, taking into account the islanded nature of Hawai'i's electric systems ■ Modeling techniques for assessing the appropriate levels and the benefit / cost of system security requirements.
#6. Proposed plan for provision of ancillary services lacks transparency and may not be most cost-effective option.	<ul style="list-style-type: none"> ■ The role of ancillary services markets on the mainland, the applicability of mainland market models to Hawai'i, and barriers and practical considerations related to implementation of such markets in Hawai'i. ■ Methods for providing "transparency" regarding ancillary services costs in Hawai'i.
#7. PSIP analysis on inter-island transmission lacks sufficient detail.	<ul style="list-style-type: none"> ■ Inter-island transmission costs and locations. ■ Cost-benefit analysis of inter-island connections. ■ Development risks associated with inter-island transmission.
#8. Customer and implementation risks are not adequately addressed	<ul style="list-style-type: none"> ■ List of risks that will be inherent in various renewable energy plans, with mitigation strategies ■ Appropriate methods for quantifying risks

Table I. High Priority Input Required for our Analysis

PROPOSED FILING AND STAKEHOLDER ENGAGEMENT SCHEDULE

The filing and engagement schedule (illustrated in Figure 2) details the timeline set forth in Order No. 33320, plus dates for one proposed Stakeholder Conference and two proposed Technical Conferences for engaging the Parties and other stakeholders.

Proposed PSIP Filing and Engagement Schedule

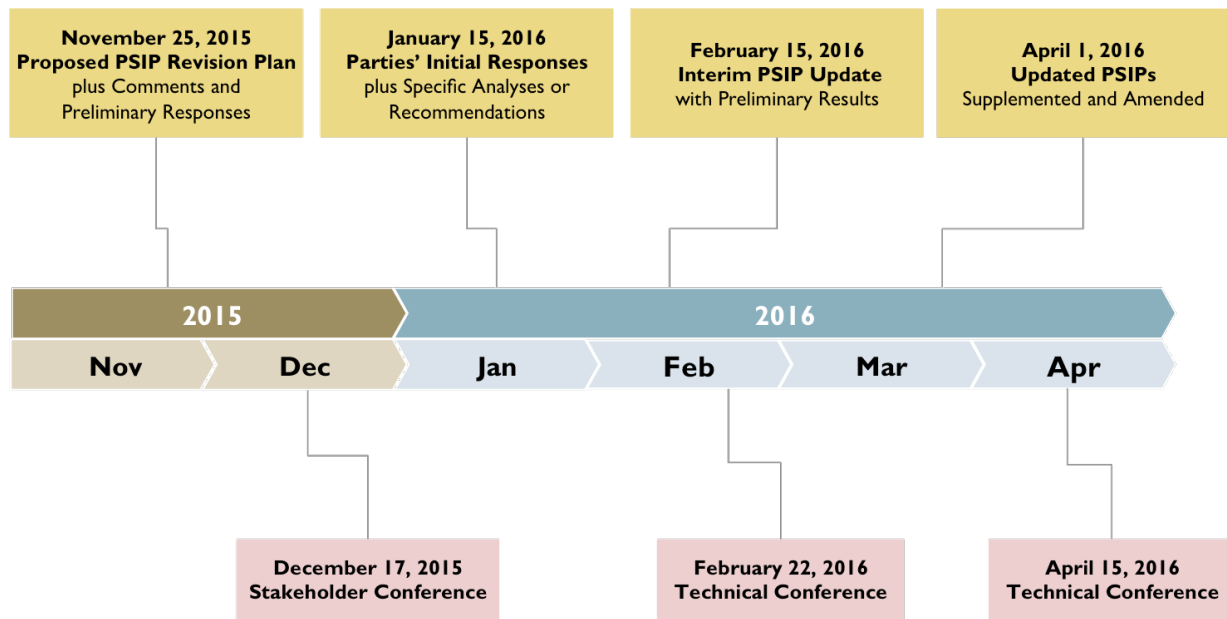


Figure 2. Overview of Proposed PSIP Filing and Stakeholder Engagement Schedule

The Companies understand the requirements directed by the Commission for each filing in the schedule. We summarize our understanding of each subsequent filing in the following sections.

