SHARON M. SUZUKI
President

June 30, 2017

Councilmember Mike White
Chair, Maui County Council
200 South High Street
Wailuku, HI 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 Seventeenth 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,

Sharon M. Suzuki

Enclosure

xc: Alan M. Arakawa (Mayor, Maui County)
William Spence (Director, County of Maui Planning Department)
Sandra Duvauchelle (Chair, Maui Planning Commission)

GENERAL COMMUNICATION NO. 17-80

SEVENTEENTH ANNUAL STATUS REPORT
DEVELOPING THE POWER GENERATING NEEDS FOR THE ISLAND OF MAUI
(July 1, 2016 - June 30, 2017)

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 2022. The new generation will 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.

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:

A Low Load Modifications project on the dual train combined cycle unit #1 (DTCC1) was completed in January 2017. This project enables the DTCC1 unit to generate power at levels lower than the original manufacturer's design operating limit, thereby creating more "headroom" on the Maui system to accept greater amounts of variable renewable generation, such as distributed generation photovoltaic energy, and wind energy.

KAHULUI GENERATING STATION:

Units K1 and K2 were deactivated in February 2014 and December 2013, respectively. "Keep Warm" systems were installed on each unit to allow reactivation within one day. With the termination of the HC&S Purchase Power Agreement in December 2016 and increased peak load growth, K1 and K2 were removed from deactivated status in September 2016 and designated as reactivated.

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 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:
   a. 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.
   b. In December 2016 HC&S ceased sugar operations on Maui and consequently terminated the firm Purchase Power Agreement with Maui Electric. HC&S had been providing approximately 5% of the power sold by Maui Electric on Maui, using bagasse (biomass) as its primary fuel source.

6. Hydroelectric/Pumped Storage Hydroelectric ("PSH"):
   In June 2012 a decision was made to cease work on the feasibility assessment of a utility-scale pumped storage hydroelectric system on the island of Maui. Three separate economic analyses were performed and all three concluded that pumped storage hydro is not cost-effective at the present time. In its PSIP filed with the Commission on August 26, 2014 as part of Docket No. 2011-0092, Maui Electric addressed PSH considerations in section J titled "Energy Storage for Grid Applications". PSH was also considered and analyzed in the PSIP updates filed on April 1, 2016 and December 23, 2016 but was not selected as a resource in the 2017-2045 timeframe. Maui Electric remains open to the development of cost-effective PSH that would benefit its customers.

7. Grid Integration:
   a. JUMP Smart Maui was a collaboration between the Japanese Government, the State of Hawaii and various stakeholders including Maui Electric, Maui Economic Development Board, and Hitachi. The project looked to develop tools to reduce curtailment of excess wind energy through management of electric vehicles. Additionally, the management of load control devices and smart photovoltaic ("PV") systems were tested to determine the feasibility of improving local power quality within circuits subject to high penetration of PV generation. Vehicle to Grid (V2G) technologies were also tested with customer participants. The project was launched in the second half of 2013 and was concluded in February 2017.

   b. 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 2015, the Maui Electric conducted a study to assess the feasibility and potential capacity of a customer generator program. The study identified potential DR opportunities at various customer locations. 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. 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.

c. In partnership with the Hawaii Natural Energy Institute ("HNEI"), Maui Electric is participating in the Maui Advanced Solar Initiative ("MASI") project. The primary objective of the project is 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 has completed the field testing of inverters at the Maui Electric Facilities and is currently analyzing the data.

d. In partnership with HNEI, Maui Electric installed a 2MW/397kWh battery on Molokai in June 2016. This purpose of the battery is to help explore how energy storage may be used to address high PV penetration impacts on the system. The algorithm and the research & development work has been completed for providing frequency response support. The system is currently on line and testing its ability to provide frequency response support.

8. Photovoltaic:
   a. New Distributed Energy Resource programs went into effect on October 12, 2015 as part of the Commission's Decision and Order ("D&O") No. 33258. Included were two new programs to replace the Net Energy Metering ("NEM"): Customer Grid Supply ("CGS") and Customer Self Supply ("CSS"). Both programs were developed to expand customer options and ensure that their PV systems can be efficiently integrated by being configured to provide grid-supportive benefits. The CGS program has enabled 248 photovoltaic systems at 1.7 MW, and the CSS program has enabled 15 photovoltaic systems at .075 MW to be integrated into the grid as of March 30, 2017.

   b. The NEM program has enabled 11,306 photovoltaic systems at 82.4 MW to be integrated into the grid as of March 30, 2017. 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. New applicants now have the options of the Customer Grid Supply or Customer Self Supply programs.

   c. Maui Electric's large customers utilize the Standard Interconnection Agreement ("SIA") to interconnect PV and offset their energy use. 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 don't receive credit for energy exported to Maui Electric.

   d. Feed-in Tariff ("FIT") programs are currently focused on 'shovel ready' projects presently in the FIT Queue and are closed to new applications. On December 5, 2014 the Commission issued D&O no. 32499 in Docket 2013-0194 which approved the Companies' and Independent Observer's Joint Plan for administration of the FIT queues. Pursuant to the Order, projects in the FIT Reserve Queue were removed and milestones were established for the remaining projects in the FIT Active Queue. As of March 31, 2017 the Independent Observer ("IO") contract has ended. The Companies' have proposed a plan to Commission allowing the FIT programs to be administered without an IO.

9. South Maui Renewable Resources:

Maui Electric received D&O no. 33537 from the Commission on February 18, 2016 approving a 2.87 MW solar facility located in South Maui. The anticipated Commercial Operations Date is expected to be the second half of 2017.

10. Ku'ia Solar:

Maui Electric received D&O No. 33541 from the Commission on February 18, 2016 approving a 2.87 MW solar facility located in West Maui. The anticipated Commercial Operations Date is expected to be the second half of 2017.