



Dean K. Matsuura
Manager
Regulatory Affairs

May 30, 2013

PUBLIC UTILITIES
COMMISSION

2013 MAY 30 P 3:45

FILED

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

Dear Commissioners:

Subject: Docket No. 2011-0206
Reliability Standards Working Group
Monthly Report

Pursuant to Ordering Paragraph 3 of the Commission's Order No. 30371, filed on May 4, 2012, in the above subject proceeding, enclosed as Exhibit A is the Hawaiian Electric Companies'¹ monthly report for April 2013 on (1) system frequency control performance during month; (2) significant system events during month; and (3) curtailment of non-dispatchable renewable resources.

In addition, an electronic copy of each report is also included with this filing. These files are voluminous, and therefore, the Company is providing a compact disc ("CD") containing the electronic files to both the Commission and the Consumer Advocate. Copies of the CD will be available to any Party to this proceeding. Interested Parties should email Marisa Chun at marisa.chun@heco.com to request a copy.

If you have any questions on this matter, please contact Marisa Chun at (808) 543-4723.

Very truly yours,

Enclosure

cc: Service List

¹ Hawaiian Electric Company, Inc., Hawaii Electric Light Company, Inc., and Maui Electric Company, Limited are collectively referred to as the "Hawaiian Electric Companies" or "Companies".

SERVICE LIST
(Docket No. 2011-0206)

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SERVICE LIST
(Docket No. 2011-0206)

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The Commission's Order No. 30371 (Docket No 2011-0206 – Relating To Various Matters in RSWG Process), filed May 4, 2012, ordered the following information for each island grid:

- (1) System frequency control performance during month:
 - a) Frequency duration plot based on the highest resolution SCADA data available for the month detailing how many seconds each power system operated at frequencies above 60 hertz and at frequencies below 60 Hz.
 - b) Tabulation of the number, magnitude and duration of frequency excursions (high and low) outside normal frequency control range (59.95 to 60.05 Hz).

The following provides information with respect to items 1a) through 1b) – (all statements are current as of the month ending April 30, 2013):

1a) Frequency duration plot based on the highest resolution SCADA data available for the month detailing how many seconds each power system operated at frequencies above 60 hertz and at frequencies below 60 Hz:

The frequency duration plots for Hawaiian Electric, MECO (Maui Division) and HELCO based on two-second data are provided in Attachment 1, and the enclosed Excel files. Refer to the electronic files for the individual data points because the information is voluminous and does not translate well to a hard copy.

1b) Tabulation of the number, magnitude and duration of frequency excursions (high and low) outside normal frequency control range (59.95 to 60.05 Hz):

Tabulation of the number, magnitude and duration of frequency excursions outside of the frequency range of 59.95 Hz to 60.05 Hz for Hawaiian Electric, MECO (Maui Division) and HELCO are provided in Attachment 2, and the enclosed Excel files. Refer to the electronic files for the individual data points because the information is voluminous and does not translate well to a hard copy.

- (2) Significant system events during month:
 - a) Tabulation of contingency reserve activations including date and time, MW magnitude, duration, and triggering event.
 - b) Tabulation of under frequency load shed activations including date and time, triggering frequency, MW magnitude, duration, and triggering event.
 - c) Tabulation of demand response activations for system events, including date and time, MW magnitude, duration, and triggering event, (excluding demand response utilization for unit commitment deferral or system operations economics.)

The following provides information with respect to items 2a) through 2c) – (all statements are current as of the month ending April 30, 2013):

2a) Tabulation of contingency reserve activations including date and time, MW magnitude, duration, and triggering event:

Hawaiian Electric's contingency reserve actions are provided in Attachment 3. MECO and HELCO do not operate with contingency reserve requirements.

2b) Tabulation of under frequency load shed activations including date and time, triggering frequency, MW magnitude, duration, and triggering event:

The tabulation of under frequency load shed events is provided in Attachment 4.

2c) Tabulation of demand response activations for system events, including date and time, MW magnitude, duration, and triggering event, (excluding demand response utilization for unit commitment deferral or system operations economics.)

Hawaiian Electric's demand response activations for system events are provided in Attachment 5. MECO and HELCO currently do not have demand response programs.

- (3) Curtailment of non-dispatchable renewable resources:
- (a) Tabulation of each curtailment event for each resource including the starting date and time, duration, megawatt hours curtailed, peak MW curtailed, and reason for curtailment.
 - (b) Total MWh of non-dispatchable renewable resources curtailed for the month.

The following provides information with respect to items 3a) through 3b) – (all statements are current as of the month ending April 30, 2013):

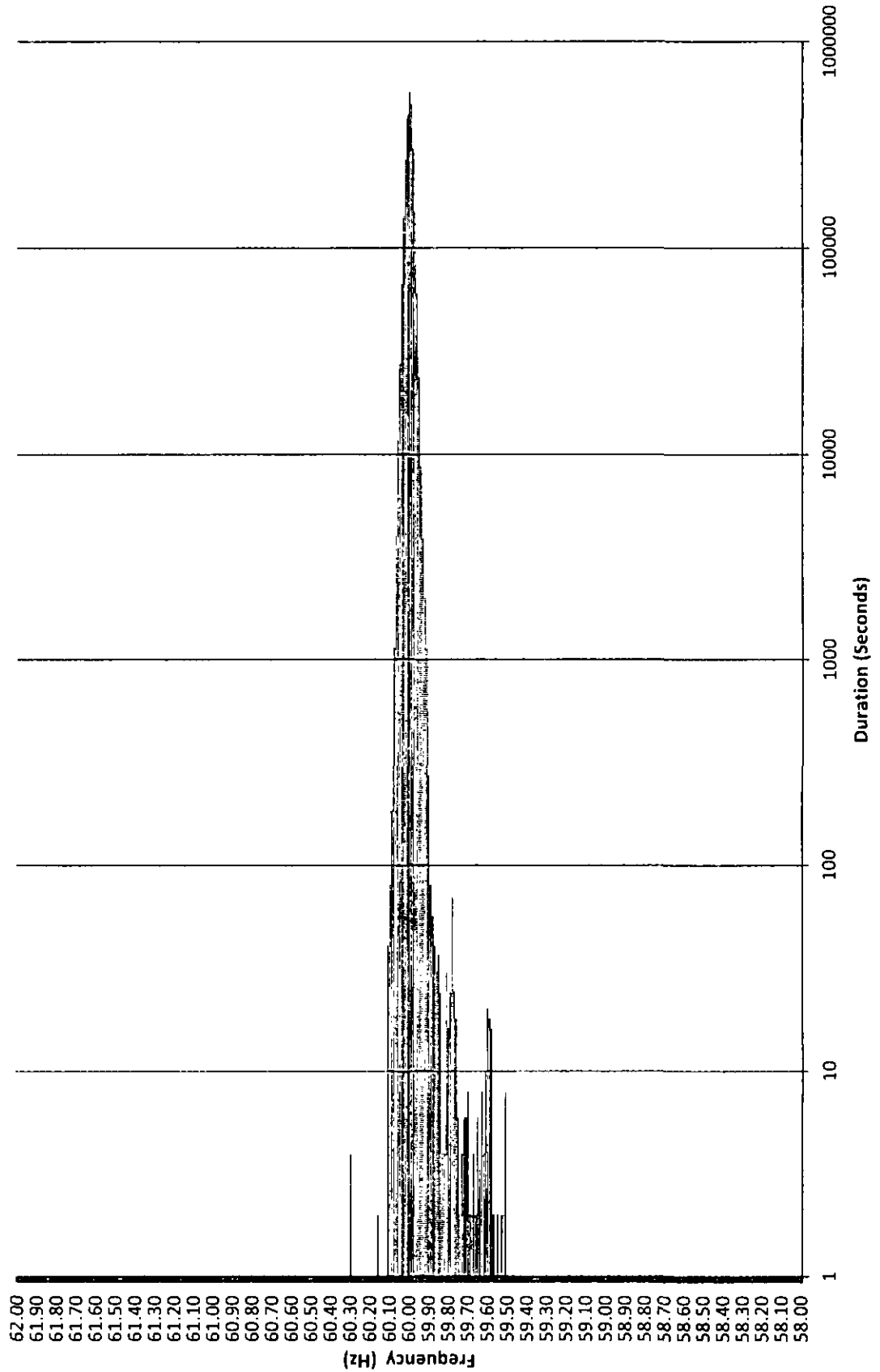
3a) Tabulation of each curtailment event for each resource including the starting date and time, duration, megawatt hours curtailed, peak MW curtailed, and reason for curtailment:

The tabulation of each curtailment event for each resource is provided in Attachment 6.

