Hawaiian Electric Companies’ Request for Proposals for Variable Renewable Dispatchable Generation and Energy Storage Stage 2 & Grid Services from Customer-Sited Distributed Energy Resources

Docket No. 2017-0352 Status Conference

April 18, 2019 PUC Hearing Room
Agenda

- Overview
- Draft Renewable RFPs
- Draft Grid Services RFP
Overview

- Draft RFPs filed April 1, 2019
- Additional documentation filed April 8
- Webinars for both Renewable RFPs and Grid Services RFP available at
  [www.hawaiianelectric.com/competitivebidding](http://www.hawaiianelectric.com/competitivebidding)
- How Companies developed RFP Drafts explained in Exhibit 1 to April 1 filing
Draft Renewable RFP Agenda

- Procurement Targets
- Energy Storage
- Guaranteed Commercial Operations Date
- Evaluation Process
- Differences from Stage 1
- Proposed RFP Schedule
# Stage 2 Energy and Storage Scope

<table>
<thead>
<tr>
<th>Targeted annual MWh of Variable Renewable Dispatchable Generation</th>
<th>O‘ahu</th>
<th>Maui</th>
<th>Hawai‘i Island</th>
</tr>
</thead>
<tbody>
<tr>
<td>160,000 annual MWh</td>
<td>65,000 annual MWh</td>
<td>70,000 annual MWh</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Targeted MW and Annual MWh of Energy Storage</th>
<th>O‘ahu</th>
<th>Maui</th>
<th>Hawai‘i Island</th>
</tr>
</thead>
<tbody>
<tr>
<td>200 MW / 438,000 annual MWh Load Shifting</td>
<td>40 MW / 58,400 annual MWh Load Shifting</td>
<td>18 MW / 6,570 annual MWh Contingency</td>
<td></td>
</tr>
</tbody>
</table>
## Stage 2 Technologies

<table>
<thead>
<tr>
<th></th>
<th>O‘ahu</th>
<th>Maui</th>
<th>Hawai‘i Island</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Generation Technologies</strong></td>
<td>Variable Generation</td>
<td>Variable Generation</td>
<td>Variable Generation</td>
</tr>
<tr>
<td><strong>Paired Storage Requirements</strong></td>
<td>Proposer’s Option – Not Required</td>
<td>Paired Storage Required</td>
<td>PV: Paired Storage Required</td>
</tr>
<tr>
<td><strong>Standalone Energy Storage Technologies</strong></td>
<td>Open</td>
<td>Open</td>
<td>Open</td>
</tr>
</tbody>
</table>

Hawaiian Electric  
Maui Electric  
Hawai‘i Electric Light
Energy Storage

- On Maui and O‘ahu, to mitigate loss of energy and capacity currently provided by Kahului Power Plant and AES facilities
- On Hawai‘i Island to provide contingency resource to respond to unexpected system events
- Can be standalone storage or paired with generation
  - Grid charging enables storage resources to provide energy to the grid, or be recharged, when needed
  - Not limited to batteries; interested in other storage options
- Will grid charge with renewables where available and with fossil fuel generation when needed
Guaranteed Commercial Operations Dates

- Order 36187
  - Portfolio of Projects in Place by 2022
  - AES PPA Expiration
  - Kahului Power Plant Retirement
- Concerns
  - Aggressive Timeframes
  - Potential for Limited Bids
- Contingency Planning
  - Seasoning Periods
  - Planning for Potential Delays
- Proposal Variation Options
Evaluation Process

◆ Initial Evaluation
  – Limited Non-Price Criteria
  – Weighted Non-Price Criteria Differently
  – Create separate Priority Lists
    - Standalone Generation
    - Generation + Storage
    - Standalone Storage

◆ Detailed Evaluation
  – Build portfolios from Priority Lists to meet target MWh and MW for economic comparison
  – Load flow analyses and other factors
Differences from Stage 1

- Proposing Non-Negotiable PPA Provisions
- Standalone Storage and Grid Charging
- Evaluation Process
- Community Engagement
- Interconnection Requirements Process
- Resiliency
## Proposed RFP Schedule

