



August 23, 2017

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PUBLIC UTILITIES
COMMISSION

The Honorable Chair and Members
of the Hawai'i Public Utilities Commission
Kekuanaoa Building, 1st Floor
465 South King Street
Honolulu, Hawai'i 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 July 2017 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@hawaiianelectric.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

¹ 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 July 31, 2017):

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 July 31, 2017):

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

Hawaiian Electric did not have any contingency reserve activations for the month of July. Maui Electric and Hawai'i Electric Light do not operate with contingency reserve requirements. Therefore, Attachment 3 is not being provided for this reporting period.

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 July. 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 did not have any demand response activations for system events for the month of June. Hawai'i Electric Light currently does not have a 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. Therefore, Attachment 5 is not being provided for this reporting period.

- (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 July 31, 2017):

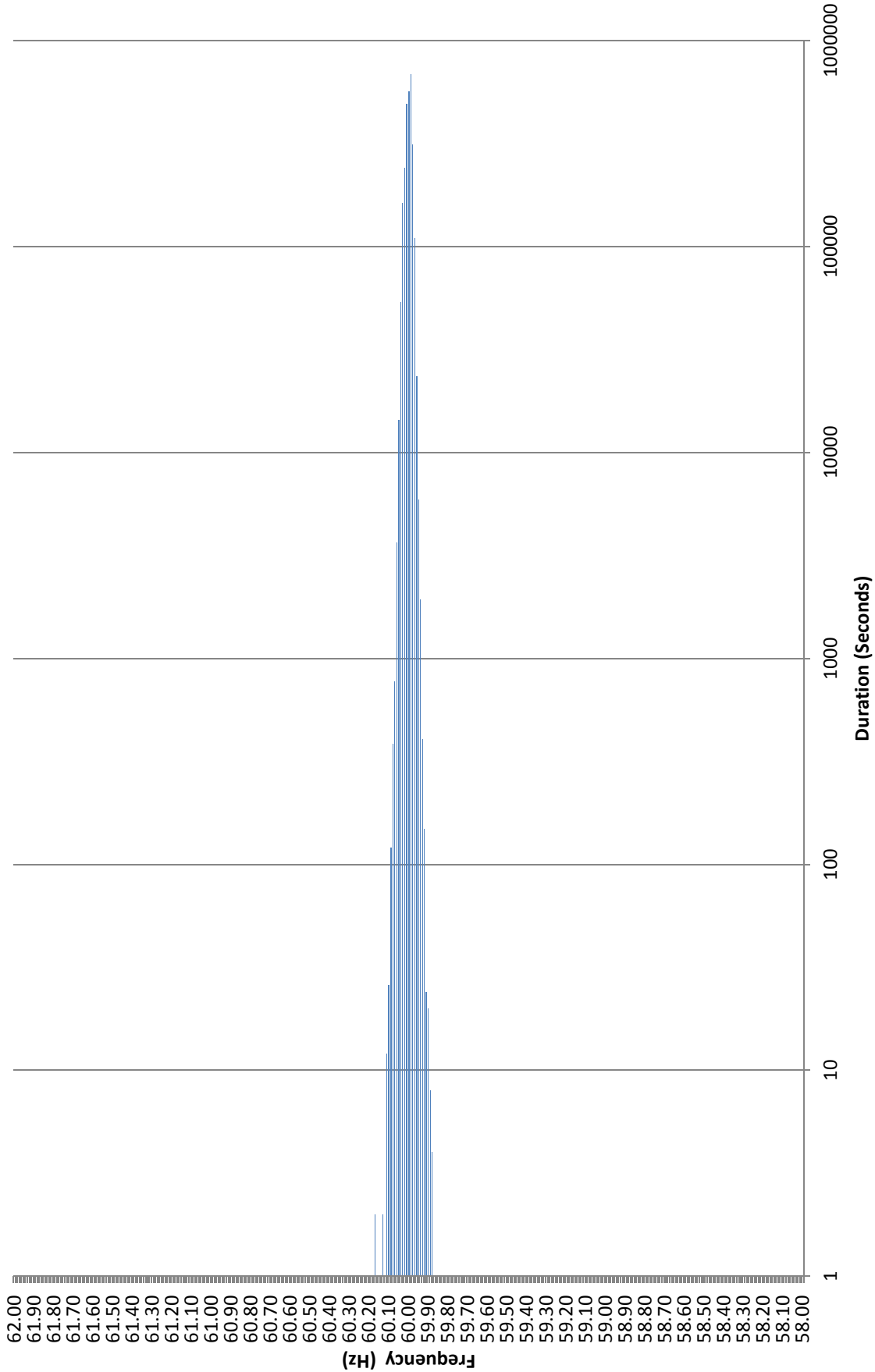
3a) Tabulation of each curtailment event for each resource including the starting date and time, duration, megawatt hours curtailed, peak MW curtailed, and reason for curtailment:

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

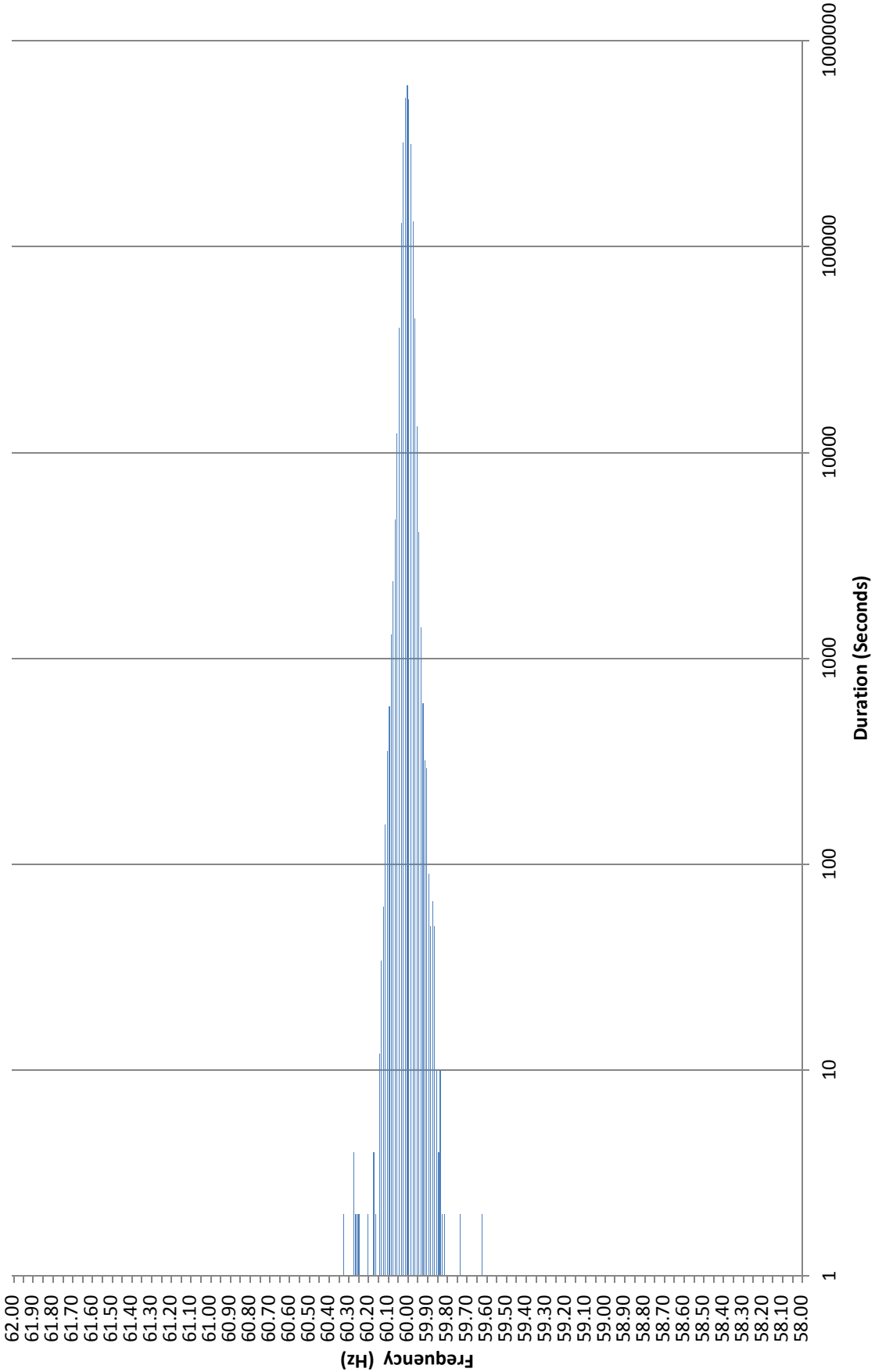
3b) Total MWh of non-dispatchable renewable resources curtailed for the month:

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.

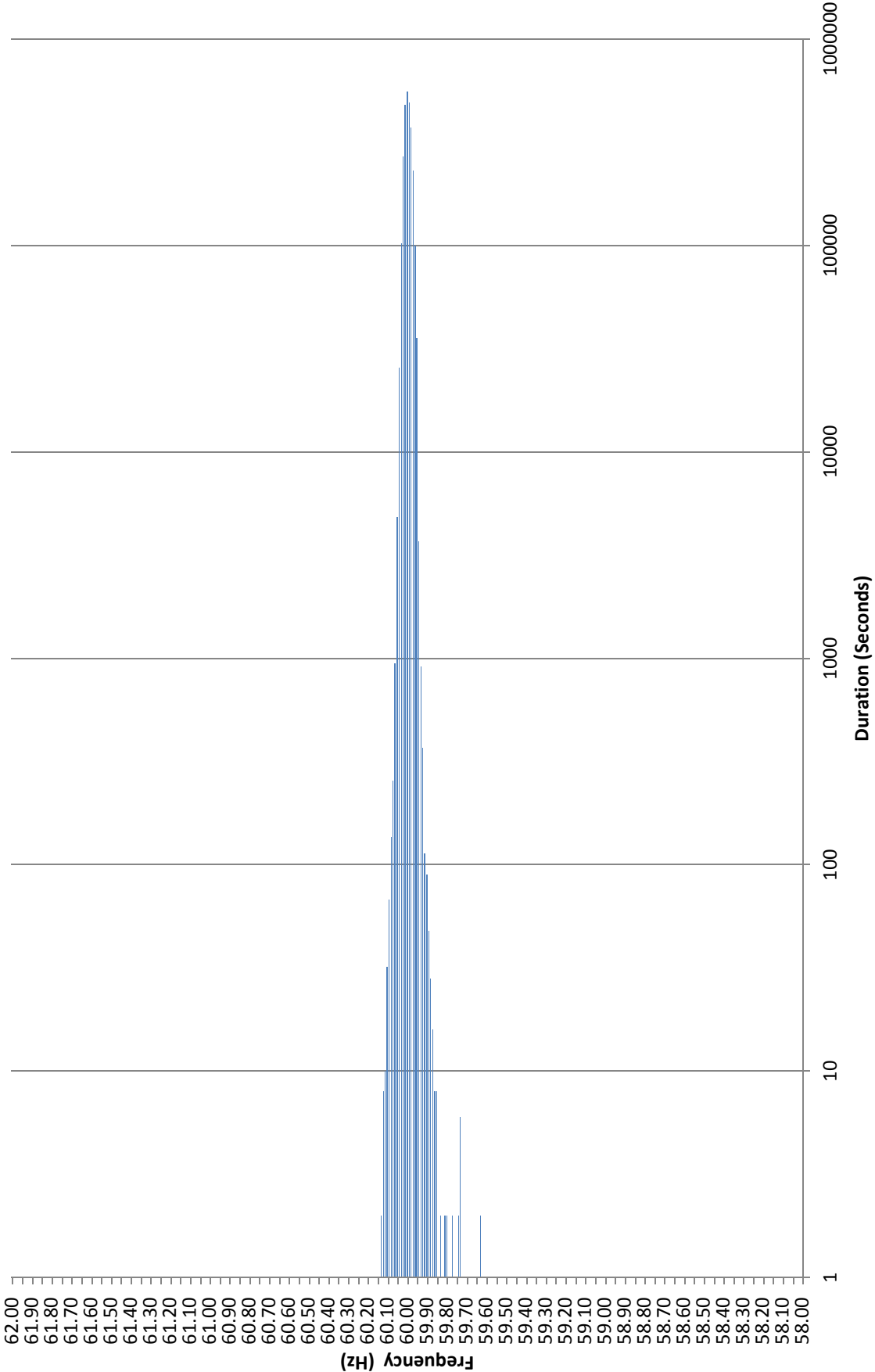
Frequency Distribution Plot - Hawaiian Electric July 2017