Initial Responses from the Parties (January 15, 2016)

The Parties will:

- Provide comments regarding the Initial Statement of Issues.
- Provide preliminary responses to the eight Observations and Concerns.
- Provide comments regarding the Companies' 2014 PSIPs.
- Submit specific recommendations or analyses that will assist the Companies to supplement, amend, and update the PSIPs. (This input can include initial alternative proposals for specific plans including a set of actions; constructive concerns and proposed modifications supported by actionable and feasible recommendations; and alternative data sets.)

4. Proposed PSIP Revision Plan

Proposed Filing and Stakeholder Engagement Schedule

Interim PSIP Update (February 15, 2016)

The Companies will:

- Report on the progress of updating the PSIPs.
- To the extent available, file interim results of the planning analyses to serve as an updated starting point for Technical Conferences with Parties.
- Discuss our preliminary analyses and results for various resource plans out to 2045 (however, it is unlikely that analyses to address all eight Observations and Concerns will be completed by this time).
- Discuss the key assumptions used (such as fuel commodity trajectories, cost development of renewable energy systems and battery energy storage systems, and DER forecasts).
- Discuss outstanding issues where additional input or guidance is required.

Updated PSIPs (April 1, 2016)

The Companies will:

- File our supplemented, amended, and updated PSIPs, including documented solutions to the eight Observations and Concerns.
- Present a detailed discussion of the recommended plan, including actionable strategies and implementation plans addressing both near-term and long-term issues.
- Identify the key risks and uncertainties considered in our analyses.
- Identify the key assumptions, inputs, and methodologies that formed the foundation of our analyses.
- Describe, in detail, customer rates and bill trajectory over the entire planning period.

Stakeholder Conference (On or about December 17, 2015)

The Stakeholder Conference will allow the Parties to discuss the objectives of the process set forth by the Commission, to ask specific questions regarding the PSIP analysis process, and to discuss any other pertinent issues raised. Our role at the meeting is to listen and engage in an open and collaborative dialog.

In the interest of facilitating dialogue and open discussion, we would prefer that this meeting be informal.

Technical Conferences (February 22, 2016 and April 15, 2016)

Considering the timeline defined by the Commission, we also propose two technical conferences: one while we are developing the updated PSIPs, and one after we file the

updated PSIPs. These technical conferences will enable us to engage the Parties and review the planning process

At the first technical conference, we plan to discuss the overarching PSIP principles, present an overview on PSIP technical development process (for example, methodologies, models, and key assumptions, including content development), and present preliminary analyses and results. More importantly, though, we plan to solicit constructive feedback, the results of their substantiated analyses, and well-considered recommendations that we can include in our ongoing analyses based on the filing of our interim update.

At the second technical conference, we plan to present and discuss the supplemented, amended, and updated set of PSIP actions; present and discuss the analyses and results addressing the eight Commission's Observations and Concerns, and discuss both the near-term and long-term customer rates and bill impacts.

We understand that the Commission might also convene technical meetings for similar purposes, but also to examine and understand our filings. These technical conferences will be held to examine and provide guidance regarding our efforts to supplement and amend the PSIPs. As the Commission states, the Parties can participate in these technical conferences.

5. Additional Comments

UPDATED PLANNING ASSUMPTIONS

The Companies will be updating and documenting all modeling assumptions with any changes that happened since the filing of the initial PSIPs on August 26, 2014 and also expand those to the 2045 time-horizon.