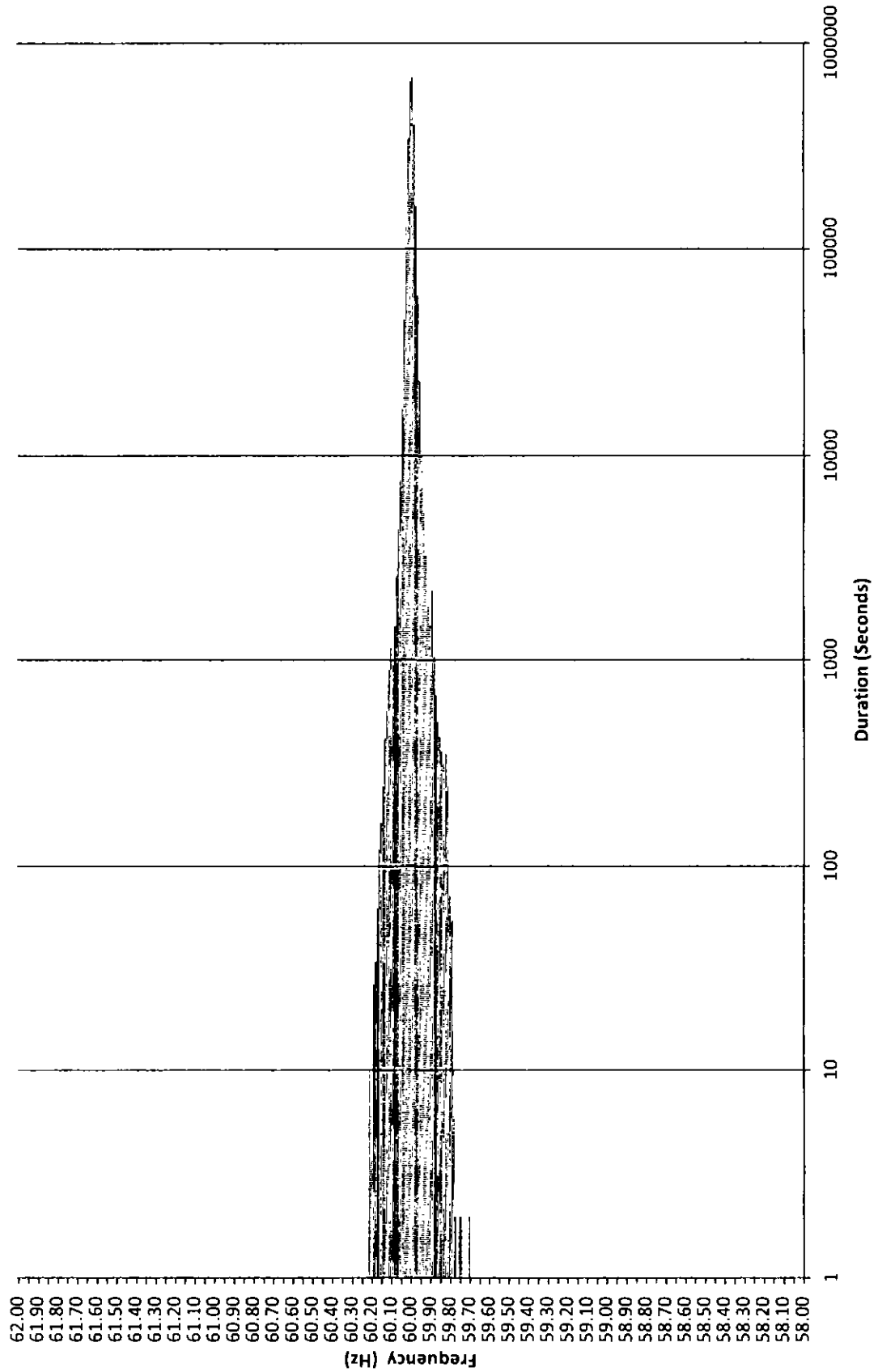
3b) Total MWh of non-dispatchable renewable resources curtailed for the month:

Curtailed MWh from non-dispatchable resources are difficult to determine due to the variability of the resource during curtailment periods. In some cases, the curtailed MWh estimates were provided by the IPPs under curtailment. HELCO is not providing an estimate of curtailed MWh, as this information is not provided to HELCO from the IPP. The Hawaiian Electric Companies do not make any representations as to the accuracy of the curtailed MWh. The estimated MWh of non-dispatchable resources curtailed for the month are provided in Attachment 6, corresponding to each curtailment event.

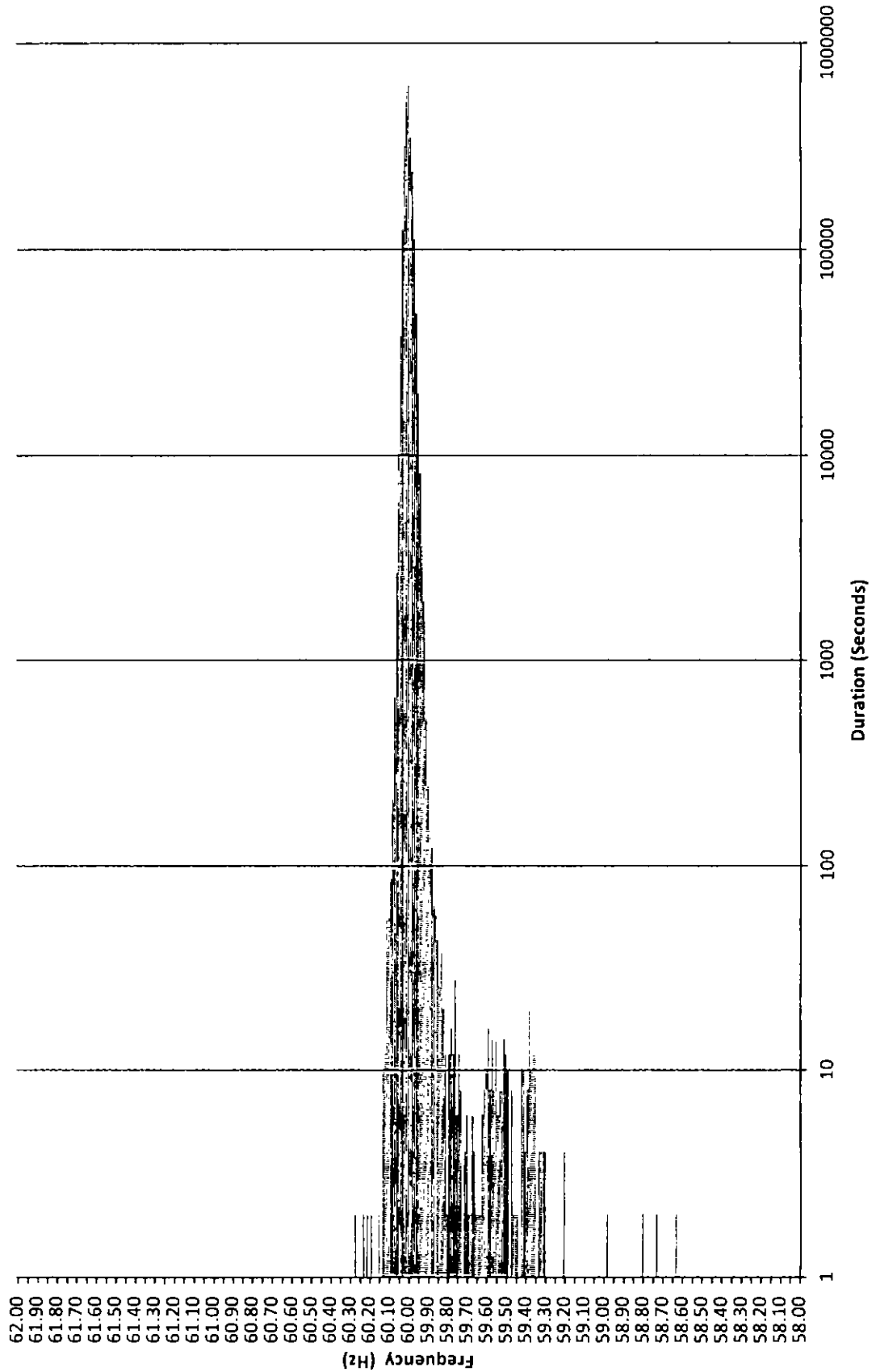
Frequency Distribution Plot - HECO April 2013



