



October 25, 2016

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

PUBLIC UTILITIES  
COMMISSION

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'<sup>1</sup> monthly report for September 2016 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 Companies are 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](mailto:marisa.chun@heco.com) to request a copy.

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

Sincerely,

Daniel G. Brown  
Manager  
Regulatory Non-Rate Proceedings

Enclosure

c: Service List

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<sup>1</sup> Hawaiian Electric Company, Inc., Hawai'i Electric Light Company, Inc., and Maui Electric Company, Limited are collectively referred to as the "Hawaiian Electric Companies" or "Companies".

**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 September 30, 2016):

**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, Maui Electric (Maui Division) and Hawai'i Electric Light 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, Maui Electric (Maui Division) and Hawai'i Electric Light 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 September 30, 2016):

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

Hawaiian Electric's contingency reserve activations are provided in Attachment 3. Maui Electric and Hawai'i Electric Light 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:**

Hawaiian Electric, Hawai'i Electric Light and Maui Electric did not have any under frequency load shed activations for the month of September. Therefore, Attachment 4 is not being provided for this reporting period.

**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 is provided in Attachment 5. Hawai'i Electric Light currently does not have demand response program. Maui Electric has implemented the Fast Demand Response pilot program on a limited basis. Hawai'i Electric Light plans to use the findings of Maui Electric's pilot program to help in the evaluation and development of future demand response programs. Maui Electric executes a weekly testing protocol which measures customer participation. This program is not currently used in response to actual system events.

- (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 September 30, 2016):

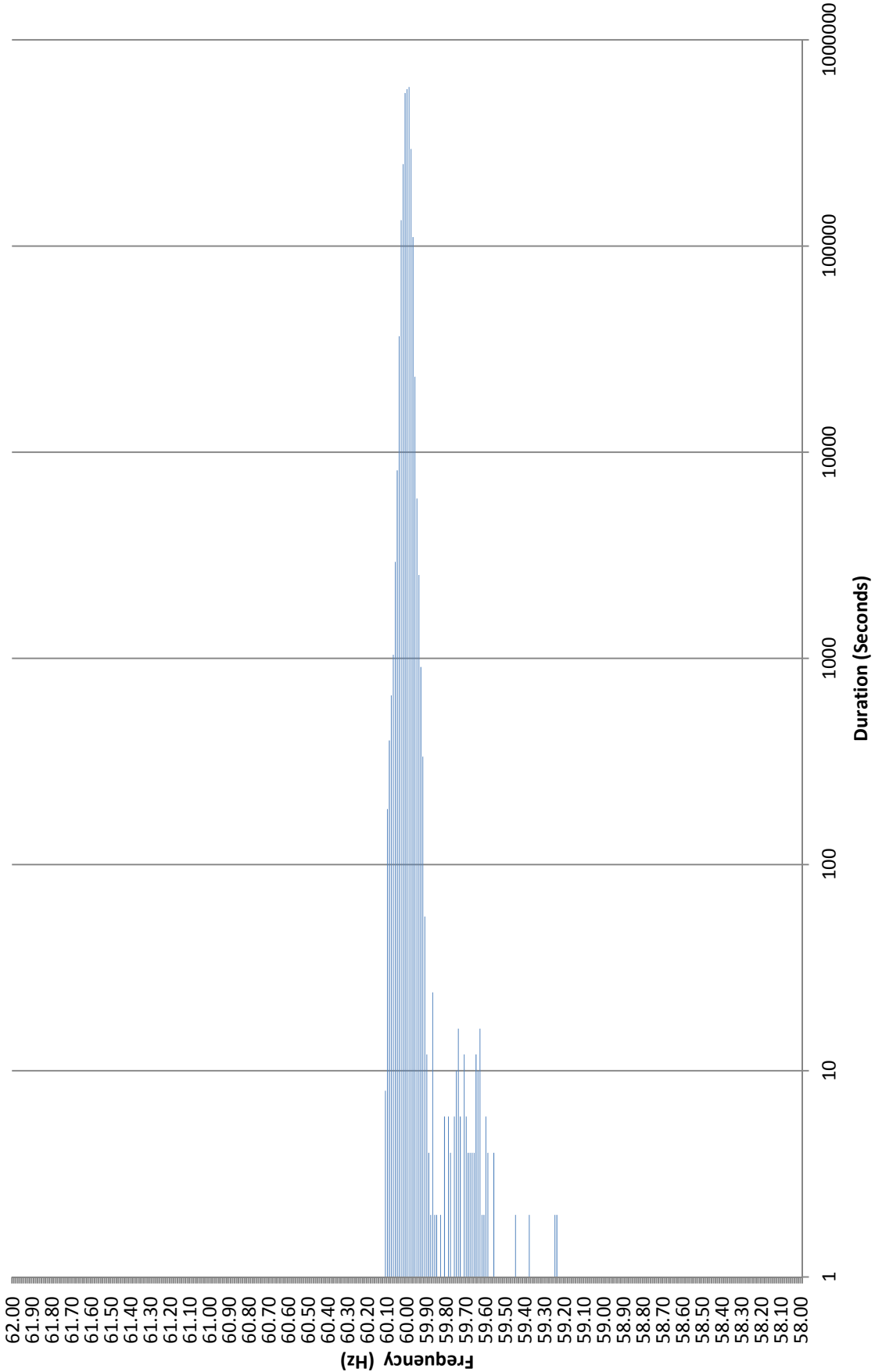
**3a) Tabulation of each curtailment event for each resource including the starting date and time, duration, megawatt hours curtailed, peak MW curtailed, and reason for curtailment:**

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

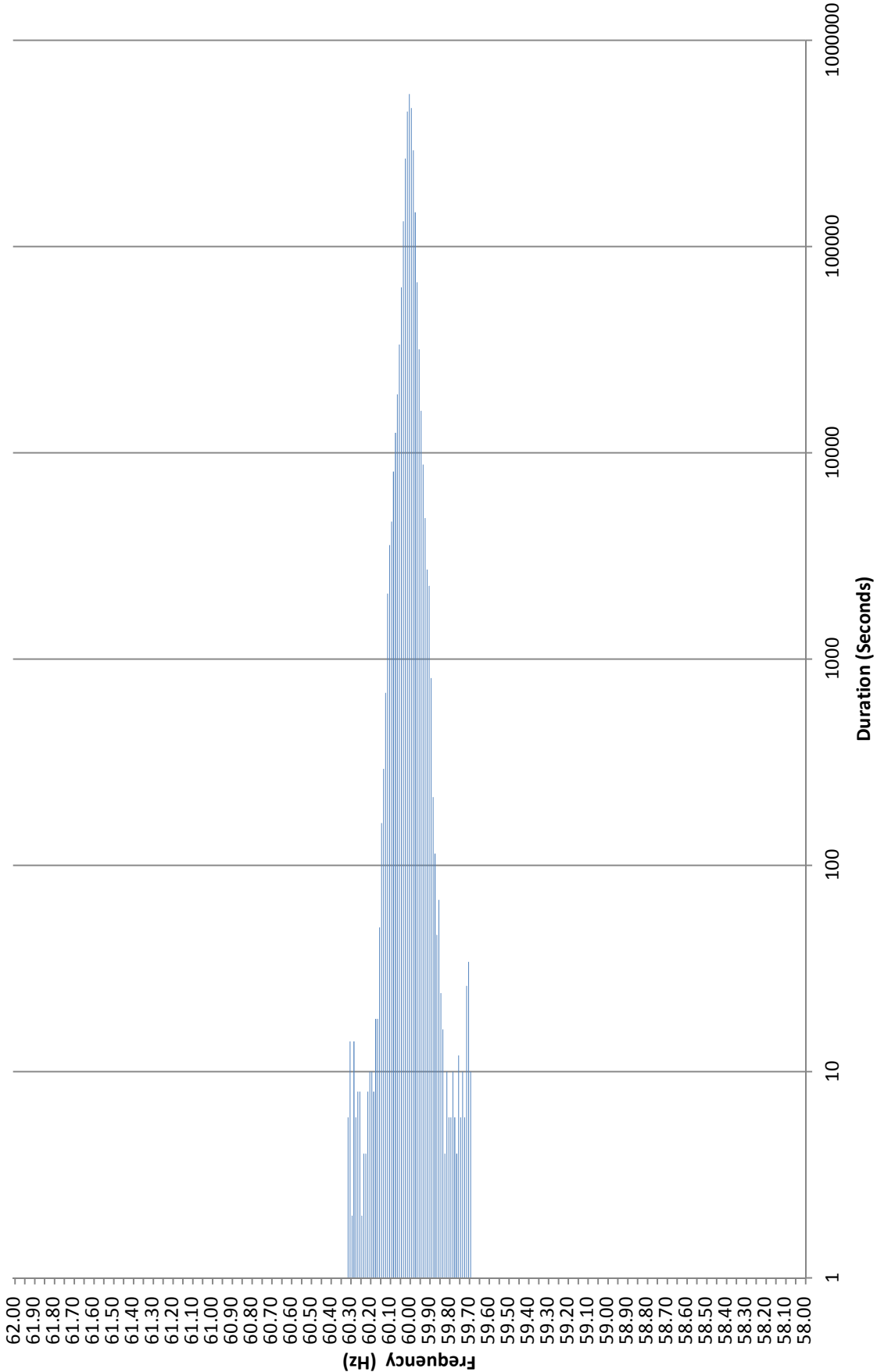
**3b) Total MWh of non-dispatchable renewable resources curtailed for the month:**