<table>
<thead>
<tr>
<th>Milestone</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Draft RFP filed</td>
<td>April 1, 2019</td>
</tr>
<tr>
<td>Proposer’s Conference Webinar</td>
<td>April 9, 2019</td>
</tr>
<tr>
<td>Comments are submitted to the Commission and Company</td>
<td>April 16, 2019</td>
</tr>
<tr>
<td>Companies respond to comments; File proposed Final RFPs</td>
<td>May 3, 2019</td>
</tr>
<tr>
<td>Commission completes review of proposed Final RFPs</td>
<td>June 3, 2019</td>
</tr>
<tr>
<td>Issue Final RFPs</td>
<td>June 10, 2019</td>
</tr>
<tr>
<td>Self-Build Proposals Due</td>
<td>August 8, 2019 2:00 pm HST</td>
</tr>
<tr>
<td>IPP or Affiliate Proposals Due</td>
<td>August 9, 2019 2:00 pm HST</td>
</tr>
<tr>
<td>Selection of Priority List</td>
<td>October 18, 2019</td>
</tr>
<tr>
<td>Best and Final Offers Due</td>
<td>October 25, 2019</td>
</tr>
<tr>
<td>Selection of Final Award Group</td>
<td>February 12, 2020</td>
</tr>
<tr>
<td>Contract Negotiations Start</td>
<td>February 19, 2020</td>
</tr>
</tbody>
</table>
Grid Services RFP Agenda

- Aggregator Model
- Solicited Grid Services
- Grid Services Purchase Agreement
- RFP Schedule
- Planned RFP Refinements
Aggregator Model - Overview

**Suppliers (Aggregators):**
- Have a direct contractual relationship with:
  - Customers to engage the customer for the use of customer-sited resources
  - The Companies to deliver the grid services in the quantities and requirements agreed upon
- Are responsible for recruitment, enrollment, enablement and management of customer assets
- Are free to increase minimum incentive levels to customers
- Receive:
  - Enablement fee (capped at 10x monthly management fee)
  - Management fee (monthly on a /kW/service basis)
- Are held to performance standards, which impact the Management fee
Aggregator Model – Companies’ Role

- Hawaiian Electric Companies
  - Provide overall program administration
  - Have deployed the platform to enable the aggregator model (Siemens DEMS)
  - Inform customers about aggregator options in various utility communication channels
  - Participate in co-branding with aggregators for outreach, marketing and recruiting efforts to provide customer assurance of utility sanctioned and facilitated program
  - In C&I sector, Key Account Managers may help aggregators with introductions and customer information
  - Pay incentives directly on bill as a credit
  - Ensure efficient and reliable service delivery by managing performance assessment and verification of settlement calculations
Building a Market of Grid Services

**Capacity**

- **Current**
  - Load Building: 10AM – 2PM
  - Load Reduction: 5PM – 9PM

**Fast Frequency Response (FFR)**

- Actions needed to help stabilize system frequency immediately following a sudden loss of generation or load.

**Regulating Reserve**

- Systems maintained to respond to supply/demand imbalances over short time frames.

**Replacement Reserve**

- 30-120 minute bridge resource to generate energy or provide loads.
## Grid Service Target

<table>
<thead>
<tr>
<th>Year</th>
<th>O‘ahu FFR</th>
<th>O‘ahu Capacity</th>
<th>Maui Capacity</th>
<th>Hawai‘i Island Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>2020</td>
<td>26.0MW</td>
<td>37.0MW</td>
<td>11.5MW</td>
<td>4.0MW</td>
</tr>
<tr>
<td>2021</td>
<td>27.0MW</td>
<td>62.0MW</td>
<td>12.0MW</td>
<td>4.0MW</td>
</tr>
<tr>
<td>2022</td>
<td>27.0MW</td>
<td>87.0MW</td>
<td>16.0MW</td>
<td>4.0MW</td>
</tr>
<tr>
<td>2023</td>
<td>27.0MW</td>
<td>87.0MW</td>
<td>16.0MW</td>
<td>4.0MW</td>
</tr>
<tr>
<td>2024</td>
<td>27.0MW</td>
<td>87.0MW</td>
<td>16.0MW</td>
<td>4.0MW</td>
</tr>
</tbody>
</table>
Grid Service Purchase Agreement ("GSPA")

- 5-year term
- One GSPA covers all islands/all services as proposed by the Supplier.
- Exhibits, with the exception of the Contract Capability and Enablement schedule, serve as a form of participation rules.
- The Company does not have a predetermined preference for a particular technology for the delivery of grid services.
- "Model GSPA" proposed to the Commission for approval. Proposed negotiation term listed in Section 3.8.5.
Evolution of the GSPA

- Winter 2018/19: Stakeholder Input
- Spring 2019: Updated Model GSPA
- March 2019: Stakeholder Input
- Revised GSPA: Technical Conference
- Stakeholder Input
- Original GSPA
- Recent GSPA Bilateral Negotiations
- ISO/Utility Contract Benchmarking
- Industry Working Group Meetings
- GSPA Iteration
- Public Input
- Other Sources

