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JAY IGNACIO, P. E.
President

January 30, 2015

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The Honorable Chairman and Members of the
Hawai'i Public Utilities Commission
465 South King Street
Kekuanaoa Building, Room 103
Honolulu, Hawai'i 96813

PUBLIC UTILITIES
COMMISSION

Dear Commissioners:

Subject: Adequacy of Supply
Hawai'i Electric Light Company, Inc. ("Hawai'i Electric Light" or "Company")

The following information is respectfully submitted in accordance with paragraph 5.3a of General Order No. 7, which states:

The generation capacity of the utility's plant, supplemented by electric power regularly available from other sources, must be sufficiently large to meet all reasonably expectable demands for service and provide a reasonable reserve for emergencies. A Statement shall be filed annually with the Commission within 30 days after the close of the year indicating the adequacy of such capacity and the method used to determine the required reserve capacity which forms the basis for future requirements in generation, transmission, and distribution plant expansion programs required under Rule 2.3h.1.

2015 Adequacy of Supply Report Summary

- Hawai'i Electric Light's generation capacity for the next three years (2015 – 2017) will be sufficient to meet reasonably expected demands for service and provide reasonable reserves for emergencies.
- The peak load experienced on the Big Island in 2014 was 187.8 MW net, and was served by Hawai'i Electric Light's total capability of 277.3 MW net, including firm power purchases. This represents a reserve margin of approximately 48% over the 2014 system net peak.
- Hawai'i Electric Light's generation capacity for the next three years (2015 – 2017) will be sufficient to meet reasonably expected demands for service and provide reasonable reserves for emergencies.

1. Peak Demand and System Capability in 2014

Hawai'i Electric Light's 2014 system peak occurred on Thursday, January 2, 2014,¹ at approximately 6:35 p.m. and was 187.8 MW net based on net Company generation and net purchased power generation.

Hawai'i Electric Light's 2014 total generating capability of 277.3 MW net includes 34.6 MW of firm power purchased from Puna Geothermal Venture ("PGV")² and 60 MW from Hamakua Energy Partners, L.P. ("HEP").

The Hawai'i Electric Light system had a reserve margin of approximately 48% over the 2014 system net peak.³

At times during 2014, Hawai'i Electric Light received energy from several utility and independent power producer variable generation energy providers (i.e., Tawhiri Wind, Wailuku River Hydroelectric, and Hawi Renewable Development). Since these contracts are not for firm capacity, they are not reflected in Hawai'i Electric Light's total firm generating capability.

2. Estimated Reserve Margins

Appendix 1 shows the expected reserve margin over the next three years, 2015-2017, based on Hawai'i Electric Light's May 2014 Sales and Peak Forecast ("May 2014 Forecast"), and includes estimated energy efficiency impacts and forecasted load management impacts.

3. Criteria to Evaluate Hawai'i Electric Light's Adequacy of Supply

Hawai'i Electric Light's capacity planning criteria are applied to determine the adequacy of supply - whether or not there is enough generating capacity on the system. Hawai'i Electric Light's capacity planning criteria take into account that the Company must provide for its own backup generation since, as an island utility, it cannot import emergency power from a neighboring utility. Hawai'i Electric Light's capacity planning criteria are described in Section 3.1.

¹ Hawai'i Electric Light's system peak in 2014 occurred in the month of January. Typically, Hawai'i Electric Light's system peaks have occurred in the month of December. For the purposes of this report, it is assumed that Hawai'i Electric Light's future annual system peak will occur in December.

² At the time of the January 2, 2014 system peak, PGV's output was 34.2 MW. The PGV additional 8 MW facility was placed in-service on March 19, 2012. PGV's total capacity was increased from 30 MW to 34.6 MW based on completed acceptance testing. According to Article 5 of the PPA for the expansion, PGV has an opportunity to use commercially reasonable efforts to increase the facility's capacity level to the committed capacity of 38 MW. For the purposes of this report, PGV's capacity of 34.6 MW is assumed for the reserve margin calculation for 2015, 2016, and 2017.