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. 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.

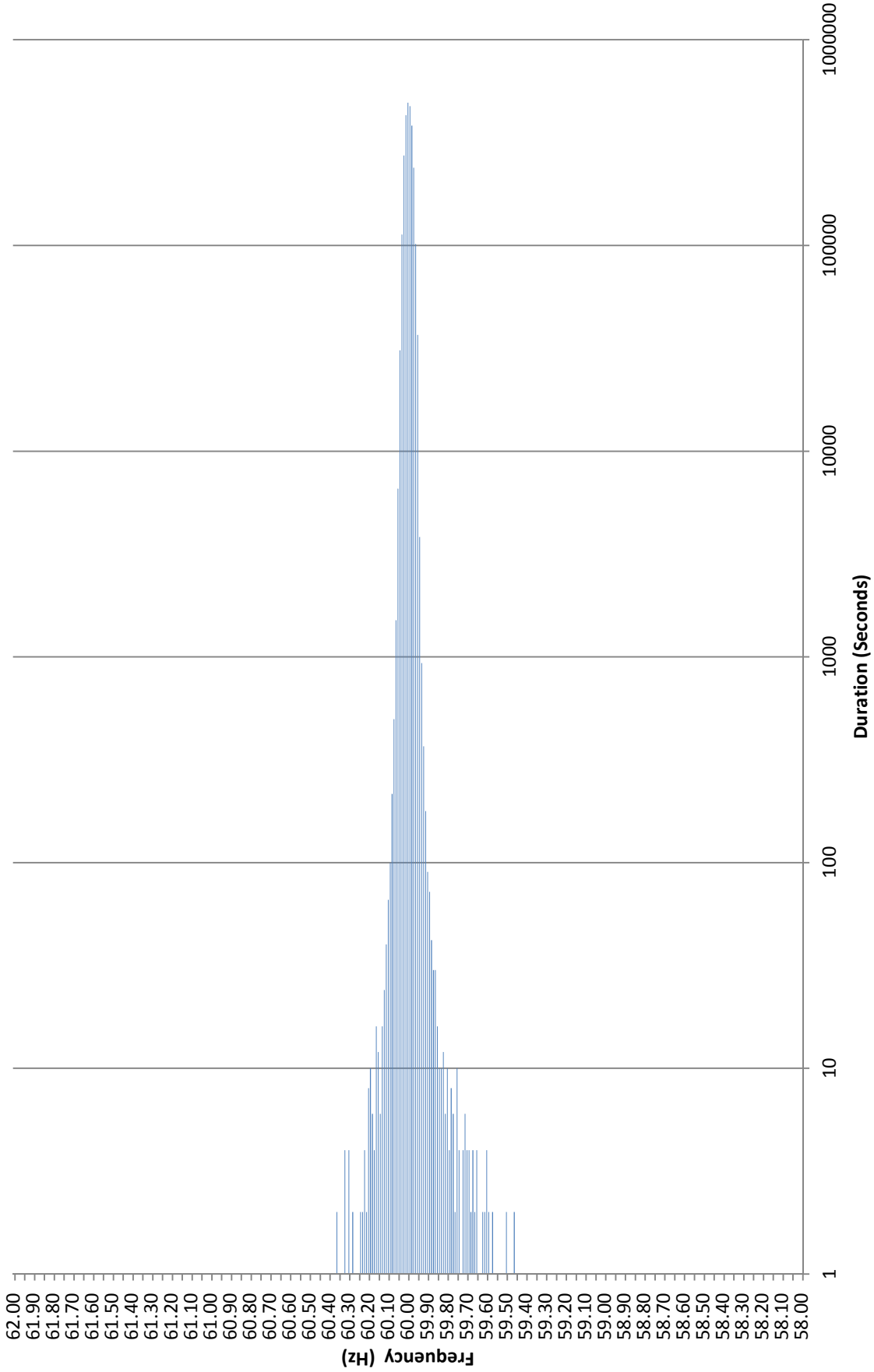
# Frequency Distribution Plot - Hawaiian Electric September 2016



**Maui Electric Frequency Distribution Plot - Maui  
September 2016**



**Frequency Distribution Plot - Hawai'i Electric Light  
September 2016**



Hawaiian Electric Frequency Excursion Statistics September 2016		
Data Rounded to the nearest	<59.95 Hz	>60.05 Hz
Number of Excursions	445	613
Maximum Duration (sec)	290	606
Maximum Deviation (Hz)	59.244	60.106
Total Duration of Excursions (sec)	6006	7686

Maui Electric Frequency Excursion Statistics September 2016		
	<59.95 Hz	>60.05 Hz
Number of Excursions	6806	6802
Maximum Duration (sec)	504	834
Maximum Deviation (Hz)	59.6878	60.3117
Total Duration of Excursions (sec)	49270	65328



Hawai'i Electric Light Frequency Excursion Statistics September 2016		
	<59.95 Hz	>60.05 Hz
Number of Excursions	4859	1019
Maximum Duration (sec)	112	162
Maximum Deviation (Hz)	59.457	60.360
Total Duration of Excursions (sec)	21834	4742



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Hawaiian Electric Curtailment Report September 2016

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
09/08/16 07:32	0.0	0.40	09/08/16 17:46	0	*	KREP	System constraints
09/09/16 08:12	0.0	2.18	09/09/16 16:27	0	*	KREP	System constraints
09/26/16 07:04	0.0	20.00	09/26/16 08:18	0	*	KWF	Facility Requested/System constraints
09/26/16 07:09	0.0	30.00	09/26/16 17:13	0	*	Mauka	Facility Requested/System constraints
09/26/16 07:10	0.0	13.40	09/26/16 08:25	0	*	Makai	Facility Requested/System constraints
09/26/16 16:46	0.0	17.30	09/26/16 17:07	0	*	KWF	Facility Requested/System constraints
09/26/16 16:50	0.0	10.40	09/26/16 17:12	0	*	Makai	Facility Requested/System constraints
09/27/16 06:55	0.0	3.80	09/27/16 08:08	0	*	Mauka	Facility Requested/System constraints
09/27/16 06:56	0.0	1.60	09/27/16 21:10	0	*	Makai	Facility Requested/System constraints
09/27/16 07:04	0.0	18.40	09/27/16 21:06	0	*	KWF	Facility Requested/System constraints
09/27/16 17:38	0.0	12.30	09/27/16 21:09	0	*	Mauka	Facility Requested/System constraints
09/28/16 06:14	0.0	9.40	09/28/16 07:35	0	*	Mauka	Facility Requested/System constraints
09/28/16 06:15	0.0	3.60	09/28/16 16:03	0	*	Makai	Facility Requested/System constraints
09/28/16 06:20	0.0	8.40	09/28/16 16:53	0	*	KWF	Facility Requested/System constraints
09/28/16 15:04	0.0	26.00	09/28/16 16:04	0	*	Mauka	Facility Requested/System constraints
09/29/16 06:10	0.0	18.10	09/29/16 07:47	0	*	KWF	Facility Requested/System constraints
09/29/16 06:24	0.0	31.10	09/29/16 17:50	0	*	Mauka	Facility Requested/System constraints
09/29/16 06:24	0.0	5.30	09/29/16 07:52	0	*	Makai	Facility Requested/System constraints
09/29/16 17:15	0.0	24.30	09/29/16 17:48	0	*	KWF	Facility Requested/System constraints
09/29/16 17:16	0.0	4.30	09/29/16 17:50	0	*	Makai	Facility Requested/System constraints
09/30/16 06:26	0.0	23.00	09/30/16 07:32	0	*	KWF	Facility Requested/System constraints
09/30/16 06:36	0.0	15.00	09/30/16 17:48	0	*	Mauka	Facility Requested/System constraints
09/30/16 06:35	0.0	7.60	09/30/16 07:34	0	*	Makai	Facility Requested/System constraints
09/30/16 17:31	0.0	18.70	09/30/16 17:45	0	*	KWF	Facility Requested/System constraints
09/30/16 17:35	0.0	12.30	09/30/16 17:47	0	*	Makai	Facility Requested/System constraints