Frequency Distribution Plot - Maui Electric July 2017



Frequency Distribution Plot - Hawai'i Electric Light July 2017



Hawaiian Electric Frequency Excursion Statistics July 2017		
Data Rounded to the nearest	<59.95 Hz	>60.05 Hz
Number of Excursions	539	1502
Maximum Duration (sec)	98	120
Maximum Deviation (Hz)	59.876	60.165
Total Duration of Excursions (sec)	4324	8940

Maui Electric Frequency Excursion Statistics July 2017		
	<59.95 Hz	>60.05 Hz
Number of Excursions	3431	2863
Maximum Duration (sec)	162	220
Maximum Deviation (Hz)	59.617	60.319
Total Duration of Excursions (sec)	11844	14052

Hawai'i Electric Light Frequency Excursion Statistics July 2017		
	<59.95 Hz	>60.05 Hz
Number of Excursions	4553	722
Maximum Duration (sec)	86	60
Maximum Deviation (Hz)	59.628	60.131
Total Duration of Excursions (sec)	21052	2920

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Hawaiian Electric Curtailment Report July 2017

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
07/05/17 07:43	0.0	16.40	07/05/17 17:02	0	*	KWF	System constraints
07/05/17 07:50	0.0	11.90	07/05/17 08:02	0	*	Mauka	System constraints
07/05/17 07:50	0.0	1.00	07/05/17 08:03	0	*	Makai	System constraints
07/05/17 07:03	0.0	0.20	07/05/17 07:28	0	*	KREP	System constraints
07/05/17 15:23	0.0	3.60	07/05/17 15:34	0	*	KREP	System constraints
07/05/17 15:42	0.0	16.90	07/05/17 17:04	0	*	Mauka	System constraints
07/05/17 15:42	0.0	6.60	07/05/17 17:03	0	*	Makai	System constraints
07/06/17 07:50	0.0	7.00	07/06/17 18:37	0	*	KWF	System constraints
07/06/17 07:53	0.0	11.00	07/06/17 08:39	0	*	Mauka	System constraints
07/06/17 07:53	0.0	2.00	07/06/17 08:40	0	*	Makai	System constraints
07/06/17 16:30	0.0	20.00	07/06/17 18:41	0	*	Mauka	System constraints
07/06/17 16:30	0.0	6.00	07/06/17 18:41	0	*	Makai	System constraints
07/07/17 05:38	0.0	16.50	07/07/17 17:16	0	*	KWF	System constraints
07/07/17 05:41	0.0	26.50	07/07/17 06:41	0	*	Mauka	System constraints
07/07/17 05:41	0.0	6.50	07/07/17 06:41	0	*	Makai	System constraints
07/07/17 14:41	0.0	5.20	07/07/17 17:14	0	*	Makai	System constraints
07/07/17 14:41	0.0	14.90	07/07/17 17:14	0	*	Mauka	System constraints
07/08/17 06:28	0.0	0.00	07/08/17 07:32	0	*	Waianae	System constraints
07/08/17 06:23	0.0	0.00	07/08/17 07:31	0	*	Aloha1	System constraints
07/08/17 14:43	0.0	21.50	07/08/17 18:09	0	*	Waianae	System constraints
07/08/17 14:34	0.0	4.60	07/08/17 18:11	0	*	Aloha1	System constraints
07/09/17 11:54	0.0	21.00	07/09/17 12:57	0	*	Waianae	System constraints
07/09/17 20:17	0.0	0.00	07/09/17 22:16	0	*	Waianae	System constraints
