



SHARON M. SUZUKI  
President

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OFFICE OF THE  
COUNTY CLERK

July 27, 2018

Mr. Mike White  
Chair, Maui County Council  
200 South High Street  
Wailuku, Hawaii 96793

Dear Chair White:

Re: Ordinance No. 2879 (Bill No. 60) to Change Zoning from Agricultural District to M-2 Heavy Industrial District (Conditional Zoning) For Property Situated at Pulehu Nui, Wailuku, Maui, Hawaii, LOT A-1, New Central Maui Generation Site Subdivision

Enclosed is a copy of Maui Electric Company, Limited's Eighteenth Annual Status Report on developing the power generating needs of the Island of Maui, required by Condition #6 of Exhibit "B" of the subject Change in Zoning Ordinance for our Waena Generating Plant.

Thank you for your consideration and assistance in this matter.

Sincerely yours,

Enclosure

xc: Alan M. Arakawa (Mayor, Maui County)  
Michele Chouteau McLean (Director, Maui Planning Department)  
Keaka Robinson (Chair, Maui Planning Commission)

GENERAL COMMUNICATION NO. 18-8

**EIGHTEENTH ANNUAL STATUS REPORT  
DEVELOPING THE POWER GENERATING NEEDS FOR THE ISLAND OF MAUI  
(July 1, 2017 - June 30, 2018)**

**WAENA GENERATING STATION**

On May 5, 2016 Maui Electric submitted to the Hawaii Public Utilities Commission (“Commission”) a request to begin the process of acquiring approximately 40 MW of new firm generation for Maui Electric to ensure reliability and support an increased use of renewable resources. As stated in the Company’s Power Supply Improvement Plan (“PSIP”) filed in April 2016 and updated in December 2016, this new generation will serve as replacement for the anticipated retirement of Kahului Power Plant in the 2022 timeframe. Depending on its location, the new generation may also help mitigate under-voltage issues in the South Maui area, where the community has expressed concerns about proposed upgrades to the overhead transmission lines. The process of adding new firm generation will take several years, so prompt approval by the Commission to start the process is necessary. On October 6, 2017, the Commission issued Order No. 34856 opening Docket No. 2017-0352 to receive filings related to the Hawaiian Electric Companies' (Companies) plans to proceed with competitive procurement to acquire firm generation and new renewable generation. In accordance with Order No. 34856, on October 23, 2017, the Companies submitted a Draft Firm Capacity Renewable Dispatchable Generation RFP, Draft Variable Renewable Dispatchable Generation RFP, and respective supporting documentation to the commission for their review. On January 12, 2018, the Commission issued Order No. 35224 "Providing Guidance on the Hawaiian Electric Companies' Proposed Request for Proposals for Dispatchable and Renewable Generation." The Order appoints Independent Observers and advises that further guidance from the Commission and IO regarding the Maui Firm RFP would be provided in the first quarter of 2018. At this time, the Company is waiting for the Commission’s comments and further guidance on the Draft Firm Capacity RFP.

Prior to Hawaiian Commercial & Sugar Company (“HC&S”) terminating their sugarcane operation in December 2016, Maui Electric leased all but approximately 1.5 acres of the Waena property back to HC&S on an interim basis, at no rent, for sugarcane cultivation.

**MAALAEA GENERATING STATION:**

No new updates.

**KAHULUI GENERATING STATION:**

No new updates.

**FEASIBILITY OF ALTERNATE ENERGY SOURCES:**

1. Kaheawa Wind Power:

This 30 MW wind farm is on-line and has been supplying electric power to Maui Electric since June 2006.

2. **Kaheawa Wind Power II:**  
This 21 MW wind farm is on-line and has been supplying electric power to Maui Electric since July 2012.
3. **Makila Hydro:**  
This 500 KW hydroelectric plant came on line in September 2006, but has operated intermittently at times due to operational challenges.
4. **Auwahi Wind Energy:**  
This 21 MW wind farm on Ulupalakua Ranch is on-line and has been supplying electric power to Maui Electric since December 2012.
5. **Biomass and Biofuels:**  
Maui Electric and Hawaiian Electric continue to monitor potential use of biofuels in Maui Electric's generating units. In 2007 an initial short-term biodiesel test was successfully completed on several internal combustion engines and a combustion turbine at Ma'alaea Generation Station ("MGS"). In 2011 Maui Electric completed a long-term biodiesel demonstration on its diesel engine generating unit M12, which demonstrated successful utility-scale long-term operation using 100% biodiesel. A project report was submitted to the Commission in January 2012. Maui Electric continues to use biodiesel during start-up and shut-down operations in two of its largest diesel generating units at MGS.
6. **Hydroelectric/Pumped Storage Hydroelectric ("PSH"):**  
Following the termination of the PPA with Hawaiian Commercial and Sugar Company ("HC&S") the companies entered into a Standard Interconnection Agreement ("SIA") for 4.51 MW of Hydro Electric generation at the HC&S facility.
7. **Grid Integration:**
  - a. Demand Response ("DR") refers to mechanisms designed to manage customer consumption of electricity to support the reliable operation of the grid. Maui Electric plans to utilize DR to meet capacity and other grid service requirements. In the regular course of planning, Maui Electric identified a projected reserve capacity shortfall starting in 2017. As one of the solutions to mitigate this deficit, Maui Electric filed a request to expand the Fast DR Program in an effort to expedite the procurement of capacity DR on Maui. Fast DR represents a key component, available in the near term, of Maui Electric's larger proposed portfolio of measures "to help mitigate increasing reserve capacity shortfalls that are anticipated to arise on the Company's Maui island system." On July 17, 2017, the Commission approved of the request to expand the Fast DR Program from the currently-approved 0.2 MW total load amount to a total load amount of 5 MW. As of June 30, 2018, 3MW of customer load has been contracted to move forward with enablement. The company has verbal agreement from additional sites and expects to complete contract of the approved 5MW.
  - b. Additionally, in February 2017, the Companies (Maui Electric, Hawaiian Electric, and Hawaii Electric Light) filed an application to establish a portfolio