KLS2 = Kalaeloa Solar 2 PV Farm  
KREP = Kalaeloa Renewable Energy Park  
KWF = Kahuku Wind Farm  
Makai = Kawaiiloa Makai Wind Farm  
Mauka = Kawaiiloa Mauka Wind Farm

(1) The estimated MWh of energy curtailed during the event is supplied by Kahuku Wind Farm and/or Kawaiiloa Wind Farm, and HECO does not make any representations as to its accuracy.

\* Data has not been provided by IPP.



Maui Curtailment Report

September 2016

Start Date and Time	Duration	IPP Curtailed	Estimated Curtailed MWH	Peak MW Curtailed	Reasons for Curtailment
9/1/2016 9:22	0:01	KWP/II	0.002	8.732	Oversupply
9/1/2016 9:24	0:05	KWP/II	0.232	10.229	Oversupply
9/1/2016 9:31	0:01	KWP/II	0.022	8.732	Oversupply
9/1/2016 11:57	0:17	KWP/II	1.400	16.217	Oversupply
9/1/2016 22:34	0:02	KWP/II	0.016	14.720	Oversupply
9/2/2016 0:28	0:56	KWP/II	2.911	16.217	Oversupply
9/2/2016 1:35	3:40	KWP/II	37.447	16.217	Oversupply
9/2/2016 3:16	1:52	AWE	7.716	21.000	Oversupply
9/2/2016 5:17	0:48	KWP/II	4.096	16.217	Oversupply
9/2/2016 7:32	1:35	KWP/II	9.192	16.217	Oversupply
9/2/2016 9:09	4:08	KWP/II	60.830	16.217	Oversupply
9/2/2016 10:03	0:03	AWE	0.008	21.000	Oversupply
9/2/2016 10:09	3:01	AWE	11.713	21.000	Oversupply
9/2/2016 13:13	0:01	AWE	0.001	21.000	Oversupply
9/2/2016 13:19	0:34	KWP/II	4.933	16.214	Oversupply
9/2/2016 13:56	0:18	KWP/II	0.867	16.203	Oversupply
9/3/2016 2:01	0:05	KWP/II	0.080	16.188	Oversupply
9/3/2016 2:10	0:01	KWP/II	0.001	16.213	Oversupply
9/3/2016 2:33	0:07	KWP/II	0.126	16.217	Oversupply
9/3/2016 2:50	0:08	KWP/II	0.051	16.177	Oversupply
9/3/2016 3:06	1:56	KWP/II	4.965	16.217	Oversupply
9/3/2016 16:53	0:01	KWP	0.000	0.001	Oversupply
9/5/2016 0:08	0:14	KWP/II	1.042	6.274	Oversupply
9/5/2016 0:24	0:10	KWP/II	0.585	6.003	Oversupply
9/5/2016 0:26	0:04	AWE	0.043	21.000	Oversupply
9/5/2016 0:55	0:24	KWP/II	1.802	9.785	Oversupply
9/5/2016 0:56	0:19	AWE	1.142	21.000	Oversupply
9/5/2016 1:22	0:14	KWP/II	1.591	9.603	Oversupply
9/5/2016 1:23	0:07	AWE	0.336	20.737	Oversupply
9/5/2016 1:31	0:01	AWE	0.002	16.120	Oversupply
9/5/2016 1:39	0:18	KWP/II	2.058	12.317	Oversupply
9/5/2016 3:25	1:43	KWP/II	27.619	19.134	Oversupply
9/5/2016 3:29	1:02	AWE	5.514	20.237	Oversupply
9/5/2016 4:37	0:12	AWE	0.648	20.980	Oversupply
9/5/2016 4:58	0:03	AWE	0.059	17.137	Oversupply
9/5/2016 5:09	1:05	KWP/II	17.913	19.139	Oversupply
9/5/2016 6:15	0:01	KWP/II	0.029	14.319	Oversupply
9/5/2016 6:19	0:59	KWP/II	3.939	19.201	Oversupply
9/5/2016 7:23	0:08	KWP/II	0.178	19.206	Oversupply
9/5/2016 7:32	0:16	KWP/II	0.675	19.207	Oversupply
9/5/2016 8:49	0:06	KWP/II	0.141	17.884	Oversupply
9/5/2016 8:56	0:01	KWP/II	0.048	18.849	Oversupply
9/5/2016 8:58	0:12	KWP/II	0.746	18.989	Oversupply
9/5/2016 9:12	3:11	KWP/II	45.553	19.176	Oversupply
9/5/2016 10:46	0:28	AWE	1.248	21.000	Oversupply
9/5/2016 11:51	0:26	AWE	1.129	21.000	Oversupply
9/5/2016 12:11	0:09	KWP	0.098	19.247	System constraint
9/5/2016 12:18	0:01	AWE	0.001	21.000	Oversupply
9/5/2016 12:25	0:02	KWP	0.038	19.303	System constraint