³ The total capability value used in the calculation of this reserve margin does not account for units not available due to maintenance outages, forced outages, or derates in unit capacities.

3.1. Hawai'i Electric Light's Capacity Planning Criteria

The following capacity planning criteria is used to determine the need for additional generation:

Rule 1:

The total capability of the system must at all times be equal to or greater than the summation of the following:

- a. the capacity needed to serve the estimated system peak load, less the total amount of interruptible loads;*
- b. the capacity of the unit scheduled for maintenance; and*
- c. the capacity that would be lost by the forced outage of the largest unit in service.*

Reserve Margin:

Consideration will be given to maintaining a reserve margin of approximately 20% based on reserve ratings.

3.2. Other Considerations in Determining the Timing of Unit Additions

The need for new generation is not based solely on the application of the criteria previously mentioned. As capacity needs become imminent, it is essential that Hawai'i Electric Light broaden its consideration to ensure timely installation of generation capacity necessary to meet its customers' energy needs.

Other near-term considerations may include:

1. the current condition and rated capacity of existing units;
2. required power purchase obligations and contract terminations;
3. the uncertainties surrounding non-utility generation resources;
4. transmission system considerations;
5. meeting environmental compliance standards; and
6. stability considerations for Hawai'i Electric Light's isolated electrical system.

As an example of consideration number 4 above, transmission line outages during Hurricane Iselle in August, and again, during a windstorm on January 2 and 3, 2015 caused,

at various points during the storm, non-utility generators PGV and HEP to be separated from the main portion of the transmission grid due to multiple transmission line outages. The transmission line outages were due to sustained equipment damage from trees which required lengthy repairs. These two facilities represent a very large fraction (more than 1/3) of the entire Hawai'i Electric Light system firm capacity. The Hawaii system is also facing a potential transmission line impact from the Kilauea lava flow which would separate PGV from the remainder of the grid. The lessons learned from this event are driving plans for:

- a) operating the generation system in two or more islands,
- b) line hardening and tree trimming projects,
- c) projects to synchronize breakers to connect to live islands during restoration, and
- d) retaining sufficient capacity to recover from multiple transmission line outages and isolation of PGV and/or HEP.

This last plan, d), shows that increased capacity margin for the known potential for capacity loss during storms and lava impacts is prudent until such time that the transmission line risks can be mitigated; this is a consideration in unit operational decisions including the potential seasonal cycling and deactivation of generating unit assets.

In the application of Hawai'i Electric Light's capacity planning criteria that are used to determine its adequacy of supply, the inputs drive the results. Two of the key inputs in the application of the capacity planning criteria are (1) projected peak demand (including the anticipated peak reduction benefits of energy efficiency demand side management programs and demand response programs) and (2) the total firm capacity on the system. These key inputs are described in the following sections.

4. Key Inputs to the 2015 Adequacy of Supply Analysis

4.1 May 2014 Forecast

Hawai'i Electric Light developed its sales and peak forecast in May 2014, which was subsequently adopted by the Company for future planning purposes and used for this analysis.

Hawai'i Electric Light May 2014 Forecast	
Year	Peak, Net MW
2015	189.8
2016	188.7
2017	189.0

4.2 Projected Peak Reduction Benefits of Demand Response Programs

Year	Residential, Net MW	Commercial, Net MW	Total, Net MW
2015	0.2	0.2	0.4
2016	0.7	3.6	4.3
2017	1.2	4.0	5.2

For the purposes of Hawai'i Electric Light's 2015 Adequacy of Supply report, the demand response assumptions herein that may apply towards capacity planning purposes are based on the Hawaiian Electric Companies⁴ Integrated Demand Response Portfolio Plan ("IDRPP") filed on July 28, 2014, in Docket No. 2007-0341. Refer to Appendix B of the IDRPP report for specific details of this forecast.

4.3 Planned Maintenance Schedules For The Generating Units On The System

Planned outages and maintenance outages reduce generating unit availabilities. The schedules for planned overhaul and maintenance outages change frequently due to unforeseeable findings during outage inspections or to changes in priorities due to unforeseeable problems. When major revisions to planned and/or maintenance outages occur, the Planned Maintenance Schedule is revised.