MECO Frequency Distribution Plot - Maui April 2013



Frequency Distribution Plot - HELCO April 2013



HECO Frequency Excursion Statistics April 2013		
Data Rounded to the nearest	<59.95 Hz	>60.05 Hz
Number of Excursions	927	1100
Maximum Duration (sec)	1270	472
Maximum Deviation (Hz)	59.507	60.301
Total Duration of Excursions (sec)	25592	27768

MECO Frequency Excursion Statistics April 2013		
	<59.95 Hz	>60.05 Hz
Number of Excursions	5959	874
Maximum Duration (sec)	746	670
Maximum Deviation (Hz)	59.69629	60.20703
Total Duration of Excursions (sec)	52084	13116

HELCO Frequency Excursion Statistics April 2013		
	<59.95 Hz	>60.05 Hz
Number of Excursions	3067	1619
Maximum Duration (sec)	310	86
Maximum Deviation (Hz)	58.63086	60.2666
Total Duration of Excursions (sec)	23224	7362

HAWAIIAN ELECTRIC COMPANY, INC.
 CONTINGENCY RESERVE ACTIVATION EVENTS
 APRIL 2013

Event #	Date & Time	Frequency (Hz)			Spinning Reserve Shortfall (MW)	Duration (HH:MM)	Description
		Prior to Event	Nadir	Trigger			
1	04/22/13 12:53	59.931	59.844	N/A	-17.00	0:16	W5 tripped offline while generating ~25 MW. W10 called online for spinning reserves.
2				N/A			
3				N/A			

MAUI ELECTRIC COMPANY, LIMITED
 UNDERFREQUENCY LOAD SHEDDING EVENTS
 April 2013

Event #	IR #	Island	Date & Time	Frequency (Hz)			Load Shed (MW)	Duration (HH:MM)	Description
				Prior to Event	Nadir	Levels UFLS Occurred			
1	236	Lanai	4/3/2013 4:59 PM	60.070	32.62	58.7, 58.4, 58.0	3.00	3:58	A system frequency depression of 32.62 Hz occurred when a mynah bird contacted lines causing recloser 1228 to fail in service in Lanai City
2	263	Lanai	4/18/2013 5:33 PM	60.009	49.80	58.7, 58.4, 58.0, 57.5	3.36	0:53	A system frequency depression of 49.80 Hz occurred when a tree made contact with lines in Lanai City

HECO Curtailment Report April 2013

Start Date/Time	Curtailment Set Point	MW output prior to start of curtailment	End Date/Time	MW output after curtailment released	Estimated MWh of curtailed energy during event [1]	IPP	Reason for Curtailment
04/01/13 16 18	0.0	4.60	04/03/13 17 23	0	*	KLS2	Communication system problems
04/03/13 13 58	0.0	1.70	04/03/13 14 17	0	*	KLS2	Lightning arrester replacement on Ewa Nui 42.46kV line
04/05/13 01:51	0.0	6.00	04/05/13 04 54	0	*	Makai	Curtailed for excess energy
04/05/13 02 09	0.0	15.00	04/05/13 04 54	0	*	Mauka	Curtailed for excess energy
04/16/13 07 01	0.0	1.10	04/18/13 07.41	0	*	KLS2	Switch upgrade at Makahio Substation
04/18/13 06:40	0.0	0.40	04/18/13 08.04	0	*	Makai	Lightning arrester replacement at Wahee Substation
04/18/13 18:18	0.0	4.30	04/18/13 19 03	0	*	Makai	Lightning arrester replacement at Wahee Substation
04/29/13 05.37	0.0	7.70	04/29/13 06 22	0	*	Makai	Circuit upgrades on Halawa Koolau 138 kV line, pole replacement on Koolau-Kahuku 46kV line
04/29/13 19 30	0.0	6.40	04/29/13 20 09	0	*	Makai	Circuit upgrades on Halawa Koolau 138 kV line, pole replacement on Koolau-Kahuku 46kV line
04/30/13 05 50	0.0	0.00	04/30/13 06 39	0	*	Makai	Circuit upgrades on Halawa Koolau 138 kV line, pole replacement on Koolau-Kahuku 46kV line
04/30/13 21 06	0.0	0.00	04/30/13 21 41	0	*	Makai	Circuit upgrades on Halawa Koolau 138 kV line, pole replacement on Koolau-Kahuku 46kV line

KLS2 = Kaula Solar 2 PV Farm
 KWF = Kahuku Wind Farm
 Makai = Kawaiolo Makai Wind Farm
 Mauka = Kawaiolo Mauka Wind Farm
 [1] The estimated MWh of energy curtailed during the event is supplied by Kahuku Wind Farm and/or Kawaiolo Wind Farm, and HECO does not make any representations as to its accuracy
 * Data has not been provided by IPP