9/5/2016 12:25	0:13	KWP/II	1.684	15.250	Oversupply
9/5/2016 12:39	0:01	KWP/II	0.037	13.971	Oversupply
9/5/2016 12:41	0:30	KWP/II	4.844	17.137	Oversupply
9/5/2016 12:42	0:04	AWE	0.088	20.213	Oversupply
9/5/2016 13:09	0:04	KWP	0.072	15.416	System constraint
9/5/2016 13:14	1:35	KWP	7.755	21.891	System constraint
9/5/2016 13:14	2:33	KWP/II	26.409	19.196	Oversupply
9/5/2016 13:29	0:01	AWE	0.004	20.957	Oversupply
9/5/2016 13:40	0:02	AWE	0.014	21.000	Oversupply
9/5/2016 13:57	0:01	AWE	0.000	20.967	Oversupply
9/5/2016 23:15	0:05	KWP/II	0.162	18.625	Oversupply
9/6/2016 0:23	0:01	KWP/II	0.017	11.172	Oversupply
9/6/2016 0:35	0:08	KWP/II	0.200	7.815	Oversupply
9/6/2016 1:02	0:03	KWP/II	0.056	16.002	Oversupply
9/6/2016 2:42	0:53	KWP/II	8.765	17.333	Oversupply
9/6/2016 3:10	0:06	AWE	0.181	21.000	Oversupply
9/6/2016 3:36	0:31	KWP/II	6.730	17.548	Oversupply
9/6/2016 4:08	1:18	KWP/II	12.111	19.018	Oversupply
9/6/2016 5:27	0:10	KWP/II	0.356	18.926	Oversupply
9/6/2016 5:39	0:01	KWP/II	0.007	18.451	Oversupply
9/6/2016 5:57	0:01	KWP/II	0.006	18.045	Oversupply
9/6/2016 7:50	0:01	KWP/II	0.025	18.619	Oversupply
9/6/2016 7:52	0:01	KWP/II	0.008	18.560	Oversupply
9/6/2016 8:00	0:01	KWP/II	0.012	17.573	Oversupply
9/6/2016 8:11	0:01	KWP/II	0.010	19.154	Oversupply
9/6/2016 8:21	0:03	KWP/II	0.052	19.096	Oversupply
9/6/2016 8:28	0:01	KWP/II	0.022	19.016	Oversupply
9/6/2016 8:32	0:01	KWP/II	0.033	18.923	Oversupply
9/6/2016 9:35	0:02	KWP/II	0.027	18.926	Oversupply
9/6/2016 9:39	0:03	KWP/II	0.068	18.490	Oversupply
9/6/2016 9:43	0:55	KWP/II	4.414	18.932	Oversupply
9/6/2016 10:37	0:01	AWE	0.000	21.000	Oversupply
9/7/2016 0:04	0:02	KWP/II	0.037	5.495	Oversupply
9/7/2016 0:33	0:22	KWP/II	1.270	13.033	Oversupply
9/7/2016 1:00	0:30	KWP/II	3.079	9.859	Oversupply
9/7/2016 1:08	0:06	AWE	0.251	17.210	Oversupply
9/7/2016 1:18	0:07	AWE	0.205	18.720	Oversupply
9/7/2016 1:49	0:03	KWP/II	0.028	4.711	Oversupply
9/7/2016 1:57	1:01	KWP/II	6.887	13.541	Oversupply
9/7/2016 2:20	0:09	AWE	0.169	14.240	Oversupply
9/7/2016 2:33	0:03	AWE	0.068	13.243	Oversupply
9/7/2016 2:37	0:16	AWE	0.379	17.403	Oversupply
9/7/2016 3:00	0:02	KWP/II	0.019	8.952	Oversupply
9/7/2016 3:23	0:35	KWP/II	1.333	11.985	Oversupply
9/7/2016 4:07	0:26	KWP/II	3.035	10.583	Oversupply
9/7/2016 4:14	0:13	AWE	0.396	15.747	Oversupply
9/7/2016 4:34	0:51	KWP/II	7.685	16.196	Oversupply
9/7/2016 5:31	0:01	KWP/II	0.016	12.642	Oversupply
9/7/2016 5:33	0:02	KWP/II	0.016	12.386	Oversupply
9/7/2016 5:38	0:04	KWP/II	0.089	10.695	Oversupply
9/7/2016 6:54	0:01	KWP/II	0.010	17.342	Oversupply
9/7/2016 6:58	0:12	KWP/II	0.235	17.638	Oversupply
9/7/2016 7:11	0:57	KWP/II	5.299	17.646	Oversupply
9/7/2016 8:40	0:04	KWP/II	0.272	16.952	Oversupply
9/7/2016 8:45	2:31	KWP/II	32.812	19.149	Oversupply
9/7/2016 9:10	0:01	AWE	0.001	21.000	Oversupply
9/7/2016 10:33	0:25	AWE	0.371	21.000	Oversupply
9/7/2016 10:59	0:04	AWE	0.013	21.000	Oversupply
9/7/2016 11:08	0:01	AWE	0.001	21.000	Oversupply