4.4 Additions of Capacity

4.4.1 Firm Capacity Additions

On December 20, 2013, the Commission issued Decision and Order No. 31758 in Docket No. 2012-0212, approving the Power Purchase Agreement ("PPA") between Hawai'i Electric Light and Hu Honua Bioenergy, LLC ("Hu Honua"). For the purposes of this report, it is anticipated that Hu Honua may be in service in 2016.

4.4.2 Non-Firm Capacity Additions

No non-firm capacity additions are planned at this time.

4.5 Reductions of Firm Generating Capacity

Hawai'i Electric Light Units Shipman 3 and Shipman 4 were placed in "inactive" status (dry layup) on November 21, 2013. These units are anticipated to be placed in "deactivated" status pending the addition of the Hu Honua facility to the Hawai'i Electric Light system. The capacities of Shipman 3 and Shipman 4 (a combined 14.4 MW net)

⁴ Hawaiian Electric Company, Inc., Maui Electric Company, Limited., and Hawai'i Electric Light Company Inc., collectively referred to as the Hawaiian Electric Companies

are not included in the reserve margin calculation.

Hawai'i Electric Light's Puna steam unit may also be a candidate for future deactivation, possibly in the 2018 timeframe, however, for the purposes of this report, the capacity provided by the Puna unit has been retained for all years analyzed.

Deactivated units may be reactivated in the event of an emergency and/or to mitigate reserve capacity shortfalls.

5. Power Supply Improvement Plan Reserve Margin Analysis

In Hawai'i Electric Light's Power Supply Improvement Plan filed on August 26, 2014,⁵ a proposed reserve margin planning standard of 30% was used for capacity planning analysis.⁶

Year	System Capability at Annual Peak Load (net MW) [A]	System Peak (net MW) [B]	Interruptible Load (net MW) [C]	Variable Generation [D]	Reserve Margin (%) $\frac{[A+D-(B-C)]}{(B-C)}$
2014	277.3	187.8	0.0	4.35	50.0%
2015	277.3	189.8	0.4	4.35	48.7%
2016	298.8	188.7	4.3	4.35	64.4%
2017	298.8	189.0	5.2	4.35	64.9%

In the above scenario, Reserve Margins are still well above the proposed 30% guideline.

6. Acquisition of Additional Firm Capacity

6.1 Competitive Bidding is the Required Acquisition Mechanism

On December 8, 2006, the Framework for Competitive Bidding ("CB Framework") was adopted by the Commission in Decision and Order No. 23121 ("D&O 23121") in Docket No. 03-0372, pursuant to HRS §§ 269-7 and 269-15, and Hawai'i Administrative Rules § 6-61-71. The Commission's CB Framework states that "[c]ompetitive bidding, unless the Commission finds it to be unsuitable, is established as the required mechanism for acquiring a future generation resource or a block of generation resources, whether or not such resource has been identified in a utility's Integrated Resource Plan."

⁵ Order No. 32290 issued on September 12, 2014, transferred Hawai'i Electric Light's Power Supply Improvement Plan report from Docket No. 2012-0212 into Docket No. 2014-0183.

⁶ Refer to Appendix M of Hawai'i Electric Light's Power Supply Improvement Plan report for reference.