MECO - Maui Curtailment Report April 2013

Start Date and Time	Duration	IPP Curtailment	Estimated Curtailment MWH	Peak MW Curtailment	Reason for Curtailment
4/1/2013 6:46	0:01	AWE	0.0	0.1	AGC MAVG - calculated
4/1/2013 6:55	0:01	AWE	0.0	0.1	AGC MAVG - calculated
4/1/2013 15:53	0:01	AWE	0.0	0.1	AGC MAVG - calculated
4/2/2013 0:42	0:01	AWE	0.0	0.1	AGC MAVG - calculated and Good Engineering and Operating Practices
4/2/2013 2:32	0:01	AWE	0.0	0.1	AGC MAVG - calculated
4/2/2013 2:43	0:01	AWE	0.0	0.2	AGC MAVG - calculated
4/2/2013 9:25	0:01	AWE	0.0	0.1	AGC MAVG - calculated
4/2/2013 9:42	0:01	AWE	0.0	7.6	AGC MAVG - calculated
4/2/2013 10:42	0:01	KWPII	0.0	0.1	AGC MAVG - calculated
4/2/2013 11:13	0:01	KWPII	0.0	6.5	AGC MAVG - calculated
4/2/2013 11:32	0:04	KWPII	0.0	5.2	AGC MAVG - calculated
4/2/2013 11:40	0:06	KWPII	0.1	6.5	AGC MAVG - calculated
4/2/2013 11:50	0:01	KWPII	0.0	4.7	AGC MAVG - calculated
4/2/2013 12:42	0:01	KWPII	0.0	5.2	AGC MAVG - calculated
4/2/2013 12:48	0:22	KWPII	0.9	6.5	AGC MAVG - calculated
4/2/2013 18:01	0:01	AWE	0.0	0.1	AGC MAVG - calculated
4/2/2013 23:24	0:14	KWPII	0.4	15.7	AGC MAVG - calculated
4/2/2013 23:39	0:02	KWPII	0.0	10.9	AGC MAVG - calculated
4/2/2013 23:42	5:10	KWPII	56.6	14.0	AGC MAVG - calculated, AGC MAVG - entered - Excess Energy, AGC MAVG - entered - Maintaining Regulating Reserves, AGC MAVG - entered - Excess Energy, AGC MAVG - entered - Excess Energy, AGC MAVG - entered and AGC MAVG - calculated
4/3/2013 0:36	3:34	SA	No data available	No data available	AGC MAVG - entered - Excess Energy and AGC MAVG - calculated
4/3/2013 0:38	0:01	AWE	0.0	0.2	AGC MAVG - entered - Excess Energy
4/3/2013 0:40	3:29	MH	No data available	No data available	AGC MAVG - entered - Excess Energy and AGC MAVG - calculated
4/3/2013 0:48	0:01	AWE	0.0	0.3	AGC MAVG - entered - Excess Energy
4/3/2013 1:07	0:01	KWP	0.0	11.4	AGC MAVG - entered - Excess Energy and AGC MAVG - calculated
4/3/2013 1:10	0:16	KWP	0.3	13.1	AGC MAVG - entered - Excess Energy
4/3/2013 1:39	2:13	KWP	12.4	17.3	AGC MAVG - calculated
4/3/2013 2:12	0:05	AWE	0.0	0.1	AGC MAVG - calculated
4/3/2013 2:18	0:01	AWE	0.0	0.1	AGC MAVG - calculated
4/3/2013 3:02	0:04	AWE	0.0	0.1	AGC MAVG - calculated
4/3/2013 3:43	0:19	KWP	0.7	13.1	AGC MAVG - calculated
4/3/2013 3:49	0:15	AWE	0.0	0.7	AGC MAVG - calculated
4/3/2013 4:03	0:02	KWP	0.0	10.6	AGC MAVG - calculated
4/3/2013 4:12	0:14	KWP	0.4	14.1	AGC MAVG - calculated
4/3/2013 4:28	0:07	KWP	0.1	13.3	AGC MAVG - calculated
4/3/2013 4:54	0:53	KWPII	4.5	15.4	AGC MAVG - calculated
4/3/2013 5:49	0:13	KWPII	0.3	16.6	AGC MAVG - calculated
4/3/2013 6:04	0:02	KWPII	0.0	16.1	AGC MAVG - calculated
4/3/2013 6:12	0:01	KWPII	0.0	13.5	AGC MAVG - calculated
4/3/2013 6:23	0:04	KWPII	0.0	14.2	AGC MAVG - calculated
4/3/2013 6:29	0:09	KWPII	0.2	16.7	AGC MAVG - calculated
4/3/2013 6:40	0:03	KWPII	0.1	15.4	AGC MAVG - calculated
4/3/2013 6:45	0:05	KWPII	0.1	16.3	AGC MAVG - calculated
4/3/2013 6:52	0:05	KWPII	0.0	16.9	AGC MAVG - entered
4/3/2013 6:59	0:02	KWPII	0.1	17.1	AGC MAVG - calculated
4/3/2013 7:02	0:05	KWPII	0.1	13.9	AGC MAVG - calculated
4/3/2013 7:08	0:01	KWPII	0.0	15.1	AGC MAVG - calculated
4/3/2013 7:11	0:01	KWPII	0.0	16.2	AGC MAVG - calculated
4/3/2013 7:13	0:01	KWPII	0.0	15.3	AGC MAVG - calculated
4/3/2013 7:35	0:04	KWPII	0.1	17.7	AGC MAVG - calculated
4/3/2013 7:47	0:01	KWPII	0.0	15.2	AGC MAVG - entered
4/3/2013 8:14	0:01	KWPII	0.0	13.9	AGC MAVG - calculated
4/3/2013 8:16	0:01	KWPII	0.0	13.6	AGC MAVG - calculated
4/3/2013 8:18	0:01	KWPII	0.0	13.7	AGC MAVG - calculated
4/3/2013 8:27	0:02	KWPII	0.0	15.1	AGC MAVG - calculated
4/3/2013 8:31	0:02	KWPII	0.0	15.5	AGC MAVG - calculated
4/3/2013 8:34	0:02	KWPII	0.0	15.8	AGC MAVG - calculated
4/3/2013 8:37	0:02	KWPII	0.0	15.5	AGC MAVG - calculated
4/3/2013 8:41	0:06	KWPII	0.1	16.3	AGC MAVG - calculated
4/3/2013 8:49	0:02	KWPII	0.1	15.3	AGC MAVG - entered
4/3/2013 8:58	0:04	KWPII	0.1	17.8	AGC MAVG - calculated
4/3/2013 9:05	0:01	KWPII	0.0	16.5	AGC MAVG - calculated
4/3/2013 9:07	0:04	KWPII	0.1	16.2	AGC MAVG - calculated
4/3/2013 9:13	0:01	KWPII	0.0	15.7	AGC MAVG - entered
4/3/2013 9:23	0:04	KWPII	0.1	15.6	AGC MAVG - calculated
4/3/2013 9:28	0:02	KWPII	0.0	15.1	AGC MAVG - calculated
4/3/2013 9:36	0:01	KWPII	0.0	13.6	AGC MAVG - calculated
4/3/2013 9:43	0:01	KWPII	0.0	13.3	AGC MAVG - entered
4/3/2013 10:04	0:02	KWPII	0.0	11.8	AGC MAVG - calculated
4/3/2013 10:12	0:04	KWPII	0.1	14.6	AGC MAVG - calculated
4/3/2013 11:02	0:01	KWPII	0.0	11.6	AGC MAVG - calculated
4/3/2013 16:40	0:05	AWE	0.0	13.0	AGC MAVG - calculated and Testing
4/3/2013 16:48	0:02	AWE	0.0	13.0	AGC MAVG - calculated and Testing
4/3/2013 17:19	0:01	KWPII	0.0	0.0	AGC MAVG - calculated
4/3/2013 0:46	0:26	AWE	0.1	11.0	AGC MAVG - entered - Excess Energy
4/3/2013 1:24	0:03	AWE	0.0	8.2	AGC MAVG - entered - Excess Energy
4/3/2013 2:01	0:50	KWPII	0.5	1.1	AGC MAVG - entered - Excess Energy
4/3/2013 3:07	0:55	AWE	0.0	11.4	AGC MAVG - entered - Excess Energy
4/3/2013 3:14	0:04	AWE	0.0	9.3	AGC MAVG - entered - Excess Energy
4/3/2013 3:19	0:02	AWE	0.0	8.8	AGC MAVG - entered - Excess Energy
4/3/2013 3:22	0:20	KWPII	1.2	5.5	AGC MAVG - entered - Excess Energy
4/3/2013 3:22	0:01	AWE	0.0	8.2	AGC MAVG - entered - Excess Energy
4/3/2013 3:44	0:11	KWPII	0.2	5.2	AGC MAVG - entered - Excess Energy
4/3/2013 4:16	0:01	KWPII	0.0	2.5	AGC MAVG - calculated
4/3/2013 23:41	0:01	KWPII	0.0	4.0	AGC MAVG - calculated
4/3/2013 23:44	6:28	KWPII	67.4	16.9	AGC MAVG - calculated, AGC MAVG - entered - Excess Energy and AGC MAVG - calculated
4/3/2013 23:48	0:01	AWE	0.0	17.8	AGC MAVG - calculated
4/3/2013 23:55	0:05	AWE	0.0	15.5	AGC MAVG - entered - Excess Energy
4/3/2013 0:02	0:33	AWE	0.2	15.1	AGC MAVG - entered - Excess Energy
4/3/2013 0:36	5:18	AWE	0.0	17.9	AGC MAVG - entered - Excess Energy and AGC MAVG - calculated
4/3/2013 0:38	5:08	SA	No data available	No data available	AGC MAVG - entered - Excess Energy and AGC MAVG - calculated
4/3/2013 0:40	5:04	MH	No data available	No data available	AGC MAVG - entered - Excess Energy and AGC MAVG - calculated
4/3/2013 0:45	0:02	KWP	0.1	18.0	AGC MAVG - calculated
4/3/2013 0:48	0:06	KWP	0.1	18.0	AGC MAVG - calculated
4/3/2013 0:57	1:10	KWP	7.5	21.7	AGC MAVG - calculated
4/3/2013 1:17	0:15	KWP	0.4	14.0	AGC MAVG - calculated
4/3/2013 2:34	0:01	KWP	0.3	10.9	AGC MAVG - calculated
4/3/2013 2:41	0:01	KWP	0.0	10.8	AGC MAVG - calculated
4/3/2013 2:43	0:27	KWP	1.0	15.3	AGC MAVG - calculated
4/3/2013 3:11	0:12	KWP	0.4	14.9	AGC MAVG - calculated
4/3/2013 3:25	0:32	KWP	1.4	17.5	AGC MAVG - calculated
4/3/2013 4:12	0:05	KWP	0.1	16.6	AGC MAVG - calculated
4/3/2013 4:18	0:01	KWP	0.0	16.5	AGC MAVG - calculated
4/3/2013 4:20	0:06	KWP	0.3	20.5	AGC MAVG - calculated
4/3/2013 4:27	0:42	KWP	2.5	25.0	AGC MAVG - calculated
4/3/2013 5:10	0:01	KWP	0.0	22.8	AGC MAVG - calculated
4/3/2013 6:15	0:36	KWPII	4.3	17.0	AGC MAVG - calculated, AGC MAVG - entered, AGC MAVG - calculated, AGC MAVG - entered, and AGC MAVG - calculated
4/3/2013 6:53	0:01	KWPII	0.0	14.3	AGC MAVG - calculated
4/3/2013 6:55	0:01	KWPII	0.0	14.6	AGC MAVG - calculated
4/3/2013 6:57	0:01	KWPII	0.0	14.4	AGC MAVG - calculated
4/3/2013 7:00	0:03	KWPII	0.1	15.2	AGC MAVG - calculated and Testing
4/3/2013 7:22	0:01	KWPII	0.0	12.4	AGC MAVG - calculated and Testing
4/3/2013 10:52	0:02	AWE	0.0	20.2	AGC MAVG - calculated, Testing, and Good Engineering and Operating Practices