Maui Curtailment Report

September 2016

Start Date and Time	Duration	IPP Curtailed	Estimated Curtailed MWH	Peak MW Curtailed	Reasons for Curtailment
9/7/2016 11:17	0:54	KWPII	13.621	18.864	Oversupply
9/7/2016 11:31	0:10	AWE	0.268	21.000	Oversupply
9/7/2016 11:56	0:02	AWE	0.019	21.000	Oversupply
9/7/2016 12:01	0:05	AWE	0.067	21.000	Oversupply
9/7/2016 12:12	0:24	KWPII	3.865	15.750	Oversupply
9/7/2016 12:38	2:49	KWPII	19.914	19.195	Oversupply
9/7/2016 22:46	0:06	KWPII	0.055	19.202	Oversupply
9/7/2016 22:53	0:02	KWPII	0.019	19.201	Oversupply
9/7/2016 23:04	1:40	KWPII	18.901	19.193	Oversupply
9/8/2016 0:02	0:36	AWE	0.959	21.000	Oversupply
9/8/2016 0:45	1:20	KWPII	12.783	18.270	Oversupply
9/8/2016 2:09	3:37	KWPII	46.154	19.042	Oversupply
9/8/2016 2:16	0:04	AWE	0.066	17.427	Oversupply
9/8/2016 2:24	0:31	AWE	1.682	16.940	Oversupply
9/8/2016 2:58	1:18	AWE	7.215	20.493	Oversupply
9/8/2016 4:17	0:13	AWE	0.391	20.790	Oversupply
9/8/2016 4:31	0:08	AWE	0.180	21.000	Oversupply
9/8/2016 7:18	0:47	KWPII	2.184	20.708	Oversupply
9/8/2016 8:07	0:01	KWPII	0.002	20.696	Oversupply
9/8/2016 8:10	0:03	KWPII	0.010	20.700	Oversupply
9/8/2016 8:17	4:15	KWPII	62.838	20.708	Oversupply
9/8/2016 10:51	0:05	AWE	0.094	21.000	Oversupply
9/8/2016 11:11	0:11	AWE	0.219	21.000	Oversupply
9/8/2016 12:35	0:57	KWPII	8.090	20.355	Oversupply
9/8/2016 13:33	0:04	KWPII	0.166	18.993	Oversupply
9/8/2016 13:40	0:01	KWPII	0.003	18.739	Oversupply
9/8/2016 13:45	1:42	KWPII	7.272	20.667	Oversupply
9/8/2016 22:10	0:03	KWPII	0.070	20.683	Oversupply
9/8/2016 22:34	0:07	KWPII	0.155	20.691	Oversupply
9/8/2016 23:05	0:44	KWPII	3.594	20.708	Oversupply
9/8/2016 23:52	1:37	KWPII	16.255	20.704	Oversupply
9/9/2016 1:17	0:07	AWE	0.219	17.513	Oversupply
9/9/2016 1:30	4:20	KWPII	70.650	20.606	Oversupply
9/9/2016 1:40	0:14	AWE	0.450	16.113	Oversupply
9/9/2016 2:15	2:04	AWE	7.214	20.580	Oversupply
9/9/2016 5:52	0:13	KWPII	0.786	20.636	Oversupply
9/9/2016 6:11	0:08	KWPII	0.150	20.632	Oversupply
9/9/2016 7:32	0:02	KWPII	0.023	20.460	Oversupply
9/9/2016 7:37	0:04	KWPII	0.048	20.471	Oversupply
9/9/2016 8:17	0:42	KWPII	7.140	20.669	Oversupply
9/9/2016 8:48	0:04	AWE	0.155	20.813	Oversupply
9/9/2016 8:54	0:01	AWE	0.021	20.493	Oversupply
9/9/2016 9:01	0:01	KWPII	0.023	17.893	Oversupply
9/9/2016 9:05	0:36	KWPII	8.443	18.510	Oversupply
9/9/2016 9:15	0:18	AWE	0.606	20.677	Oversupply
9/9/2016 9:35	0:01	AWE	0.001	20.070	Oversupply
9/9/2016 9:43	0:07	KWPII	0.491	18.488	Oversupply
9/9/2016 9:53	0:08	KWPII	0.188	19.816	Oversupply
9/9/2016 10:04	0:01	KWPII	0.020	19.520	Oversupply
9/9/2016 10:17	0:33	KWPII	4.924	20.186	Oversupply
9/9/2016 11:17	0:21	KWPII	1.873	20.477	Oversupply
9/9/2016 11:39	0:01	KWPII	0.009	18.658	Oversupply
9/9/2016 11:50	0:01	KWPII	0.023	17.111	Oversupply
9/9/2016 11:52	0:05	KWPII	0.179	16.412	Oversupply
9/9/2016 12:36	0:01	KWPII	0.018	15.581	Oversupply
9/9/2016 12:40	0:15	KWPII	0.477	19.201	Oversupply
9/9/2016 14:46	0:03	KWPII	0.075	17.382	Oversupply
9/9/2016 15:41	0:55	KWPII	5.442	20.694	Oversupply
9/10/2016 0:05	0:13	KWPII	0.607	20.596	Oversupply
9/10/2016 0:34	0:37	KWPII	3.443	20.601	Oversupply
9/10/2016 1:26	0:01	KWPII	0.025	15.918	Oversupply
9/10/2016 1:28	3:24	KWPII	30.747	20.670	Oversupply
9/10/2016 5:11	0:12	KWPII	0.736	20.314	Oversupply
9/10/2016 6:30	0:01	KWPII	0.001	20.133	Oversupply
9/10/2016 13:55	0:05	KWPII	0.111	5.860	Oversupply
9/10/2016 14:40	0:11	KWPII	1.604	15.395	Oversupply
9/10/2016 14:41	0:01	AWE	0.014	20.687	Oversupply
9/11/2016 3:08	0:01	AWE	0.000	0.003	Oversupply
9/11/2016 13:29	0:01	KWP	0.000	0.002	Oversupply
9/15/2016 1:23	0:13	AWE	0.518	12.187	Oversupply
9/15/2016 2:11	0:53	AWE	5.986	20.463	Oversupply
9/15/2016 4:19	0:27	AWE	1.096	20.690	Oversupply
9/15/2016 5:28	0:15	AWE	0.396	20.600	Oversupply
9/15/2016 5:46	0:03	AWE	0.012	20.247	Oversupply
9/15/2016 5:50	0:06	AWE	0.050	20.043	Oversupply
9/15/2016 5:57	0:01	AWE	0.000	20.003	Oversupply
9/15/2016 6:00	0:02	AWE	0.005	20.287	Oversupply
9/15/2016 9:10	1:17	AWE	3.962	20.647	Oversupply and system constraint
9/15/2016 11:52	0:20	AWE	0.585	20.373	Oversupply
9/15/2016 22:11	0:05	KWPII	0.116	18.969	Oversupply
9/15/2016 22:34	6:33	KWPII	98.582	19.211	Oversupply
9/16/2016 0:43	0:01	AWE	0.001	21.000	Oversupply
9/16/2016 0:47	0:02	AWE	0.004	21.000	Oversupply
9/16/2016 0:51	1:09	AWE	4.257	21.000	Oversupply
9/16/2016 2:01	2:59	AWE	25.839	21.000	Oversupply
9/16/2016 5:09	0:16	KWPII	2.474	17.495	Oversupply
9/16/2016 5:26	0:12	KWPII	0.871	17.968	Oversupply
9/16/2016 9:37	0:29	KWPII	7.011	18.934	Oversupply
9/16/2016 9:42	0:21	AWE	0.964	21.000	Oversupply
9/16/2016 10:15	0:15	KWPII	2.313	19.222	Oversupply
9/16/2016 12:34	0:08	KWPII	0.103	6.832	Oversupply
9/17/2016 9:11	0:05	KWPII	0.523	14.465	Oversupply
9/17/2016 9:36	0:27	AWE	1.337	21.000	Oversupply
9/17/2016 10:10	0:04	KWPII	0.184	17.286	Oversupply
9/17/2016 17:10	0:12	AWE	0.355	21.000	Oversupply
9/17/2016 22:55	2:27	KWPII	32.166	20.708	Oversupply
9/18/2016 0:48	0:01	AWE	0.001	21.000	Oversupply
9/18/2016 0:50	0:02	AWE	0.004	21.000	Oversupply
9/18/2016 0:53	0:03	AWE	0.010	21.000	Oversupply
9/18/2016 0:57	0:05	AWE	0.021	21.000	Oversupply
9/18/2016 1:09	0:04	AWE	0.066	21.000	Oversupply
9/18/2016 1:14	0:03	AWE	0.057	20.833	Oversupply
9/18/2016 1:24	12:00	KWPII	199.410	20.708	Oversupply
9/18/2016 1:27	0:03	AWE	0.101	20.530	Oversupply
9/18/2016 1:31	0:22	AWE	0.544	21.000	Oversupply
9/18/2016 2:02	0:20	AWE	0.524	21.000	Oversupply
9/18/2016 2:27	0:22	AWE	1.196	21.000	Oversupply
9/18/2016 2:51	1:24	AWE	5.470	21.000	Oversupply