07/10/17 06:50	0.0	2.80	07/10/17 07:45	0	*	Waianae	System constraints
07/10/17 07:58	0.0	13.60	07/10/17 17:22	0	*	KWF	System constraints
07/10/17 08:04	0.0	3.50	07/10/17 08:37	0	*	Mauka	System constraints
07/10/17 08:04	0.0	1.80	07/10/17 08:37	0	*	Makai	System constraints
07/10/17 16:08	0.0	11.10	07/10/17 17:19	0	*	Makai	System constraints
07/10/17 16:08	0.0	30.10	07/10/17 17:20	0	*	Mauka	System constraints
07/11/17 06:16	0.0	1.40	07/11/17 17:14	0	*	KWF	System constraints
07/11/17 06:18	0.0	0.00	07/11/17 08:00	0	*	Mauka	System constraints
07/11/17 06:18	0.0	0.00	07/11/17 08:00	0	*	Makai	System constraints
07/11/17 14:31	0.0	21.50	07/11/17 15:01	0	*	Waianae	System constraints
07/11/17 14:47	0.0	3.70	07/11/17 15:01	0	*	Aloha1	System constraints
07/11/17 16:07	0.0	22.40	07/11/17 17:12	0	*	Mauka	System constraints
07/11/17 16:08	0.0	12.20	07/11/17 17:12	0	*	Makai	System constraints
07/12/17 06:17	0.0	6.00	07/12/17 16:44	0	*	KWF	System constraints
07/12/17 06:20	0.0	0.00	07/12/17 07:30	0	*	Mauka	System constraints
07/12/17 06:20	0.0	0.00	07/12/17 07:30	0	*	Makai	System constraints
07/12/17 06:25	0.0	0.00	07/12/17 07:25	0	*	KLS2	System constraints
07/12/17 12:09	0.0	3.50	07/12/17 13:52	0	*	KLS2	System constraints
07/12/17 15:38	0.0	0.00	07/12/17 16:46	0	*	Makai	System constraints
07/12/17 15:38	0.0	22.00	07/12/17 16:47	0	*	Mauka	System constraints
07/14/17 06:11	0.0	14.00	07/14/17 19:23	0	*	KWF	System constraints
07/14/17 06:14	0.0	1.00	07/14/17 07:49	0	*	Makai	System constraints
07/14/17 06:15	0.0	6.00	07/14/17 07:50	0	*	Mauka	System constraints
07/14/17 17:53	0.0	4.00	07/14/17 19:25	0	*	Makai	System constraints
07/14/17 17:53	0.0	15.50	07/14/17 19:26	0	*	Mauka	System constraints
07/19/17 06:42	0.0	11.00	07/19/17 08:21	0	*	KWF	System constraints
07/19/17 06:44	0.0	0.00	07/19/17 08:19	0	*	Makai	System constraints
07/19/17 15:16	0.0	15.00	07/19/17 16:21	0	*	KWF	System constraints
07/19/17 15:19	0.0	6.00	07/19/17 16:23	0	*	Makai	System constraints
07/21/17 15:02	0.0	25.00	07/21/17 15:38	0	*	Waianae	System constraints
07/21/17 15:04	0.0	1.80	07/21/17 15:40	0	*	Aloha1	System constraints
07/22/17 06:10	0.0	0.00	07/22/17 06:17	0	*	KREP	System constraints
07/22/17 17:55	0.0	0.90	07/22/17 18:05	0	*	KREP	System constraints
07/24/17 08:52	0.0	4.00	07/24/17 09:12	0	*	Mauka	System constraints
07/31/17 05:53	0.0	0.00	07/31/17 06:58	0	*	Aloha1	System constraints
07/31/17 05:56	0.0	0.00	07/31/17 07:22	0	*	Waianae	System constraints
07/31/17 19:51	0.0	0.00	07/31/17 20:26	0	*	Waianae	System constraints
07/31/17 19:54	0.0	0.00	07/31/17 20:23	0	*	Aloha1	System constraints

