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Warren H. W. Lee, P.E.  
President

March 15, 2005

The Honorable Chairman and Members of the  
Hawaii Public Utilities Commission  
465 South King Street  
Kekuanaoa Building, 1st Floor  
Honolulu, Hawaii 96813

Dear Commissioners:

Subject: Adequacy of Supply  
Hawaii Electric Light Company, Inc.

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PUBLIC UTILITIES  
COMMISSION  
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In accordance with paragraph 5.3a of General Order No. 7<sup>1</sup>, the following information is respectfully submitted.

HELCO's 2004 total system capability was 289,500 kW net (293,900 kW gross) and included firm capacity power purchases of 25,600 kW from Puna Geothermal Venture ("PGV")<sup>2</sup>, 22,000 kW from Hilo Coast Power Company ("HCPC"), and 60,000 kW from Hamakua Energy Partners, L.P. ("HEP"). HELCO's system peak of 194,500 kW net (198,800 kW gross) occurred on December 27, 2004, at approximately 6:42 p.m. The 2004 reserve margin was 48.8% over the system peak.

Load Management/DSM

At the time of the system peak, HELCO had in place 26 load management contracts totaling 6,400 kW under Rider M and Schedule U, which reduced the evening peak by approximately 6,000 kW. In addition, HELCO has had residential and commercial & industrial demand side management ("DSM") programs in place since 1996, which reduced the system peak by an estimated 5,600 net kW (net of free riders). Without the DSM impacts and off-peak

<sup>1</sup> On January 31, 2005, HELCO submitted to the PUC a request to extend its Adequacy of Supply Report filing date to no later than March 15, 2005. This extension was needed to allow time for HELCO to update its combined heat and power ("CHP") projections. By Order No. 05-ORD-04 (filed February 9, 2005), the PUC granted HELCO its request.

<sup>2</sup> PGV's normal rating is 30,000 kW. In 2004, it generally exported between 25,000 kW and 26,000 kW. At the time of the peak it exported 25,600 kW. PGV estimates that drilling for a new production well and a new injection well will start in the April 2005 timeframe and will be completed in mid 2005. PGV has stated that 30,000 kW can be exported to HELCO upon completion of these activities.

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rider agreements, the system peak would have been approximately 206,100 kW net, with a 40.4% reserve margin.

### CHP

On October 10, 2003, HELCO (along with HECO and MECO, collectively, the "Companies") filed a PUC Application for approval of a proposed utility-owned Combined Heat and Power ("CHP") program in Docket No. 03-0366. On March 2, 2004, by Order No. 20831, the Commission suspended the Companies' CHP Program application, indicating that its Distributed Generation ("DG") docket is intended to "form the basis for rules and regulations deemed necessary to govern participation into Hawaii's electricity market through distributed generation." The proceedings for the DG Docket No. 03-0371 are currently in progress, and the matter is expected to be ready for a decision by the PUC after briefing is completed at the end of March 2005.

In addition, on January 21, 2005, the Commission issued Order No. 21554 in Docket No. 04-0366 suspending HELCO's application requesting approval of a combined heat and power agreement with Koa Hotel, LLC. (On January 21, 2005, the Commission also issued Order No. 21555 in Docket No. 04-0314 suspending HECO's application requesting approval of a combined heat and power agreement with Pacific Allied Products, Limited.) With the continued suspension of HELCO's CHP program application and the recent suspension of HELCO's and HECO's application for individual CHP projects, there is significant uncertainty as to when the benefits of utility CHP can begin to be realized.

For the purposes of HELCO's near- and long-term planning, HELCO is currently assuming that the installation of utility CHP under the CHP program (and/or individual CHP agreements) will begin in 2006. The currently estimated impacts of the proposed CHP Program on future system peaks are indicated in Attachment 1<sup>3</sup>.

### Reserve Margins

Attachment 1 shows the expected reserve margin over the next three years, based on HELCO's 2004-2025 Sales and Peak Forecast, dated June 22, 2004, HELCO's latest estimate of forecasted DSM impacts, and HELCO latest estimate of forecasted CHP impacts. (Attachment 1 also shows the estimated reserve margins without future DSM and without utility-owned CHP.) Attachment 2 details the gross and net ratings of HELCO units and IPP units.

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<sup>3</sup> For purposes of this report, utility-owned CHP systems are reflected in the System Peak numbers (based on the net equivalent capacity of the CHP system, taking into account the electrical capacity supplied to a customer, the reduction of the customer's electrical load through waste heat application for the system, and a reduction in line losses). The load reduction impacts of CHP systems and/or DG owned by third parties are also reflected in the System Peak numbers.