MECO - Maul Curtailment Report April 2013

Start Date and Time	Duration	IPP Curtailed	Estimated Curtailed MWh	Peak MW Curtailed	Reason for Curtailment
4/5/2013 11:00	0:01	AWE	0.0	20.3	AGC MAVG - calculated, Testing, and Good Engineering and Operating Practices
4/6/2013 0:55	4:10	AWE	0.0	21.0	AGC MAVG - calculated
4/7/2013 20:46	0:07	KWPPI	0.3	10.2	AGC MAVG - calculated
4/7/2013 21:14	0:01	KWPPI	0.0	13.5	AGC MAVG - calculated
4/7/2013 21:18	0:01	KWPPI	0.0	14.8	AGC MAVG - calculated
4/7/2013 21:24	0:02	KWPPI	0.0	14.8	AGC MAVG - calculated
4/7/2013 21:28	0:03	KWPPI	0.0	15.6	AGC MAVG - calculated
4/7/2013 21:36	0:01	KWPPI	0.0	15.9	AGC MAVG - calculated
4/7/2013 21:39	0:01	KWPPI	0.0	14.9	AGC MAVG - calculated
4/7/2013 21:42	0:02	KWPPI	0.0	13.2	AGC MAVG - calculated
4/8/2013 1:32	0:05	AWE	0.0	15.6	AGC MAVG - calculated
4/8/2013 1:31	0:01	AWE	0.0	15.2	AGC MAVG - calculated
4/8/2013 3:41	1:07	KWPPI	6.5	12.9	AGC MAVG - calculated
4/8/2013 3:41	0:04	AWE	0.0	8.5	AGC MAVG - calculated
4/8/2013 3:51	0:37	AWE	0.0	14.9	AGC MAVG - calculated
4/8/2013 4:30	0:04	AWE	0.0	9.7	AGC MAVG - calculated
4/8/2013 4:39	0:01	AWE	0.0	11.4	AGC MAVG - calculated
4/8/2013 4:42	0:01	AWE	0.0	14.0	AGC MAVG - calculated
4/8/2013 4:54	0:01	KWPPI	0.0	1.6	AGC MAVG - calculated
4/8/2013 4:58	0:01	KWPPI	0.0	1.2	AGC MAVG - calculated
4/8/2013 4:58	0:03	KWPPI	0.0	0.7	AGC MAVG - calculated
4/8/2013 4:58	0:03	AWE	0.0	16.3	AGC MAVG - calculated
4/8/2013 5:55	0:02	KWPPI	0.0	4.1	AGC MAVG - calculated and Testing
4/8/2013 5:58	0:01	KWPPI	0.0	3.5	AGC MAVG - calculated and Testing
4/8/2013 6:04	0:05	KWPPI	0.2	5.8	AGC MAVG - calculated and Testing
4/8/2013 6:05	0:01	AWE	0.0	12.9	AGC MAVG - calculated and Testing
4/8/2013 7:27	0:03	KWPPI	0.0	8.2	AGC MAVG - calculated and Testing
4/8/2013 7:31	0:02	KWPPI	0.0	9.1	AGC MAVG - calculated and Testing
4/8/2013 7:35	0:03	KWPPI	0.1	9.0	AGC MAVG - calculated and Testing
4/8/2013 7:39	0:02	KWPPI	0.0	7.1	AGC MAVG - calculated and Testing
4/8/2013 7:43	0:02	KWPPI	0.0	8.3	AGC MAVG - calculated and Testing
4/8/2013 11:14	0:01	KWPPI	0.0	4.0	AGC MAVG - calculated, Testing, and Good Engineering and Operating Practices
4/8/2013 11:16	0:02	KWPPI	0.0	3.9	AGC MAVG - calculated, Testing, and Good Engineering and Operating Practices
4/8/2013 11:42	0:02	KWPPI	0.0	6.1	AGC MAVG - calculated and Testing
4/9/2013 0:22	0:04	KWPPI	0.1	4.4	AGC MAVG - calculated
4/9/2013 0:31	0:02	KWPPI	0.0	7.5	AGC MAVG - calculated
4/9/2013 0:37	0:01	KWPPI	0.0	6.3	AGC MAVG - calculated
4/9/2013 0:48	0:02	KWPPI	0.0	7.0	AGC MAVG - calculated
4/9/2013 0:51	1:13	KWPPI	6.4	8.8	AGC MAVG - calculated
4/9/2013 0:58	0:49	AWE	0.0	18.2	AGC MAVG - calculated
4/9/2013 1:56	0:01	AWE	0.0	17.1	AGC MAVG - calculated
4/9/2013 2:07	0:06	KWPPI	0.1	4.0	AGC MAVG - calculated
4/9/2013 2:15	0:01	KWPPI	0.0	3.4	AGC MAVG - calculated
4/9/2013 2:17	0:01	KWPPI	0.0	2.9	AGC MAVG - calculated
4/9/2013 2:21	0:01	KWPPI	0.0	1.9	AGC MAVG - calculated
4/9/2013 2:26	0:01	KWPPI	0.0	0.9	AGC MAVG - calculated
4/9/2013 2:32	3:30	KWPPI	28.8	17.7	AGC MAVG - calculated
4/9/2013 2:32	0:03	AWE	0.0	17.8	AGC MAVG - calculated
4/9/2013 2:37	0:05	AWE	0.0	21.0	AGC MAVG - calculated
4/9/2013 2:44	1:02	AWE	0.0	21.0	AGC MAVG - calculated
4/9/2013 3:47	0:01	AWE	0.0	11.4	AGC MAVG - calculated
4/9/2013 3:49	0:05	AWE	0.0	12.0	AGC MAVG - calculated
4/9/2013 3:57	0:04	AWE	0.0	11.0	AGC MAVG - calculated
4/9/2013 4:03	0:04	AWE	0.0	11.7	AGC MAVG - calculated
4/9/2013 4:08	0:09	AWE	0.0	15.4	AGC MAVG - calculated
4/9/2013 4:18	0:12	AWE	0.0	15.7	AGC MAVG - calculated
4/9/2013 4:33	0:02	AWE	0.0	16.8	AGC MAVG - calculated
4/9/2013 4:40	0:02	AWE	0.0	20.1	AGC MAVG - calculated
4/9/2013 4:44	0:15	AWE	0.0	21.0	AGC MAVG - calculated
4/9/2013 5:01	0:03	AWE	0.0	21.0	AGC MAVG - calculated
4/9/2013 5:13	0:01	AWE	0.0	21.0	AGC MAVG - calculated
4/9/2013 5:20	0:04	AWE	0.0	21.0	AGC MAVG - calculated
4/9/2013 5:30	0:04	AWE	0.0	21.0	AGC MAVG - calculated