Aloha1 = Aloha Solar 1 PV Farm
KLS2 = Kalaeloa Solar 2 PV Farm
KREP = Kalaeloa Renewable Energy Park
KWF = Kahuku Wind Farm
Makai = Kawailoa Makai Wind Farm
Mauka = Kawailoa Mauka Wind Farm
North = Waihonu North PV Farm
South = Waihonu South PV Farm
Waianae = Waianae Solar PV Farm

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



Maui Curtailment Report

Start Date and Time	Duration	IPP Curtailed	Estimated Curtailed MWH	Peak MW Curtailed	Reasons for Curtailment
7/1/2017 2:28	0:25	KWPPII	1.318	19.211	Oversupply
7/1/2017 2:57	0:13	KWPPII	0.393	19.211	Oversupply
7/1/2017 3:32	1:46	KWPPII	14.992	19.211	Oversupply
7/1/2017 5:36	1:24	KWPPII	3.585	19.211	Oversupply
7/1/2017 8:16	1:28	KWPPII	7.159	19.211	Oversupply
7/1/2017 10:19	0:41	KWPPII	6.285	19.010	Oversupply
7/1/2017 11:29	0:03	BS250	Data is not available	Data is not available	Oversupply
7/1/2017 11:30	0:03	KWPPII	0.059	13.488	Oversupply
7/1/2017 11:36	0:03	BS250	Data is not available	Data is not available	Oversupply
7/1/2017 11:36	0:03	KWPPII	0.085	15.488	Oversupply
7/1/2017 11:43	0:09	BS250	Data is not available	Data is not available	Oversupply
7/1/2017 11:45	0:07	KWPPII	0.209	17.874	Oversupply
7/1/2017 12:32	0:05	BS250	Data is not available	Data is not available	Oversupply
7/1/2017 12:32	0:06	KWPPII	0.121	18.305	Oversupply
7/1/2017 12:38	0:17	BS250	Data is not available	Data is not available	Oversupply
7/1/2017 12:39	0:16	KWPPII	1.644	18.796	Oversupply
7/1/2017 12:56	0:16	KWPPII	1.716	18.236	Oversupply
7/1/2017 15:41	0:01	BS250	Data is not available	Data is not available	Oversupply
7/1/2017 15:56	0:01	KWP	0.008	0.476	Oversupply
7/1/2017 16:01	0:01	KWPPII	0.001	0.047	Oversupply
7/1/2017 17:17	0:01	KWPPII	0.000	0.004	Oversupply
7/1/2017 18:05	0:02	KWP	0.022	0.861	Oversupply
7/2/2017 7:53	0:02	KWP	0.017	0.523	Oversupply
7/3/2017 2:06	0:02	KWPPII	0.000	20.708	Oversupply
7/3/2017 2:10	0:48	KWPPII	3.649	20.708	Oversupply
7/3/2017 3:02	0:01	KWPPII	0.000	20.700	Oversupply
7/3/2017 3:04	0:02	KWPPII	0.065	20.705	Oversupply
7/3/2017 3:07	1:12	KWPPII	4.963	20.708	Oversupply
7/3/2017 4:33	0:03	KWPPII	0.030	20.708	Oversupply
7/3/2017 10:21	3:10	KWPPII	18.260	20.708	Oversupply
7/4/2017 0:46	0:01	KWPPII	0.001	20.607	Oversupply
7/4/2017 1:00	0:16	KWPPII	0.452	20.708	Oversupply
7/4/2017 1:21	0:03	KWPPII	0.048	20.708	Oversupply
7/4/2017 1:26	0:13	KWPPII	0.445	20.708	Oversupply
7/4/2017 1:42	0:04	KWPPII	0.027	20.708	Oversupply
7/4/2017 1:48	0:01	KWPPII	0.004	20.704	Oversupply
7/4/2017 2:07	1:25	KWPPII	12.126	20.708	Oversupply