The Honorable Chairman and Members of the  
Hawaii Public Utilities Commission  
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The following capacity planning criteria is used to determine the need for additional generation:

*The sum of the reserve ratings of all available units, minus the reserve rating of the largest available unit, minus the reserve ratings of any units on maintenance, must be equal to or greater than the system peak load to be supplied<sup>4</sup>.*

HELCO's generation capacity for the Big Island for the next three years is sufficiently large to meet all reasonably expected demands for service and provide reasonable reserves for emergencies.

Very truly yours,



Attachments

cc: Division of Consumer Advocacy

<sup>4</sup> HELCO is evaluating whether and to what extent reserve margins higher than those produced by application of the capacity planning criteria should be targeted based on factors (such as unit availabilities) not explicitly considered by the criteria.



**Table 1**  
**Adequacy of Supply**

With Utility CHP (Includes 3 <sup>rd</sup> Party CHP) <sup>(i)</sup>						
			Without Future DSM (Includes Acquired DSM) <sup>(iii)</sup>		With Future DSM (Includes Acquired DSM) <sup>(iv)</sup>	
Year	System Capability at Annual Peak Load (net kW) [A]	Notes	System Peak (net kW) [B] <sup>(v)</sup>	Reserve Margin (%) [[A-B]/B] <sup>(x)</sup>	System Peak (net kW) [C] <sup>(v)</sup>	Reserve Margin (%) [[A-C]/C] <sup>(x)</sup>
<i>Recorded</i>						
2004	289,500	(vi)	194,500	48.8%	N/A	N/A
<i>Future</i>						
2005	271,900	(vii)	202,000	34.6%	201,100	35.2%
2006	271,900	(viii)	206,500	31.7%	205,100	32.6%
2007	271,900	(ix)	208,800	30.2%	206,800	31.5%

Without Utility CHP (Includes 3 <sup>rd</sup> Party CHP) <sup>(ii)</sup>						
			Without Future DSM (Includes Acquired DSM) <sup>(iii)</sup>		With Future DSM (Includes Acquired DSM) <sup>(iv)</sup>	
Year	System Capability at Annual Peak Load (net kW) [A]	Notes	System Peak (net kW) [B] <sup>(v)</sup>	Reserve Margin (%) [[A-B]/B] <sup>(x)</sup>	System Peak (net kW) [C] <sup>(v)</sup>	Reserve Margin (%) [[A-C]/C] <sup>(x)</sup>
<i>Recorded</i>						
2004	289,500	(vi)	194,500	48.8%	N/A	N/A
<i>Future</i>						
2005	271,900	(vii)	201,600	34.9%	200,700	35.5%
2006	271,900	(vii)	207,500	31.0%	206,100	31.9%
2007	271,900	(ix)	212,000	28.3%	210,000	29.5%

Notes:

- (I) With Utility CHP:
- Forecasted system peaks include reduction for forecasted system level utility and third party CHP impacts.<sup>1</sup>
- (II) Without Utility CHP
- Forecasted system peaks do not include reduction for forecasted utility CHP impacts. Peaks include third party CHP impacts (without utility CHP program)
- (III) System Peaks (Without Future Peak Reduction Benefits of DSM Programs):
- Implementation of full-scale DSM programs began in the first quarter of 1996 following Commission approval of the programs.
  - The forecasted system peak values for the years 2005-2007 include the actual peak reduction benefits acquired in 1996-2003 and the estimated peak reduction benefits acquired in 2004, as well as the benefits of the Rider M and Schedule U contracts, utility CHP (where applicable), and third party CHP impacts.
- (IV) System Peaks (With Future Peak Reduction Benefits of DSM Programs):
- The forecasted system peaks for 2005-2007 include the peak reduction benefits of the DSM programs (acquired and future) and the Rider M and Schedule U contracts, utility CHP (where applicable), and third party CHP impacts.
- (V) The 2005-2007 annual forecasted system peaks are based on
- HELCO's 2004-2025 Sales and Peak Forecast, dated June 22, 2004. The HELCO annual forecasted system peak is expected to occur in the month of December.
- (VI) System Capability for 2004 includes:
- HELCO units at a total of 181,900, kW net (186,300 kW gross). This includes the installation of Keahole CT-4 and CT-5 and the retirements of Keahole D18-20.
  - Firm power purchase contracts with a combined net total of 107,600 kW from PGV (25,600 kW),<sup>2</sup> HCPC (22,000 kW) and HEP (60,000 kW).