4/9/2013 5:38	0:02	AWE	0.0	21.0	AGC MAVG - calculated
4/9/2013 5:45	0:01	AWE	0.0	21.0	AGC MAVG - calculated
4/9/2013 5:48	0:02	AWE	0.0	21.0	AGC MAVG - calculated
4/9/2013 5:54	0:03	AWE	0.0	21.0	AGC MAVG - calculated
4/9/2013 6:03	0:26	KWPPI	3.8	19.7	AGC MAVG - calculated
4/11/2013 2:28	0:16	KWPPI	0.2	1.3	AGC MAVG - calculated and Good Engineering and Operating Practices
4/11/2013 2:31	0:09	AWE	0.0	21.0	AGC MAVG - calculated and Good Engineering and Operating Practices
4/11/2013 2:45	0:01	KWPPI	0.0	0.6	AGC MAVG - calculated and Good Engineering and Operating Practices
4/11/2013 4:20	0:45	KWPPI	2.3	13.1	AGC MAVG - calculated
4/11/2013 7:51	0:01	KWPPI	0.0	5.5	AGC MAVG - calculated and Testing
4/11/2013 8:04	0:01	KWPPI	0.0	14.3	AGC MAVG - calculated and Testing
4/11/2013 8:17	0:10	KWPPI	0.3	19.6	AGC MAVG - calculated, Testing, and Good Engineering and Operating Practices
4/11/2013 8:28	0:07	KWPPI	0.2	19.8	AGC MAVG - calculated, Testing, and Good Engineering and Operating Practices
4/11/2013 11:09	0:04	KWPPI	0.0	15.0	AGC MAVG - calculated and Testing
4/11/2013 11:18	0:01	KWPPI	0.0	13.4	AGC MAVG - calculated and Testing
4/11/2013 12:09	0:13	KWPPI	0.3	3.8	AGC MAVG - calculated and Testing
4/11/2013 12:09	0:09	AWE	0.0	17.8	AGC MAVG - calculated and Testing
4/11/2013 13:12	0:02	KWPPI	0.0	7.6	AGC MAVG - calculated and Testing
4/11/2013 13:25	0:02	KWPPI	0.0	10.4	AGC MAVG - calculated and Testing
4/11/2013 14:54	0:02	KWPPI	0.0	14.5	AGC MAVG - calculated and Testing
4/11/2013 17:19	0:01	AWE	0.0	0.3	AGC MAVG - calculated and Testing
4/14/2013 6:02	0:01	AWE	0.0	0.1	AGC MAVG - calculated and Testing
4/14/2013 6:37	0:05	KWPPI	0.1	12.5	AGC MAVG - calculated and Testing
4/14/2013 6:50	0:04	KWPPI	0.1	13.6	AGC MAVG - calculated and Testing
4/14/2013 6:57	0:01	KWPPI	0.0	11.7	AGC MAVG - calculated and Testing
4/14/2013 6:57	0:01	AWE	0.0	0.1	AGC MAVG - calculated and Testing
4/14/2013 6:59	0:01	KWPPI	0.0	11.5	AGC MAVG - calculated and Testing
4/14/2013 9:21	0:01	AWE	0.0	0.3	AGC MAVG - calculated and Testing
4/15/2013 8:25	0:01	AWE	0.0	0.3	AGC MAVG - calculated, Testing, and Good Engineering and Operating Practices
4/15/2013 9:13	0:01	AWE	0.0	0.3	AGC MAVG - calculated, Testing, and Good Engineering and Operating Practices
4/15/2013 9:49	0:01	AWE	0.0	0.1	AGC MAVG - calculated and Testing
4/15/2013 16:30	0:01	AWE	0.0	0.1	AGC MAVG - calculated and Testing
4/15/2013 17:21	0:01	AWE	0.0	0.3	AGC MAVG - calculated and Testing
4/17/2013 0:18	0:05	KWPPI	0.0	7.8	AGC MAVG - calculated and Testing
4/17/2013 0:27	0:04	KWPPI	0.0	16.4	AGC MAVG - calculated and Testing
4/17/2013 0:32	0:08	KWPPI	0.5	18.3	AGC MAVG - calculated and Testing
4/17/2013 0:42	0:20	KWPPI	0.9	15.0	AGC MAVG - calculated and Testing
4/17/2013 1:03	0:03	KWPPI	0.1	9.4	AGC MAVG - calculated and Testing
4/17/2013 1:08	0:41	KWPPI	2.2	11.0	AGC MAVG - calculated and Testing
4/17/2013 2:29	0:03	KWPPI	0.0	2.5	AGC MAVG - calculated and Testing
4/17/2013 3:26	0:25	KWPPI	2.1	9.7	AGC MAVG - calculated and Testing
4/17/2013 3:26	0:03	AWE	0.0	10.8	AGC MAVG - calculated and Testing
4/17/2013 3:30	0:07	AWE	0.0	10.5	AGC MAVG - calculated and Testing
4/17/2013 3:45	0:14	AWE	0.0	10.2	AGC MAVG - calculated, Testing, and AGC MAVG - entered - Maintaining Regulating Reserves
4/17/2013 3:58	0:49	KWPPI	7.4	14.6	AGC MAVG - calculated, Testing, and AGC MAVG - entered - Maintaining Regulating Reserves
4/17/2013 4:01	0:42	AWE	0.0	16.1	AGC MAVG - entered - Maintain Regulating Reserves and Testing
4/17/2013 4:49	0:14	KWPPI	2.4	14.0	AGC MAVG - calculated and Testing
4/17/2013 4:54	0:35	AWE	0.0	19.6	AGC MAVG - calculated and Testing
4/17/2013 5:05	0:36	KWPPI	1.7	14.0	AGC MAVG - calculated and Testing
4/17/2013 5:42	0:01	KWPPI	0.0	7.5	AGC MAVG - calculated and Testing
4/17/2013 6:41	0:02	AWE	0.0	20.2	AGC MAVG - calculated and Testing
4/17/2013 6:57	0:02	KWPPI	0.0	1.1	AGC MAVG - calculated and Testing