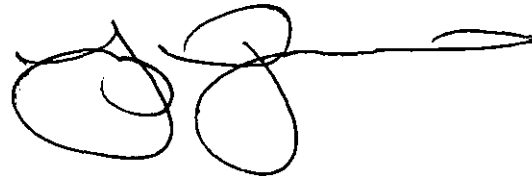
6.1.1 Geothermal Request For Proposals

On May 1, 2012, the Commission opened Docket No. 2012-0092 to allow Hawai'i Electric Light to proceed with the competitive bidding process, in accordance with the Commission's December 8, 2006 CB Framework, to acquire up to 50 MW of dispatchable renewable geothermal firm capacity on the Island of Hawai'i. Hawai'i Electric Light filed the Proposed Final Geothermal Request For Proposal ("RFP") with the Commission on January 25, 2013 and issued the Final Geothermal RFP on February 28, 2013. On October 28, 2014, Hawai'i Electric Light filed the Geothermal RFP Addendum No. 1 (Best and Final Offer) and Attachment A (Best and Final Offer Bidder's Response Package). The Due Date for Geothermal RFP Best and Final Offers was January 15, 2015. Updated Geothermal RFP information, including key filings and documents, may be found at <http://GeothermalRFP.helcohi.com>. The forecasted service dates from this RFP are outside of the timeframe analyzed in this report. As can be seen from this filing, the desire to acquire geothermal energy is not for increasing generation capacity; but rather to acquire renewable energy at price that, with consideration of integration and infrastructure costs, will result in benefits to customers.

7. Conclusion

Hawai'i Electric Light's generation capacity for the next three years (2015 – 2017) will be sufficient to meet reasonably expected demands for service and provide reasonable reserves for emergencies.

Very truly yours,

A handwritten signature in black ink, appearing to read 'Jay Ignacio', with a long horizontal line extending to the right.

Jay Ignacio
President

Attachment – Appendix 1

c: Division of Consumer Advocacy (with Attachment)

Table 1
Adequacy of Supply

Year	System Capability at Annual Peak Load (net MW) [A] ^{III, IV, V, VI}	System Peak (net MW) [B] ^{I, II}	Interruptible Load (net MW) [C]	Reserve Margin (%) $\frac{[A-(B-C)]}{(B-C)}$ ^{VII}	Reserve Margin w/o Interruptible Load (%) $\frac{[A-B]}{[B]}$ ^{VII}
2014	277.3	187.8	0.0	47.7%	47.7%
2015	277.3	189.8	0.4	46.4%	46.1%
2016	298.8	188.7	4.3	62.0%	58.3%
2017	298.8	189.0	5.2	62.5%	58.1%

Notes:

- (I) System Peaks - The 2015-2017 annual forecasted system peaks are based on:
- Hawai'i Electric Light's May 2014 Forecast. The annual forecasted system peak is expected to occur in the month of December.
 - The forecasted system peak values for the years 2015-2017 include estimated peak reduction benefits acquired through 2014 implemented by Hawai'i Energy, as well as the benefits of future energy efficiency programs, Rider M, and Schedule U contracts.
- (II) System Peaks (Recorded):
- The recorded system peak for 2014 includes the actual peak reduction benefit of the acquired energy efficiency programs and the Rider M and Schedule U contracts.
- (III) System Capability for 2014 includes:
- Hawai'i Electric Light units at a total of 182.7 MW net.
 - Firm independent power purchase contracts with a combined net total of 94.6 MW, from PGV (34.6 MW) and HEP (60 MW).
- (IV) System Capability for 2015 includes:
- Hawai'i Electric Light units at a total of 182.7 MW net.
 - Firm independent power purchase contracts with a combined net total of 94.6 MW, from PGV (34.6 MW) and HEP (60 MW).
- (V) System Capability for 2016 includes:
- Hawai'i Electric Light units at a total of 182.7 MW net.

- Firm independent power purchase contracts with a combined net total of 116.1 MW from PGV (34.6 MW), HEP (60 MW), and Hu Honua (21.5 MW).

(VI) System Capability for 2017 includes:

- Hawai'i Electric Light units at a total of 182.7 MW net.
- Firm independent power purchase contracts with a combined net total of 116.1 MW from PGV (34.6 MW), HEP (60 MW), and Hu Honua (21.5 MW).

(VII) Reserve Margin

- Shipman 3 and Shipman 4 have been placed in an inactive status (dry layup). These units are anticipated to be placed in deactivated status pending the addition of the Hu Honua Bioenergy facility to the Hawai'i Electric Light system. The capacities of Shipman 3 and Shipman 4 (a combined 14.4 MW net) are not included in the reserve margin calculation.