<sup>1</sup> Utility CHP impacts are from a CHP forecast dated February 7, 2005. These impacts are included in the system peak. The impacts are at system level based on a loss factor of 8.39% and include an availability factor to account for periods when the utility CHP is unavailable due to forced outage and maintenance.

<sup>2</sup> PGV generally exported to HELCO between 25,000 kW and 26,000 kW in 2004. At the time of the system peak it exported 25,600 kW. PGV estimates that drilling for a new production well and a new injection well will start in the April 2005 timeframe and will be completed in mid 2005. PGV has stated that 30,000 kW can be exported to HELCO upon completion of these activities.

(VII.) System Capability for 2005 includes

- HELCO units at a total of 181,900 kW net (186,300 kW gross). Kanoelehua CT-1, D11, D15-17, Waimea D12-14, and Keahole D21-23 (35,500 kW total) will be kept in service until the units are no longer needed to maintain system reliability or to maintain quick start capability.<sup>3</sup>
- Firm power purchase contracts with a combined net total of 90,000 kW from PGV (30,000 kW) and HEP (60,000 kW). HCPC's Second Amended and Restated PPA, as amended by Amendment No. 1, was terminated as of midnight, December 31, 2004.

(VII) System Capability for 2006 includes:

- HELCO units at a total of 181,900 kW net (186,300 kW gross).
- Firm power purchase contracts with a combined net total of 90,000 kW from PGV (30,000 kW) and HEP (60,000 kW).

(VIII) System Capability for 2007 includes:

- HELCO units at a total of 181,900 kW net (186,300 kW gross).
- Firm power purchase contracts with a combined net total of 90,000 kW from PGV (30,000 kW) and HEP (60,000 kW).

(IX) Reserve Margin

- The reserve margins shown for 2005-2007 assume that HEP and PGV are at full ratings.

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<sup>3</sup> The diesel units have fast-starting capability and can be on line within 150 seconds from when they are started. The fast-start diesel units are used to balance generation and load during post-contingency situations such as a generating unit trip or a transmission line outage.

**HELCO Adequacy of Supply  
 2004 Unit Ratings (Firm Capacity at Actual System Peak in December 2004)**

Unit	(Gross MW)		(Net MW)	
	Reserve Rating (MW)	NTL Rating (MW)	Reserve Rating (MW)	NTL Rating (MW)
Shipman 3	7.50 (I)	7.50 (I)	7.10 (I)	7.10 (I)
Shipman 4	7.70 (I)	7.70 (I)	7.30 (I)	7.30 (I)
Hill 5	14.10	14.10	13.50	13.50
Hill 6	21.40	21.40	20.20	20.20
Puna	15.50	15.50	14.10	14.10
Kanoelehua D11	2.00	2.00	2.00	2.00
Waimea D12	2.75	2.50	2.75	2.50
Waimea D13	2.75	2.50	2.75	2.50
Waimea D14	2.75	2.50	2.75	2.50
Kanoelehua D15	2.75	2.50	2.75	2.50
Kanoelehua D16	2.75	2.50	2.75	2.50
Kanoelehua D17	2.75	2.50	2.75	2.50
Keahole D18	0.00 (II)	0.00 (II)	0.00 (II)	0.00 (II)
Keahole D19	0.00 (II)	0.00 (II)	0.00 (II)	0.00 (II)
Keahole D20	0.00 (II)	0.00 (II)	0.00 (II)	0.00 (II)
Keahole D21	2.75	2.50	2.75	2.50
Keahole D22	2.75	2.50	2.75	2.50
Keahole D23	2.75	2.50	2.75	2.50
Kanoelehua CT1	11.50	11.50	11.50	11.50
Keahole CT2	13.00	13.00	13.00	13.00
Puna CT3	20.80	20.80	20.40	20.40
Keahole CT-4	22 (II)	22 (II)	22 (II)	22 (II)
Keahole CT-5	22 (II)	22 (II)	22 (II)	22 (II)
Panaewa D24	1.00	1.00	1.00	1.00
Ouli D25	1.00	1.00	1.00	1.00
Punaluu D26	1.00	1.00	1.00	1.00
Kapua D27	1.00	1.00	1.00	1.00
<b>HELCO Total</b>	<b>186.25</b>	<b>184.00</b>	<b>181.85</b>	<b>179.60</b>
HCPC	22.00	22.00	22.00	22.00
PGV	25.60 (III)	25.60 (III)	25.60 (III)	25.60 (III)
HEP	60.00	60.00	60.00	60.00
<b>IPP Total</b>	<b>107.60</b>	<b>107.60</b>	<b>107.60</b>	<b>107.60</b>
<b>System Total</b>	<b>293.85</b>	<b>291.60</b>	<b>289.45</b>	<b>287.20</b>

Notes:

- (I) HELCO is temporarily restricting the outputs of Shipman 3 and 4 to 6.8 MW and 6.7 MW, respectively.
- (II) Keahole CT-4 and CT-5 have been installed in 2004. CT-4 and CT-5 ratings are nominal and have been produced under test conditions. Keahole D18-20 have been retired in 2004.
- (III) PGV has been exporting between 25,000 kW and 26,000 kW in 2004 and 25,600 kW during the system peak. PGV estimates that drilling for a new production well and a new injection well will start in the April 2005 timeframe and will be completed by mid 2005. PGV has stated that 30,000 kW can be exported to HELCO upon completion of these activities.