MECO - Maui Curtailment Report April 2013

Start Date and Time	Duration	IPP Curtailed	Estimated Curtailed MWH	Peak MW Curtailed	Reason for Curtailment
4/25/2013 19:43	0:01	KWPII	0.0	17.8	AGC MAVG - calculated
4/25/2013 19:46	0:05	KWPII	0.0	17.6	AGC MAVG - calculated and Testing
4/25/2013 19:58	0:04	KWPII	0.1	16.9	AGC MAVG - calculated and Testing
4/25/2013 20:03	0:07	KWPII	0.2	15.7	AGC MAVG - calculated and Testing
4/25/2013 20:27	0:01	KWPII	0.0	16.5	AGC MAVG - calculated
4/25/2013 20:30	0:01	KWPII	0.0	16.0	AGC MAVG - calculated
4/25/2013 20:32	0:02	KWPII	0.0	16.1	AGC MAVG - calculated
4/25/2013 20:35	0:03	KWPII	0.1	16.3	AGC MAVG - calculated
4/25/2013 20:39	0:06	KWPII	0.2	17.8	AGC MAVG - calculated
4/25/2013 20:46	1:22	KWPII	11.1	20.7	AGC MAVG - calculated - AGC MAVG - entered - Maintaining Regulating Reserves, AGC MAVG - calculated - AGC MAVG - entered - Maintaining Regulating Reserves, and AGC MAVG - entered
4/25/2013 22:09	6:53	KWPII	126.6	20.7	AGC MAVG - entered - Maintaining Regulating Reserves, Good Engineering and Operating Practices - AGC MAVG - entered - Maintaining Regulating Reserves - AGC MAVG - calculated - entered - Excess Energy, AGC MAVG - calculated, and AGC MAVG - entered
4/25/2013 23:13	0:22	AWE	0.0	15.0	AGC MAVG - entered - Excess Energy
4/25/2013 23:41	5:21	AWE	0.1	18.6	AGC MAVG - entered - Excess Energy - AGC MAVG - calculated, and AGC MAVG - entered
4/26/2013 0:26	4:35	KWP	27.6	27.6	AGC MAVG - entered - Excess Energy and AGC MAVG - calculated
4/26/2013 5:03	8:02	KWPII	136.6	20.7	AGC MAVG - entered - AGC MAVG - calculated - AGC MAVG - entered - AGC MAVG - entered - Maintaining Regulating Reserves, Good Engineering and Operating Practices and Testing
4/26/2013 5:03	1:41	AWE	0.0	20.6	AGC MAVG - entered, AGC MAVG - calculated, and AGC MAVG - entered
4/26/2013 5:04	0:01	KWP	0.0	26.1	AGC MAVG - entered
4/26/2013 6:46	0:41	AWE	0.0	21.0	AGC MAVG - entered
4/26/2013 10:43	0:32	AWE	0.0	21.0	AGC MAVG - entered - Maintain Regulating Reserves and Good Engineering and Operating Practices
4/26/2013 13:05	0:01	AWE	0.0	19.8	AGC MAVG - entered - Maintain Regulating Reserves and Testing
4/26/2013 13:08	0:01	AWE	0.0	19.2	AGC MAVG - entered - Maintain Regulating Reserves and Testing
4/27/2013 2:41	0:01	AWE	0.0	17.5	AGC MAVG - calculated
4/27/2013 3:08	0:01	AWE	0.0	17.1	AGC MAVG - calculated
4/27/2013 3:12	0:02	AWE	0.0	18.3	AGC MAVG - calculated
4/27/2013 3:18	0:49	AWE	0.0	18.3	AGC MAVG - entered - Maintain Regulating Reserves
4/27/2013 4:03	0:48	KWPII	0.4	1.1	AGC MAVG - entered - Maintaining Regulating Reserves and AGC MAVG - calculated
4/27/2013 4:12	0:20	AWE	0.0	20.1	AGC MAVG - entered - Maintain Regulating Reserves
4/27/2013 4:36	0:01	AWE	0.0	19.1	AGC MAVG - entered - Maintain Regulating Reserves
4/27/2013 4:45	0:01	AWE	0.0	19.1	AGC MAVG - entered - Maintain Regulating Reserves
4/28/2013 8:19	0:01	AWE	0.0	0.2	AGC MAVG - calculated
4/28/2013 8:33	0:01	AWE	0.0	0.1	AGC MAVG - calculated
4/28/2013 9:35	0:01	AWE	0.0	0.2	AGC MAVG - calculated
4/28/2013 10:17	0:01	AWE	0.0	0.2	AGC MAVG - calculated
4/28/2013 11:23	0:01	AWE	0.0	0.2	AGC MAVG - calculated
4/28/2013 12:04	0:01	AWE	0.0	0.3	AGC MAVG - calculated
4/28/2013 12:09	0:01	AWE	0.0	0.2	AGC MAVG - calculated
4/28/2013 12:37	0:01	AWE	0.0	0.1	AGC MAVG - calculated
4/28/2013 16:22	0:01	AWE	0.0	0.1	AGC MAVG - calculated
4/29/2013 21:01	0:01	KWP	0.0	0.2	AGC MAVG - calculated

- Notes
- Curtailment for KWP, AWEs, and KWP II is now controlled by MECO's Automatic Generation Control System ("AGC"). The AGC curtailment control automatically calculates the amount of Maximum Allowable Variable Generation ("MAVG") that MECO can accept into the Maui system, based on the system current available variable generation ("CAVG"), regulating reserve down requirement ("RRDR") and available regulating reserve down ("ARRD"). Thus, the AGC MAVG - calculated is equal to CAVG less RRDR less ARRD. Additionally, the AGC curtailment control allows the MECO operator to enter an AGC MAVG value. The AGC curtailment control will employ the lesser of the AGC MAVG - calculated and AGC MAVG - entered values in the control logic.
 - The Estimated Curtailed MW and Peak MW Curtailed are formulated with information provided by the IPPs, and MECO does not make any representation as to its accuracy.
 - MECO recently upgraded the SCADA controls to permit the curtailment of the Makale Hydro facility to Net Zero Protocol and uncurtailment of the Makale Hydro facility without opening and closing the MECO and Makale Hydro interconnection circuit breaker. The SCADA control upgrade decreased the durations of the Makale Hydro curtailment events beginning on 2/17/13.
 - Estimated Curtailed MW and Peak MW Curtailed data is not provided by the IPPs for Makale Hydro, or AAAAA Rent-A-Space Maui LTD.

MECO-Lanai Curtailment Report April 2013

Start Date/Time	Curtailment Event Duration	IPP Curtailed	MWH Curtailed	Peak MW Curtailed	Reason for Curtailment
4/1/13 9:01	0:13	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/1/13 10:00	0:12	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/1/13 11:00	0:13	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/1/13 12:00	0:16	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/1/13 13:01	0:15	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/1/13 14:01	0:14	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/1/13 15:01	0:16	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/1/13 16:02	0:15	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/1/13 17:00	0:12	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/2/13 9:01	0:12	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/2/13 10:02	0:15	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/2/13 11:01	0:14	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/2/13 12:02	0:14	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/2/13 13:01	0:16	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/2/13 14:02	0:15	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/2/13 15:01	0:12	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/2/13 16:02	0:14	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/2/13 17:02	0:14	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/3/13 9:02	0:12	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/3/13 10:01	0:13	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/3/13 11:01	0:12	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/3/13 12:02	0:16	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/3/13 13:02	0:12	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/3/13 14:02	0:14	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/3/13 15:02	0:16	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/3/13 16:01	0:16	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/4/13 9:01	0:14	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/4/13 10:00	0:13	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/4/13 11:01	0:12	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/4/13 12:00	0:15	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/4/13 13:02	0:15	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/4/13 14:00	0:13	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/4/13 15:00	0:15	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/4/13 16:01	0:16	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/4/13 17:02	0:16	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/5/13 9:00	0:16	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/5/13 10:01	0:15	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/5/13 11:00	0:14	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/5/13 12:02	0:15	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/5/13 13:02	0:15	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/5/13 14:00	0:12	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/5/13 15:01	0:15	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/5/13 16:00	0:12	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/5/13 17:02	0:13	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/6/13 9:01	0:15	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/6/13 10:02	0:12	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/6/13 11:00	0:12	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/6/13 12:02	0:15	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/6/13 13:00	0:14	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/6/13 14:00	0:12	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/6/13 15:02	0:12	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/6/13 16:00	0:12	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/6/13 17:00	0:12	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/7/13 9:01	0:16	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/7/13 10:02	0:15	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/7/13 11:01	0:12	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/7/13 12:00	0:16	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/7/13 13:01	0:16	LSR-La Ola PV	No data	No data	Ramp rate mitigation