of DR programs to meet various system requirements. The portfolio was approved on January 25, 2018 through Commission Decision & Order 35238 and the Hawaiian Electric Companies are currently in the process of reviewing offers for aggregator services in future programs.

- c. In partnership with the Hawaii Natural Energy Institute (“HNEI”), Maui Electric participated in the Maui Advanced Solar Initiative (“MASI”) project. The primary objective of the project was to study the use of smart inverter functionality over a smart grid network, to manage the impact of a high penetration of distributed residential scale PV systems on the electric grid. HNEI completed the field testing and analysis of data for inverters at the Maui Electric Facilities. The project demonstrated that distribution voltage can be regulated through the use of a smart PV inverter by generating or absorbing the reactive power (Var). A smart inverter can also manage distribution voltage through the control of real power (kW). As a result, effective smart inverter operation can benefit grid operations. The project is complete and the results were published at the 2017 IEEE International Conference on Power Electronics and Drive Systems.
- d. In partnership with HNEI, Maui Electric installed a 2MW/397kWh battery on Molokai in June 2016. The purpose of the battery is to help explore how energy storage may be used to address high PV penetration impacts on the system. The initial control algorithm, research and development work was completed in April 2017 and the battery system was brought online to provide frequency response support. To date, the battery system has provided frequency support through nine events, avoiding under frequency load shedding and the loss of service to customers. System testing and adjustments to the control algorithm are ongoing and will continue for three years, scheduled to end in November 2020.

#### 8. Photovoltaic:

- a. Two new programs - Customer Grid Supply Plus (“CGS+” or “GSP”) and Smart Export (“SE”) - went into effect on February 20, 2018. These programs were developed to further expand customer options and integrate systems configured to provide grid-supportive functionality. As of June 30, 2018, fourteen Conditional Approvals were issued for CGS+ with no systems yet installed and validated. The low number of applications to date may be due to unfamiliarity with the program, continued available capacity within the CGS program and the potential for curtailability that the other programs do not have.
- b. The existing Customer Grid Supply (“CGS”) program has enabled 513 photovoltaic systems at 4.3 MW, and the existing Customer Self Supply (“CSS”) program has enabled 96 photovoltaic systems at 0.64 MW to be integrated into the grid as of June 30, 2018.
- c. The NEM program has enabled 11,590 photovoltaic systems at 86.5 MW to be integrated into the grid as of June 30, 2018. Customers already interconnected under NEM will be allowed to continue under this program. Those customers

given pre-approval under the NEM program are actively working to interconnect their projects. No new customers are being accepted under the NEM program.

- d. Maui Electric's large customers utilize the Standard Interconnection Agreement ("SIA") to interconnect PV and offset their energy use. As of June 30, 2018, 17.6 MWs have been installed under this program. These customers include the County of Maui's wastewater treatment facilities in Kihei and Lahaina. Customers participating in this program design their PV system to offset their existing load and do not receive credit for energy exported to Maui Electric.
- e. The Feed-in Tariff ("FIT") program is currently focused on 'shovel ready' projects presently in the FIT Queue and is closed to new applications. As of June 30, 2018, approximately 4.9 MWs of PV have been interconnected with an additional 1.75 MWs in the early stages of project development and construction. Milestones to achieve commercial operation have been established for the remaining projects in the FIT Active Queue. Revised FIT tariffs were submitted to the Commission for review and approval on March 2, 2018.

9. South Maui Renewable Resources:

Maui Electric received approval from the Commission on February 18, 2016 for a 2.87 MW solar facility located in South Maui. The facility achieved Commercial Operations on May 5, 2018.

10. Ku'ia Solar:

Maui Electric received approval from the Commission on February 18, 2016 for a 2.87 MW solar facility located in West Maui. The anticipated Commercial Operations Date is expected to be the second half of 2018.