Hawaiian Electric
Maui Electric
Hawai‘i Electric Light
## Proposed RFP Schedule

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<tr>
<th>Milestone</th>
<th>Schedule Dates</th>
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<tbody>
<tr>
<td>Draft RFP is filed</td>
<td>April 1, 2019</td>
</tr>
<tr>
<td>Proposers Conference Webinar</td>
<td>April 11, 2019</td>
</tr>
<tr>
<td>Stakeholder Comments submitted to PUC and Company</td>
<td>April 16, 2019</td>
</tr>
<tr>
<td>Companies’ Response to Stakeholder Comments and Proposed Final RFP are Filed</td>
<td>May 3, 2019</td>
</tr>
<tr>
<td>Completion of Commission review period of Proposed Final RFPs</td>
<td>June 3, 2019</td>
</tr>
<tr>
<td>Final RFP is Issued</td>
<td>June 10, 2019</td>
</tr>
<tr>
<td>Self-Deliver Proposal Due Date</td>
<td>August 8, 2019 at 2:00 pm HST</td>
</tr>
<tr>
<td>Aggregator or Affiliate Proposal Due Date</td>
<td>August 9, 2019 at 2:00 pm HST</td>
</tr>
<tr>
<td>Selection of Short List</td>
<td>September 20, 2019</td>
</tr>
<tr>
<td>BAFOs Due</td>
<td>September 27, 2019</td>
</tr>
<tr>
<td>Selection of Final Award Group</td>
<td>November 15, 2019</td>
</tr>
<tr>
<td>Contract Negotiations Start</td>
<td>November 22, 2019</td>
</tr>
</tbody>
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RFP Refinements

♦ Grid Services Definitions/Delivery Requirements
  – Companies will clarify that the contract term assumes a consistent definition of grid services and associated delivery requirements

♦ Enhance Detailed Evaluation step
  – Current “Final Evaluation” section will benefit from process definition and more specific metrics for the final evaluation step.
  – Companies will revise this section to explicitly define additional, detailed screening criteria to contemplate scenarios where more than needed kW is proposed.
  – Strategies for enhanced evaluation include:
    – Metrics for customer segment diversity
    – Metrics for technology diversity
    – Rigorous risk assessment of customer recruitment and enablement strategies
Questions
Backup
Guaranteed Commercial Operations Date and Grid-Charging (O‘ahu)

Draft RFP Section 1.2.16:

<table>
<thead>
<tr>
<th>Project Technology</th>
<th>Generation Only</th>
<th>Generation Paired w/ Storage (not intended to meet energy storage need)</th>
<th>Generation Paired w/ Storage (intended to meet energy storage need)</th>
<th>Standalone Storage</th>
</tr>
</thead>
<tbody>
<tr>
<td>GCOD</td>
<td>December 31, 2022*</td>
<td>December 31, 2022*</td>
<td>March 31, 2022</td>
<td>March 31, 2022</td>
</tr>
<tr>
<td>Grid Charging</td>
<td>N/A</td>
<td>PV: As bid during ITC period; 100% after ITC period</td>
<td>PV: As bid during ITC period; 100% after ITC period</td>
<td>100% at GCOD</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wind: 100% at GCOD</td>
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<td></td>
</tr>
</tbody>
</table>

*May also submit a Proposal variation based on GCOD not later than December 31, 2024, but primary Proposal must meet December 31, 2022
Guaranteed Commercial Operations Date and Grid-Charging (Maui)

Draft RFP Section 1.2.16:

<table>
<thead>
<tr>
<th>Project Technology</th>
<th>Generation Paired w/ Storage (not intended to meet energy storage need)</th>
<th>Standalone Storage or Generation Paired w/ Storage (intended to meet energy storage need)</th>
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</thead>
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<tr>
<td>GCOD</td>
<td>December 31, 2022*</td>
<td>December 31, 2022**</td>
</tr>
<tr>
<td>Grid Charging</td>
<td>PV: As bid during ITC period; 100% after ITC period Wind: 100% at GCOD</td>
<td>100% at GCOD</td>
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</tbody>
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** May also submit a Proposal variation based on GCOD not later than December 31, 2023, but primary Proposal must meet December 31, 2022
Guaranteed Commercial Operations Date and Grid-Charging (Hawai‘i Island)

Draft RFP Section 1.2.16:

<table>
<thead>
<tr>
<th>Project Technology</th>
<th>Wind Generation Only</th>
<th>Generation Paired w/ Storage</th>
<th>Standalone Storage</th>
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<tr>
<td>GCOD</td>
<td>December 31, 2022*</td>
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