Maui Curtailment Report

September 2016

Start Date and Time	Duration	IPP Curtailed	Estimated Curtailed MWH	Peak MW Curtailed	Reasons for Curtailment
9/18/2016 4:19	0:06	AWE	0.224	21.000	Oversupply
9/18/2016 4:26	0:01	AWE	0.001	18.023	Oversupply
9/18/2016 4:34	0:04	AWE	0.101	20.820	Oversupply
9/18/2016 4:40	0:04	AWE	0.046	20.077	Oversupply
9/18/2016 4:45	0:02	AWE	0.029	19.717	Oversupply
9/18/2016 4:52	0:01	AWE	0.017	20.510	Oversupply
9/18/2016 4:55	0:01	AWE	0.001	20.357	Oversupply
9/18/2016 8:10	0:03	AWE	0.020	21.000	Oversupply
9/18/2016 8:14	1:06	AWE	2.388	21.000	Oversupply
9/18/2016 9:22	0:01	AWE	0.001	21.000	Oversupply
9/18/2016 9:27	0:02	AWE	0.003	21.000	Oversupply
9/18/2016 9:30	0:03	AWE	0.007	21.000	Oversupply
9/18/2016 9:34	3:40	AWE	21.858	21.000	Oversupply
9/18/2016 13:15	0:01	AWE	0.002	21.000	Oversupply
9/18/2016 13:26	1:11	KWP/II	15.377	20.708	Oversupply
9/18/2016 14:38	0:03	KWP/II	0.005	20.705	Oversupply
9/18/2016 22:23	0:03	KWP/II	0.038	20.708	Oversupply
9/18/2016 22:48	0:06	KWP/II	0.075	20.703	Oversupply
9/18/2016 22:58	0:06	KWP/II	0.068	20.708	Oversupply
9/18/2016 23:39	2:02	KWP/II	18.391	20.708	Oversupply
9/19/2016 1:29	0:04	AWE	0.010	21.000	Oversupply
9/19/2016 1:43	1:34	KWP/II	26.345	20.706	Oversupply
9/19/2016 2:18	0:03	AWE	0.052	17.723	Oversupply
9/19/2016 2:22	0:04	AWE	0.095	18.260	Oversupply
9/19/2016 2:27	0:06	AWE	0.120	18.600	Oversupply
9/19/2016 2:44	0:03	AWE	0.086	18.937	Oversupply
9/19/2016 3:05	0:04	AWE	0.034	17.803	Oversupply
9/19/2016 3:10	0:01	AWE	0.024	18.013	Oversupply
9/19/2016 3:20	0:20	KWP/II	6.021	20.708	Oversupply
9/19/2016 3:28	0:07	AWE	0.427	20.447	Oversupply
9/19/2016 3:42	0:26	KWP/II	2.777	20.708	Oversupply
9/19/2016 4:12	0:04	KWP/II	0.050	20.701	Oversupply
9/19/2016 4:18	0:06	KWP/II	0.089	20.687	Oversupply
9/19/2016 4:27	0:07	KWP/II	0.065	20.693	Oversupply
9/19/2016 4:44	0:02	KWP/II	0.004	20.701	Oversupply
9/19/2016 4:49	0:01	KWP/II	0.001	20.699	Oversupply
9/19/2016 8:23	0:01	AWE	0.000	0.010	Oversupply
9/19/2016 10:07	0:14	KWP/II	0.458	20.705	Oversupply
9/19/2016 10:55	0:01	KWP/II	0.001	20.705	Oversupply
9/19/2016 12:43	0:17	KWP/II	0.365	20.705	Oversupply
9/19/2016 13:30	0:06	KWP/II	0.134	20.705	Oversupply
9/19/2016 13:38	0:06	KWP/II	0.084	20.705	Oversupply
9/19/2016 13:45	0:11	KWP/II	0.183	20.705	Oversupply
9/19/2016 23:42	0:17	KWP/II	0.187	20.705	Oversupply
9/20/2016 0:16	0:08	KWP/II	0.265	20.705	Oversupply
9/20/2016 0:29	0:40	KWP/II	2.256	20.705	Oversupply
9/20/2016 1:14	0:11	KWP/II	0.217	20.705	Oversupply
9/20/2016 1:30	1:44	KWP/II	10.098	20.705	Oversupply
9/20/2016 9:27	0:01	KWP/II	0.001	20.705	Oversupply
9/20/2016 9:30	0:06	KWP/II	0.074	20.705	Oversupply
9/20/2016 9:38	0:02	KWP/II	0.008	20.705	Oversupply
9/20/2016 9:44	0:01	KWP/II	0.001	20.705	Oversupply
9/20/2016 9:52	0:06	KWP/II	0.085	20.705	Oversupply
9/20/2016 10:36	0:05	KWP/II	0.034	20.705	Oversupply
9/20/2016 12:23	0:10	KWP/II	0.535	20.705	Oversupply
9/20/2016 12:35	0:13	KWP/II	0.438	20.705	Oversupply
9/20/2016 13:15	0:02	KWP/II	0.004	20.705	Oversupply
9/20/2016 13:35	0:13	KWP/II	0.268	20.705	Oversupply
9/21/2016 8:58	0:06	KWP/II	0.242	20.705	Oversupply
9/22/2016 8:54	0:34	KWP/II	1.496	20.705	Oversupply
9/22/2016 22:03	0:52	KWP/II	2.891	20.705	Oversupply
9/22/2016 23:00	0:56	KWP/II	2.512	20.705	Oversupply
9/23/2016 3:39	2:26	KWP/II	35.390	20.705	Oversupply
9/23/2016 7:40	0:06	KWP/II	0.108	20.705	Oversupply
9/23/2016 8:39	1:20	KWP/II	17.227	20.705	Oversupply
9/23/2016 13:02	0:02	KWP/II	0.009	20.705	Oversupply
9/23/2016 13:24	0:24	KWP/II	2.366	20.705	Oversupply
9/23/2016 13:49	1:10	KWP/II	8.693	20.705	Oversupply
9/23/2016 15:22	0:03	KWP/II	0.021	20.705	Oversupply
9/24/2016 5:01	0:01	KWP/II	0.000	20.705	Oversupply
9/24/2016 13:08	1:46	KWP/II	5.408	20.705	Oversupply
9/24/2016 14:55	0:05	KWP/II	0.028	20.705	Oversupply
9/24/2016 15:05	0:34	KWP/II	0.966	20.705	Oversupply
9/24/2016 22:09	0:02	KWP/II	0.030	20.705	Oversupply
9/25/2016 1:06	0:02	KWP/II	0.014	20.705	Oversupply
9/25/2016 1:32	0:02	KWP/II	0.018	20.705	Oversupply
9/25/2016 1:35	0:01	KWP/II	0.015	20.705	Oversupply
9/25/2016 1:38	0:05	KWP/II	0.137	20.705	Oversupply
9/25/2016 1:54	0:06	KWP/II	0.769	20.705	Oversupply
9/25/2016 2:07	0:07	KWP/II	0.705	20.705	Oversupply
9/25/2016 2:19	0:01	KWP/II	0.006	20.705	Oversupply
9/25/2016 2:28	3:34	KWP/II	33.729	20.705	Oversupply
9/25/2016 8:58	4:25	KWP/II	49.949	20.705	Oversupply
9/25/2016 13:28	0:07	KWP/II	0.334	20.705	Oversupply
9/25/2016 13:43	0:17	KWP/II	1.187	20.705	Oversupply
9/25/2016 14:56	0:10	KWP/II	0.348	20.705	Oversupply
9/26/2016 1:47	0:02	KWP/II	0.006	20.705	Oversupply
9/26/2016 1:50	3:13	KWP/II	16.740	20.705	Oversupply
9/26/2016 4:07	0:01	AWE	0.020	18.563	Oversupply
9/26/2016 5:06	0:03	KWP/II	0.029	20.705	Oversupply
9/26/2016 5:43	0:01	KWP/II	0.002	20.705	Oversupply
9/26/2016 5:53	0:04	KWP/II	0.044	20.705	Oversupply
9/26/2016 7:32	0:15	KWP/II	0.629	20.705	Oversupply
9/26/2016 8:22	0:56	KWP/II	2.970	20.705	Oversupply
9/26/2016 9:19	0:01	KWP/II	0.001	20.705	Oversupply
9/26/2016 9:38	0:16	KWP/II	0.329	20.705	Oversupply
9/26/2016 10:00	0:07	KWP/II	0.052	20.705	Oversupply
9/26/2016 10:34	3:14	KWP/II	20.360	20.705	Oversupply
9/26/2016 13:55	0:01	KWP/II	0.002	20.705	Oversupply
9/26/2016 14:04	0:48	KWP/II	1.597	20.705	Oversupply
9/26/2016 23:00	0:14	KWP/II	0.533	20.705	Oversupply
9/26/2016 23:24	0:16	KWP/II	0.868	20.705	Oversupply
9/26/2016 23:53	2:59	KWP/II	18.474	20.705	Oversupply
9/27/2016 2:53	0:27	KWP/II	0.850	20.705	Oversupply
9/27/2016 3:22	0:02	KWP/II	0.013	20.705	Oversupply
9/27/2016 3:27	0:01	KWP/II	0.000	20.705	Oversupply
9/27/2016 7:23	0:01	KWP/II	0.000	20.705	Oversupply
9/27/2016 7:58	0:08	KWP/II	0.403	20.705	Oversupply