MECO-Lanai Curtailment Report April 2013

Start Date/Time	Curtailment Event Duration	IPP Curtailed	MWH Curtailed	Peak MW Curtailed	Reason for Curtailment
4/7/13 14:01	0:14	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/7/13 15:02	0:12	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/7/13 16:00	0:16	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/7/13 17:00	0:13	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/8/13 9:00	0:16	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/8/13 10:01	0:13	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/8/13 11:01	0:15	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/8/13 12:01	0:15	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/8/13 13:02	0:12	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/8/13 14:02	0:15	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/8/13 15:00	0:14	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/8/13 16:02	0:13	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/8/13 17:01	0:12	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/9/13 9:02	0:13	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/9/13 10:02	0:15	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/9/13 11:02	0:15	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/9/13 12:00	0:16	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/9/13 13:01	0:15	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/9/13 14:01	0:15	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/9/13 15:01	0:12	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/9/13 16:02	0:16	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/9/13 17:01	0:15	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/10/13 9:02	0:15	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/10/13 10:02	0:15	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/10/13 11:01	0:16	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/10/13 12:02	0:16	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/10/13 13:02	0:14	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/10/13 14:00	0:12	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/10/13 15:01	0:13	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/10/13 16:00	0:12	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/10/13 17:00	0:13	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/11/13 9:00	0:14	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/11/13 10:02	0:12	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/11/13 11:01	0:16	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/11/13 12:01	0:15	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/11/13 13:02	0:13	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/11/13 14:00	0:13	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/11/13 15:01	0:16	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/11/13 16:01	0:15	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/11/13 17:01	0:16	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/12/13 9:00	0:16	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/12/13 10:00	0:13	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/12/13 11:02	0:12	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/12/13 12:02	0:15	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/12/13 13:01	0:14	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/12/13 14:02	0:13	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/12/13 15:01	0:14	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/12/13 16:01	0:14	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/12/13 17:00	0:14	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/13/13 9:01	0:16	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/13/13 10:00	0:13	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/13/13 11:00	0:12	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/13/13 12:00	0:16	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/13/13 13:02	0:12	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/13/13 14:01	0:14	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/13/13 15:02	0:15	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/13/13 16:01	0:13	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/13/13 17:02	0:16	LSR-La Ola PV	No data	No data	Ramp rate mitigation

MECO-Lanai Curtailment Report April 2013

Start Date/Time	Curtailment Event Duration	IPP Curtailed	MWH Curtailed	Peak MW Curtailed	Reason for Curtailment
4/14/13 9:01	0:15	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/14/13 10:02	0:15	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/14/13 11:01	0:13	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/14/13 12:00	0:14	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/14/13 13:01	0:14	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/14/13 14:00	0:13	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/14/13 15:02	0:13	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/15/13 9:00	0:14	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/15/13 10:00	0:15	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/15/13 11:02	0:14	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/15/13 12:00	0:16	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/15/13 13:00	0:16	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/15/13 14:00	0:14	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/15/13 15:02	0:16	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/15/13 16:00	0:14	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/15/13 17:02	0:16	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/16/13 9:01	0:12	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/16/13 10:01	0:15	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/16/13 11:00	0:16	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/16/13 12:00	0:12	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/16/13 13:02	0:16	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/16/13 14:00	0:13	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/16/13 15:01	0:13	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/16/13 16:02	0:12	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/16/13 17:01	0:15	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/17/13 9:02	0:12	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/17/13 10:01	0:14	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/17/13 11:02	0:12	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/17/13 12:01	0:13	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/17/13 13:00	0:12	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/17/13 14:01	0:13	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/17/13 15:00	0:16	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/17/13 16:01	0:15	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/17/13 17:02	0:15	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/18/13 9:01	0:16	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/18/13 10:02	0:16	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/18/13 11:00	0:14	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/18/13 12:01	0:12	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/18/13 13:02	0:12	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/18/13 14:00	0:15	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/18/13 15:01	0:12	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/18/13 16:02	0:13	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/18/13 17:01	0:15	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/25/13 15:02	0:13	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/25/13 16:02	0:14	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/25/13 17:01	0:12	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/26/13 9:01	0:13	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/26/13 10:00	0:12	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/26/13 11:02	0:13	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/26/13 12:00	0:14	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/26/13 13:00	0:15	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/26/13 14:02	0:14	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/26/13 15:00	0:15	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/26/13 16:02	0:14	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/26/13 17:01	0:13	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/27/13 9:02	0:14	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/27/13 10:01	0:15	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/27/13 11:01	0:15	LSR-La Ola PV	No data	No data	Ramp rate mitigation

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Start Date/Time	Curtailment Event Duration	IPP Curtailed	MWH Curtailed	Peak MW Curtailed	Reason for Curtailment
4/27/13 12:00	0:16	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/27/13 13:00	0:12	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/27/13 14:01	0:13	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/27/13 15:02	0:13	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/27/13 16:01	0:16	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/27/13 17:02	0:12	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/28/13 9:01	0:15	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/28/13 10:02	0:15	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/28/13 11:01	0:16	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/28/13 12:01	0:13	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/28/13 13:00	0:14	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/28/13 14:02	0:16	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/28/13 15:01	0:14	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/28/13 16:02	0:15	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/28/13 17:01	0:16	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/29/13 9:01	0:13	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/29/13 10:01	0:13	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/29/13 11:00	0:15	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/29/13 12:00	0:14	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/29/13 13:00	0:15	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/29/13 14:02	0:14	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/29/13 15:01	0:16	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/29/13 16:01	0:16	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/29/13 17:00	0:15	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/30/13 9:01	0:12	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/30/13 10:02	0:15	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/30/13 11:00	0:14	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/30/13 12:00	0:16	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/30/13 13:00	0:14	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/30/13 14:02	0:12	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/30/13 15:00	0:16	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/30/13 16:00	0:16	LSR-La Ola PV	No data	No data	Ramp rate mitigation
4/30/13 17:02	0:12	LSR-La Ola PV	No data	No data	Ramp rate mitigation

Note: On June 27, 2012, MECO notified LSR that although LSR has not operated in compliance with the revised ramp rate of 360 kW/minute, MECO would conditionally allow LSR to operate at the allowed capacity of 1.2 MW while the MECO-Lanai Diesel Operator was in the control room.

HELCO Curtailment Report April 2013				
Start Date/Time	MW output prior to start of curtailment	End Date/Time	MW output after curtailment released	Reason for Curtailment
04/09/13 23:59	19.0 MW	04/10/13 01:51	6.7 MW	Tawhiri Group B curtailed for excess energy.
04/18/13 02:00	19.8 MW	04/18/13 04:26	16.8 MW	Tawhiri Group B curtailed for excess energy.
04/20/13 01:00	19.8 MW	04/20/13 05:07	17.8 MW	Tawhiri Group B curtailed for excess energy.