7/4/2017 4:32	0:02	KWPPII	0.008	17.172	Oversupply
7/4/2017 4:36	0:09	KWPPII	0.720	18.806	Oversupply
7/4/2017 4:48	1:50	KWPPII	15.916	20.603	Oversupply
7/4/2017 7:00	0:02	BS250	Data is not available	Data is not available	Oversupply
7/4/2017 7:01	0:02	KWPPII	0.008	20.708	Oversupply
7/4/2017 7:04	0:02	BS250	Data is not available	Data is not available	Oversupply
7/4/2017 7:05	1:17	KWPPII	2.826	20.708	Oversupply
7/4/2017 8:25	1:04	KWPPII	2.325	20.703	Oversupply
7/4/2017 9:40	0:02	BS250	Data is not available	Data is not available	Oversupply
7/4/2017 9:41	4:39	KWPPII	43.829	20.708	Oversupply
7/4/2017 14:29	0:20	KWPPII	1.177	20.497	Oversupply
7/5/2017 1:23	0:56	KWPPII	3.993	19.211	Oversupply
7/6/2017 2:08	0:01	AWE	0.005	0.300	Oversupply
7/6/2017 2:29	0:37	KWPPII	2.511	19.211	Oversupply
7/6/2017 6:49	0:01	AWE	0.003	0.200	Oversupply
7/7/2017 1:55	2:36	KWPPII	19.320	20.708	Oversupply
7/7/2017 4:34	0:03	KWPPII	0.052	20.708	Oversupply
7/7/2017 4:46	0:17	KWPPII	0.590	20.708	Oversupply
7/7/2017 6:11	0:01	BS250	Data is not available	Data is not available	Oversupply
7/7/2017 6:12	0:01	KWPPII	0.006	20.708	Oversupply
7/8/2017 2:16	0:19	KWPPII	0.861	20.704	Oversupply
7/8/2017 3:26	0:01	AWE	0.003	0.200	Oversupply
7/8/2017 3:38	0:02	KWPPII	0.026	19.675	Oversupply
7/8/2017 12:11	0:25	BS250	Data is not available	Data is not available	Oversupply
7/8/2017 12:12	0:01	KWPPII	0.008	9.444	Oversupply
7/8/2017 12:14	0:22	KWPPII	1.012	9.135	Oversupply
7/8/2017 15:47	0:01	KWPPII	0.001	0.077	Oversupply
7/9/2017 3:34	0:03	KWPPII	0.122	15.472	System constraint
7/9/2017 5:39	0:07	KWPPII	0.161	18.592	System constraint
7/9/2017 7:13	0:01	BS250	Data is not available	Data is not available	System constraint
7/9/2017 7:13	0:02	KWPPII	0.011	15.720	System constraint
7/9/2017 7:18	0:03	BS250	Data is not available	Data is not available	System constraint
7/9/2017 7:19	0:03	KWPPII	0.070	16.824	System constraint
7/9/2017 7:22	0:01	BS250	Data is not available	Data is not available	System constraint
7/9/2017 7:23	0:36	KWPPII	1.935	18.488	System constraint
7/9/2017 7:24	0:34	BS250	Data is not available	Data is not available	System constraint
7/9/2017 8:00	0:03	BS250	Data is not available	Data is not available	System constraint
7/9/2017 8:00	0:04	KWPPII	0.041	16.091	System constraint
7/9/2017 8:48	0:01	KWPPII	0.006	15.994	System constraint
7/9/2017 8:57	0:02	BS250	Data is not available	Data is not available	System constraint
7/9/2017 8:58	0:02	KWPPII	0.018	17.123	System constraint
7/9/2017 9:32	0:16	BS250	Data is not available	Data is not available	System constraint