**Maui Curtailment Report**

September 2016

Start Date and Time	Duration	IPP Curtailed	Estimated Curtailed MWH	Peak MW Curtailed	Reasons for Curtailment
9/27/2016 8:18	0:11	KWP/II	0.191	20.705	Oversupply
9/27/2016 8:34	0:13	KWP/II	0.625	20.705	Oversupply
9/27/2016 9:07	0:57	KWP/II	4.174	20.705	Oversupply
9/27/2016 10:05	0:04	KWP/II	0.067	20.705	Oversupply
9/27/2016 10:10	0:03	KWP/II	0.020	20.705	Oversupply
9/27/2016 10:18	0:01	KWP/II	0.007	20.705	Oversupply
9/27/2016 10:21	0:04	KWP/II	0.041	20.705	Oversupply
9/27/2016 10:26	0:11	KWP/II	0.164	20.705	Oversupply
9/27/2016 10:40	1:27	KWP/II	8.774	20.705	Oversupply
9/27/2016 12:48	0:30	KWP/II	2.066	20.705	Oversupply
9/27/2016 21:41	0:01	KWP/II	0.000	20.705	Oversupply
9/27/2016 22:30	0:08	KWP/II	0.162	20.705	Oversupply
9/27/2016 23:12	0:05	KWP/II	0.065	20.705	Oversupply
9/27/2016 23:53	0:46	KWP/II	2.865	20.705	Oversupply
9/28/2016 0:42	3:21	KWP/II	39.996	20.705	Oversupply
9/28/2016 4:04	0:01	KWP/II	0.002	20.705	Oversupply
9/28/2016 4:32	0:02	KWP/II	0.019	20.705	Oversupply
9/28/2016 4:36	0:02	KWP/II	0.034	20.705	Oversupply
9/28/2016 4:41	0:01	KWP/II	0.010	20.705	Oversupply
9/28/2016 4:43	0:08	KWP/II	0.090	20.705	Oversupply
9/28/2016 5:10	0:17	KWP/II	0.682	20.705	Oversupply
9/28/2016 5:30	0:01	KWP/II	0.000	20.705	Oversupply
9/28/2016 6:58	0:01	KWP/II	0.001	20.705	Oversupply
9/28/2016 7:17	0:09	KWP/II	0.302	20.705	Oversupply
9/28/2016 7:27	0:13	KWP/II	0.614	20.705	Oversupply
9/28/2016 7:43	0:02	KWP/II	0.009	20.705	Oversupply
9/28/2016 7:48	0:04	KWP/II	0.083	20.705	Oversupply
9/28/2016 7:53	0:01	KWP/II	0.001	20.705	Oversupply
9/28/2016 7:55	0:04	KWP/II	0.050	20.705	Oversupply
9/28/2016 13:16	0:01	KWP/II	0.204	20.705	Oversupply
9/28/2016 15:19	0:23	KWP/II	1.402	20.705	Oversupply
9/28/2016 17:31	0:01	KWP/II	0.000	20.705	Oversupply
9/28/2016 17:54	0:14	KWP/II	0.379	20.705	Oversupply
9/28/2016 22:26	0:26	KWP/II	1.448	20.705	Oversupply
9/28/2016 22:54	0:01	KWP/II	0.001	20.705	Oversupply
9/28/2016 22:56	0:02	KWP/II	0.013	20.705	Oversupply
9/28/2016 22:59	7:14	KWP/II	108.489	20.705	Oversupply
9/29/2016 0:50	0:28	AWE	0.959	21.000	Oversupply
9/29/2016 1:41	0:05	AWE	0.199	19.340	Oversupply
9/29/2016 1:49	0:12	AWE	0.369	18.017	Oversupply
9/29/2016 2:13	0:07	AWE	0.097	14.563	Oversupply
9/29/2016 2:45	0:15	AWE	0.366	14.650	Oversupply
9/29/2016 3:01	0:03	AWE	0.040	12.783	Oversupply
9/29/2016 3:32	0:22	AWE	2.058	21.000	Oversupply
9/29/2016 3:55	0:02	AWE	0.033	12.390	Oversupply
9/29/2016 4:07	0:24	AWE	1.065	17.197	Oversupply
9/29/2016 4:33	0:19	AWE	1.590	21.000	Oversupply
9/29/2016 4:53	0:16	AWE	0.501	21.000	Oversupply
9/29/2016 7:51	0:02	KWP/II	0.006	20.705	Oversupply
9/29/2016 7:58	7:13	KWP/II	107.874	20.705	Oversupply
9/29/2016 10:21	0:25	AWE	0.625	21.000	Oversupply
9/29/2016 10:47	0:03	AWE	0.027	20.423	Oversupply
9/29/2016 10:55	0:01	AWE	0.006	19.537	Oversupply
9/29/2016 10:58	0:03	AWE	0.078	20.087	Oversupply
9/29/2016 11:02	0:02	AWE	0.035	20.527	Oversupply
9/29/2016 11:05	0:01	AWE	0.013	20.813	Oversupply
9/29/2016 11:07	0:03	AWE	0.044	21.000	Oversupply
9/29/2016 11:16	0:01	AWE	0.000	21.000	Oversupply
9/29/2016 11:41	0:02	AWE	0.007	21.000	Oversupply
9/29/2016 11:45	0:01	AWE	0.001	21.000	Oversupply
9/29/2016 11:48	0:01	AWE	0.006	20.993	Oversupply
9/29/2016 11:50	0:02	AWE	0.009	21.000	Oversupply
9/29/2016 12:00	1:49	AWE	5.149	21.000	Oversupply
9/29/2016 20:25	0:09	KWP/II	0.086	20.705	Oversupply
9/29/2016 20:36	0:07	KWP/II	0.046	20.705	Oversupply
9/29/2016 21:46	0:03	KWP/II	0.025	20.705	Oversupply
9/29/2016 21:50	0:01	KWP/II	0.001	20.705	Oversupply
9/29/2016 22:17	0:04	KWP/II	0.009	20.705	Oversupply
9/29/2016 23:08	0:01	KWP/II	0.004	20.705	Oversupply
9/29/2016 23:37	0:03	KWP/II	0.131	20.705	Oversupply
9/29/2016 23:57	0:02	KWP/II	0.172	20.705	Oversupply
9/30/2016 0:00	0:21	KWP/II	2.478	20.705	Oversupply
9/30/2016 0:22	5:28	KWP/II	86.525	20.705	Oversupply
9/30/2016 2:04	0:01	AWE	0.015	15.337	Oversupply
9/30/2016 2:07	0:03	AWE	0.033	14.987	Oversupply
9/30/2016 2:19	0:03	AWE	0.095	16.517	Oversupply
9/30/2016 2:42	0:01	AWE	0.015	12.790	Oversupply
9/30/2016 2:44	0:01	AWE	0.024	13.303	Oversupply
9/30/2016 2:58	0:53	AWE	4.810	20.410	Oversupply
9/30/2016 3:54	0:13	AWE	0.751	17.120	Oversupply
9/30/2016 4:08	0:12	AWE	0.374	16.500	Oversupply
9/30/2016 4:47	0:02	AWE	0.031	17.450	Oversupply
9/30/2016 4:51	0:09	AWE	0.240	20.267	Oversupply
9/30/2016 7:12	0:37	BS250	Data is not available	Data is not available	Oversupply
9/30/2016 7:13	0:36	KWP/II	2.686	20.705	Oversupply
9/30/2016 8:08	6:47	BS250	Data is not available	Data is not available	Oversupply
9/30/2016 8:08	6:48	KWP/II	93.415	20.705	Oversupply
9/30/2016 10:43	0:01	AWE	0.002	21.000	Oversupply
9/30/2016 10:50	0:19	AWE	0.225	21.000	Oversupply
9/30/2016 11:10	0:08	AWE	0.187	21.000	Oversupply
9/30/2016 11:19	0:38	AWE	1.149	21.000	Oversupply
9/30/2016 11:59	0:39	AWE	1.065	21.000	Oversupply
9/30/2016 12:39	0:02	AWE	0.002	21.000	Oversupply
9/30/2016 12:43	0:06	AWE	0.010	21.000	Oversupply
9/30/2016 14:55	1:56	BS250	Data is not available	Data is not available	Oversupply
9/30/2016 22:52	0:05	KWP/II	0.147	20.705	Oversupply
9/30/2016 22:59	1:01	KWP/II	13.933	20.705	Oversupply

Notes:

- Curtailment for Kaheawa Wind Power ("KWP"), Makila Hydroelectric ("MH"), AAAAA Rent-A-Space Maui LTD ("SA"), Bioreal Solar, LLC ("BS"), Auwahi Wind Energy ("AWE"), Kaheawa Wind Power II ("KWP/II") Bioreal Solar 250, LLC ("BS250") may now be controlled by Maui Electric's Automatic Generation Control System ("AGC") or a Maui Electric operator-entered curtailment limit. The AGC curtailment control automatically calculates the amount of Maximum Allowable Variable Generation ("MAVG") that Maui Electric 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 Maui Electric 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 MWH and Peak MW Curtailed are calculated with information provided by AWE, KWP, and KWP/II. Maui Electric does not make any representation as to its accuracy.
- The data to calculate the Estimated Curtailed MWH and Peak MW Curtailed is not provided by SA, BS, BS 250 or MH.
- Curtailment signals sent to SA, BS, or BS250 during nighttime hours are not recorded as curtailment events because no energy generation is possible during that time.
- The curtailment reasons have been modified to oversupply, system constraints, and facility requested, to provide continuity with HPUC Docket No. 2013-0141 Decoupling for HECO companies metrics.
- The Bioreal Solar 250, LLC circuit breaker failed on May 5, 2016. Bioreal Solar 250, LLC plan to replace the circuit breaker and resume production.