**HELCO Adequacy of Supply**  
**2005-2007 Unit Ratings (Firm Capacity at Forecasted System Peak in December 2005-2007)**

Unit	(Gross MW)		(Net MW)	
	Reserve Rating (MW)	NTL Rating (MW)	Reserve Rating (MW)	NTL Rating (MW)
Shipman 3	7.50	7.50	7.10	7.10
Shipman 4	7.70	7.70	7.30	7.30
Hill 5	14.10	14.10	13.50	13.50
Hill 6	21.40	21.40	20.20	20.20
Puna	15.50	15.50	14.10	14.10
Kanoelehua D11	2.00	2.00	2.00	2.00
Waimea D12	2.75	2.50	2.75	2.50
Waimea D13	2.75	2.50	2.75	2.50
Waimea D14	2.75	2.50	2.75	2.50
Kanoelehua D15	2.75	2.50	2.75	2.50
Kanoelehua D16	2.75	2.50	2.75	2.50
Kanoelehua D17	2.75	2.50	2.75	2.50
Keahole D18	0.00	0.00	0.00	0.00
Keahole D19	0.00	0.00	0.00	0.00
Keahole D20	0.00	0.00	0.00	0.00
Keahole D21	2.75	2.50	2.75	2.50
Keahole D22	2.75	2.50	2.75	2.50
Keahole D23	2.75	2.50	2.75	2.50
Kanoelehua CT1	11.50	11.50	11.50	11.50
Keahole CT2	13.00	13.00	13.00	13.00
Puna CT3	20.80	20.80	20.40	20.40
Keahole CT-4	22	22	22	22
Keahole CT-5	22	22	22	22
Panaewa D24	1.00	1.00	1.00	1.00
Ouli D25	1.00	1.00	1.00	1.00
Punaluu D26	1.00	1.00	1.00	1.00
Kapua D27	1.00	1.00	1.00	1.00
<b>HELCO Total</b>	<b>186.25</b>	<b>184.00</b>	<b>181.85</b>	<b>179.60</b>
HCPC	0.00 (I)	0.00 (I)	0.00 (I)	0.00 (I)
PGV	30.00 (II)	30.00 (II)	30.00 (II)	30.00 (II)
HEP	60.00	60.00	60.00	60.00
<b>IPP Total</b>	<b>90.00</b>	<b>90.00</b>	<b>90.00</b>	<b>90.00</b>
<b>System Total</b>	<b>276.25</b>	<b>274.00</b>	<b>271.85</b>	<b>269.60</b>

Notes:

(I) HCPC contract was terminated as of midnight, December 31, 2004.

(II) PGV expects to be restored to 30 MW by mid 2005.



BKK/KM



Warren H. W. Lee, P.E.  
President

January 31, 2005

PUBLIC UTILITIES  
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FILED

The Honorable Chairman and Members of the  
Hawaii Public Utilities Commission  
465 South King Street  
Kekuanaoa Building, 1st Floor  
Honolulu, Hawaii 96813

Dear Commissioners:

Subject: Adequacy of Supply  
Hawaii Electric Light Company, Inc.

In accordance with paragraph 5.3a of General Order No. 7, HELCO's Adequacy of Supply Report ("AOS Report") is due within 30 days after the end of the year. HELCO respectfully requests an extension to no later than March 15, 2005 in which to submit its AOS Report.

In general, the AOS Report assesses the adequacy of central station generation (including firm purchased power) to serve forecasted loads, as those loads are reduced due to the projected impacts of energy efficiency demand-side management ("DSM") programs, load management programs, and customer-sited combined heat and power systems ("CHP"), during the next three years. HELCO requests a delay to file its AOS Report until no later than March 15, 2005, because, among other things, HELCO is in the process of updating its CHP projections (given the current state of the proposed CHP program, Rule 4 contract applications and generic distributed generation docket). The Consumer Advocate does not object to this request.

Very truly yours,

cc: Division of Consumer Advocacy