The supplemental analysis will also address considerations of all additional pertinent circumstances that have changed since the PSIPs were filed. These changes include:

- The increased RPS requirements established by Act 97 of the 2015 Hawai‘i Legislature.
- Substantial decrease in petroleum prices.
- Limits the use of LNG as a cost-effective transitional bridge fuel that does not impede the utilization of renewable energy sources as established by Act 38 of the 2015 Hawai‘i Legislature.
- Changes in the estimated timing for implementation of major near-term projects in the 2014 Preferred Plans, including LNG utilization and BESS projects.
- Potential significant changes in Federal energy policies that may affect Hawai‘i’s utilities, including the July 29, 2015 U.S. Supreme Court decision regarding Mercury and Air Toxics Standards (MATS) regulations and promulgation of the Clean Power Plan Final Rule.
- An announcement by the Governor of the State of Hawai‘i regarding administration policy regarding utilization of LNG fuels for electric utility power production.

In addition, the Companies will identify and characterize any known significant changes in circumstances that would affect utility plans and operations and will explain how these circumstances could affect utility plans and supplement, amend, and update the PSIPs.

The Companies are aware of the fact that long-term planning inevitably includes uncertainty related to the development of the critical input variables. We will perform sensitivity analysis related to these variables to measure the exposure of these risks and increase the robustness of the planning decisions.

PARTIES AND OTHER STAKEHOLDERS

Order No. 33320 grants participation status to 18 parties and intervention status to 3 others (collectively, with the Consumer Advocate, the “Parties”).

The participating parties are Renewable Energy Action Coalition of Hawai‘i (REACH), Life of the Land (LOL), NextEra Hawai‘i, Hawai‘i Solar Energy Association (HSEA), Puna Pono, The Alliance for Solar Choice (TASC), Hawai‘i Renewable Energy Alliance (HREA), Hawai‘i Gas, AES, Blue Planet, Ulupono, The Hawai‘i PV Coalition (HPVC), Sierra Club, Tawhiri, SunPower, Paniolo Power, Eurus, and First Wind. The parties granted intervention status are County of Hawai‘i (COH), County of Maui (COM), and the Department of Business, Economic Development, and Tourism (DBEDT). The Companies also acknowledge that other stakeholders might have meaningful input and perspective that we would consider, including: Hawai‘i Natural Energy Institute (HNEI), Electric Power Research Institute (EPRI), U.S. Department of Energy, University of Hawai‘i Economic Research Organization (UHERO), National Renewable Energy Laboratory (NREL), Hawai‘i Energy, and the Consumer Advocate.

The Order allows and encourages the Parties “to present analysis, testimony, statements, or position, and reply statements of position.”¹⁴ The Companies support the Commission’s order, that on or before January 15, 2016, the involved Parties can file their initial responses to the PSIPs; comments regarding the Commission’s Observations and Concerns and Initial Statement of Issues; and comments regarding the Companies’ comments, preliminary responses, and proposed PSIP Revision Plan included in this document.

We encourage—indeed propose to actively engage—the Parties to assist the Companies in developing updated PSIPs by submitting alternative data, assumptions, analyses, models, methodologies, and sources to assist us in addressing the Commission’s Observations and Concerns, and offering constructive feedback throughout the process.

The Companies also support the Commission’s statement that they will preclude any attempts to broaden the issues or to unduly delay the proceeding.

¹⁴ *Ibid.* At 168.

PROCESS CONSIDERATIONS

The Order makes clear the need for substantial supporting evidence for the conclusions and recommendations presented in the updated PSIPs. Several sections in the Order call attention to specific guidance that the Companies need to consider when describing evidence supporting PSIP findings. This guidance includes the Commission's Inclinations and the IRP Principal Issues. The Order, however, states that the Commission reviewed this guidance and developed the eight preliminary Observations and Concerns that addressed the major components of this guidance and their overall impacts on the proposed plans (that is, the updated PSIPs).

While the following guidance was included in the eight Observations and Concerns, we will consider these areas on a larger scale so that the updated PSIPs address all of the Commission's concerns.