September 2016



Lanai Curtailment Report

Start Date and Time	Duration	IPP Curtailed	Estimated MWh Curtailed	Peak MW Curtailed	Reasons for Curtailment
9/19/2016 11:25	0:03	LSR	Data is not available	Data is not available	Oversupply
9/19/2016 11:29	0:27	LSR	Data is not available	Data is not available	Oversupply
9/19/2016 14:45	0:02	LSR	Data is not available	Data is not available	Oversupply
9/19/2016 14:50	0:04	LSR	Data is not available	Data is not available	Oversupply
9/19/2016 15:52	0:01	LSR	Data is not available	Data is not available	Oversupply
9/19/2016 15:59	0:01	LSR	Data is not available	Data is not available	Oversupply
9/19/2016 16:05	0:01	LSR	Data is not available	Data is not available	Oversupply
9/19/2016 16:35	0:26	LSR	Data is not available	Data is not available	Oversupply
9/20/2016 7:43	0:03	LSR	Data is not available	Data is not available	Oversupply
9/20/2016 7:51	0:09	LSR	Data is not available	Data is not available	Oversupply
9/22/2016 9:00	0:03	LSR	Data is not available	Data is not available	Oversupply
9/22/2016 9:07	0:01	LSR	Data is not available	Data is not available	Oversupply
9/29/2016 7:36	0:25	LSR	Data is not available	Data is not available	Oversupply
9/29/2016 8:04	0:01	LSR	Data is not available	Data is not available	Oversupply
9/29/2016 8:06	0:01	LSR	Data is not available	Data is not available	Oversupply
9/29/2016 8:09	0:27	LSR	Data is not available	Data is not available	Oversupply
9/29/2016 8:49	0:14	LSR	Data is not available	Data is not available	Oversupply
9/29/2016 9:04	0:16	LSR	Data is not available	Data is not available	Oversupply

Notes:

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

LSR possible output data is not available. Therefore, Maui Electric assumes LSR is curtailed if the LSR curtailment set point is less than 1,200 kW and LSR's output is within 50 kW of the curtailment set point.

The curtailment reasons have been modified to oversupply, system constraints, and facility requested, to provide continuity with HPUC Docket No. 2013-0141 Decoupling for HECO companies metrics.

The historical Lanai curtailment limit data used to determine the curtailment event starts and durations information was periodically inaccurate due to an off scale SCADA parameter. Therefore, the Miki Basin Diesel Operator Hourly Log data was used to modify the occasionally inaccurate curtailment limit.

Hawai'i Electric Light Company Curtailment Report September 2016

Start Date/Time	MW output prior to start of curtailment	End Date/Time	MW output after curtailment released <sup>1</sup>	IPP	Reason for Curtailment
09/07/16 12:17	0.2 MW	09/07/16 13:07	0.0 MW	TGUH11	Oversupply
09/15/16 08:20	19.9 MW	09/15/16 09:26	19.5 MW	Tawhiri	Facility requested
09/16/16 05:14	19.8 MW	09/16/16 10:23	18.6 MW	Tawhiri	Facility requested
09/16/16 12:31	19.9 MW	09/16/16 17:11	17.7 MW	Tawhiri	Facility requested
09/18/16 15:39	19.9 MW	09/18/16 16:33	17.9 MW	Tawhiri	Facility requested
09/19/16 00:45	19.8 MW	09/19/16 03:50	19.7 MW	Tawhiri	Oversupply

<sup>1</sup> The MW output values are taken soon after curtailment is released by Hawai'i Electric Light and may not reflect their full output depending on ramp rate for the facility. The wind farms generally return immediately to full available levels, whereas PGV and Wailuku may take longer to return to scheduled or full available output levels.

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DEAN NISHINA ACTING EXECUTIVE DIRECTOR DEPARTMENT OF COMMERCE AND CONSUMER AFFAIRS DIVISION OF CONSUMER ADVOCACY P.O. Box 541 Honolulu, HI 96809	2 Copies Via Hand Delivery
GREGG J. KINKLEY, ESQ. DEPARTMENT OF THE ATTORNEY GENERAL 425 Queen Street Honolulu, Hawaii 96813 Counsel for DBEDT	1 Copy Electronically Transmitted
DANIEL W.S. LAWRENCE, ESQ. DEPARTMENT OF THE CORPORATION COUNSEL CITY AND COUNTY OF HONOLULU 530 S. King Street, Room 110 Honolulu, HI 96813 Counsel for the CITY AND COUNTY OF HONOLULU	1 Copy Electronically Transmitted
MOLLY A. STEBBINS, ESQ. WILLIAM V. BRILHANTE, JR., ESQ. DEPARTMENT OF THE CORPORATION COUNSEL COUNTY OF HAWAII 101 Aupuni Street, Suite 325 Hilo, HI 96720 Counsel for the COUNTY OF HAWAII	1 Copy Electronically Transmitted
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DOUGLAS A. CODIGA, ESQ.  
SCHLACK ITO LLLC  
Topa Financial Center  
745 Fort Street, Suite 1500  
Honolulu, HI 96813  
Counsel for BLUE PLANET FOUNDATION

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Electronically Transmitted

ISAAC MORIWAKE, ESQ.  
DAVID HENKIN, ESQ.  
EARTHJUSTICE  
850 Richards Street, Suite 400  
Honolulu, HI 96813-4501  
Counsel for HAWAII SOLAR ENERGY ASSOCIATION

1 Copy  
Electronically Transmitted

RICK REED  
DIRECTOR  
HAWAII SOLAR ENERGY ASSOCIATION  
761 Ahua Street  
Honolulu, HI 96819

1 Copy  
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KENT D. MORIHARA, ESQ.  
KRIS N. NAKAGAWA, ESQ.  
LAUREN M. IMADA-LEE, ESQ.  
TANYA M. FERNANDES, ESQ.  
Mori-hara Lau & Fong LLP  
841 Bishop Street, Suite 400  
Honolulu, Hawaii 96813  
Counsel for KAUAI ISLAND UTILITY COOPERATIVE

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ERIK W. KVAM  
CHIEF EXECUTIVE OFFICER  
ZERO EMISSIONS LEASING LLC  
4188-4 Keanu Street  
Honolulu, HI 96816

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SANDRA-ANN Y.H. WONG, ESQ.  
ATTORNEY AT LAW, A LAW CORPORATION  
1050 Bishop Street, #514  
Honolulu, HI 96813  
Counsel for TAWHIRI POWER LLC

1 Copy  
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RILEY SAITO  
73-1294 Awakea Street  
Kailua-Kona, HI 96740  
For SOLAR ENERGY INDUSTRIES ASSOCIATION

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(Docket No. 2011-0206)

DEAN T. YAMAMOTO, ESQ.  
YAMAMOTO & SETTLE  
700 Bishop Street, Suite 200  
Honolulu, HI 96813  
Counsel for CASTLE & COOKE HOMES HAWAII, INC.,  
CASTLE & COOKE RESORTS, LLC and  
LANAI SUSTAINABILITY RESEARCH, LLC

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MICHAEL J. HOPPER, ESQ.  
DEPUTY CORPORATION COUNSEL  
DEPARTMENT OF THE CORPORATION COUNSEL  
COUNTY OF MAUI  
200 S. High Street  
Wailuku, HI 96793  
Counsel for the COUNTY OF MAUI

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CURTIS SEYMOUR  
SENIOR MANAGER, GOVERNMENT AFFAIRS  
SUN EDISON LLC  
600 Clipper Drive  
Belmont, CA 94002

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MONA W. CLARK, ESQ.  
OFFICE OF THE COUNTY ATTORNEY  
COUNTY OF KAUAI  
4444 Rice Street, Suite 200  
Lihue, HI 96766-1300

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BRADLEY ALBERT  
PRESIDENT  
HAWAII PV COALITION  
P.O. Box 81501  
Haiku, HI 96708

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HILTON H. UNEMORI  
ECM, INC.  
130 N. Market Street  
Wailuku, HI 96793-1716  
For SOUTH MAUI RENEWABLE RESOURCES, LLC

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SKY STANFIELD  
SHUTE, MIHALY & WEINBERGER LLP  
396 Hayes Street  
San Francisco, CA 94102  
For the INTERSTATE RENEWABLE ENERGY COUNCIL

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PETE COOPER  
SOLARCITY CORPORATION  
REGIONAL DIRECTOR, HAWAII  
599 Kahelu Street  
Mililani, HI 96789

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STANLEY ALLEN GRAY, SENIOR DEVELOPER  
Pier 1, Bay 3  
San Francisco, CA 94111  
For MOLOKAI RENEWABLES LLC

1 Copy  
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ALISON SILVERSTEIN  
19213 Luedtke Lane  
Pflugerville, TX 78660

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Palm City, FL 34990

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