Maui Curtailment Report

Start Date and Time	Duration	IPP Curtailed	Estimated Curtailed MWH	Peak MW Curtailed	Reasons for Curtailment
7/9/2017 9:33	0:16	KWPPI	0.569	17.950	System constraint
7/9/2017 10:31	0:38	KWPPI	3.212	18.287	System constraint
7/9/2017 10:36	0:33	BS250	Data is not available	Data is not available	System constraint
7/9/2017 11:11	0:09	BS250	Data is not available	Data is not available	System constraint
7/9/2017 11:11	0:04	KWPPI	0.109	17.053	System constraint
7/9/2017 11:16	0:05	KWPPI	0.044	16.895	System constraint
7/9/2017 11:22	0:04	BS250	Data is not available	Data is not available	System constraint
7/9/2017 11:27	0:03	BS250	Data is not available	Data is not available	System constraint
7/9/2017 11:27	0:03	KWPPI	0.041	17.473	System constraint
7/9/2017 11:33	0:44	BS250	Data is not available	Data is not available	System constraint
7/9/2017 11:34	0:44	KWPPI	2.904	18.197	System constraint
7/9/2017 12:18	0:07	BS250	Data is not available	Data is not available	System constraint
7/9/2017 12:19	0:07	KWPPI	0.240	17.129	System constraint
7/9/2017 12:28	0:07	BS250	Data is not available	Data is not available	System constraint
7/9/2017 12:29	0:08	KWPPI	0.151	16.056	System constraint
7/9/2017 12:36	0:01	BS250	Data is not available	Data is not available	System constraint
7/9/2017 12:38	0:02	BS250	Data is not available	Data is not available	System constraint
7/9/2017 12:39	0:02	KWPPI	0.026	16.942	System constraint
7/9/2017 12:51	0:02	BS250	Data is not available	Data is not available	System constraint
7/9/2017 12:51	0:02	KWPPI	0.027	16.198	System constraint
7/9/2017 12:57	0:02	BS250	Data is not available	Data is not available	System constraint
7/9/2017 12:58	0:02	KWPPI	0.015	15.607	System constraint
7/10/2017 1:22	1:10	KWPPI	4.835	20.583	Oversupply
7/10/2017 5:42	0:16	KWPPI	0.863	19.655	Oversupply
7/10/2017 5:49	0:09	BS250	Data is not available	Data is not available	Oversupply
7/10/2017 6:54	0:01	KWPPI	0.040	10.252	Oversupply
7/10/2017 6:56	0:46	KWP	2.546	11.911	Oversupply
7/10/2017 8:16	0:03	BS250	Data is not available	Data is not available	Oversupply
7/10/2017 8:16	0:03	KWPPI	0.039	14.111	Oversupply
7/11/2017 13:02	0:01	KWPPI	0.001	0.073	Oversupply
7/12/2017 6:46	0:01	BS250	Data is not available	Data is not available	Oversupply
7/12/2017 6:47	0:01	KWPPI	0.003	17.573	Oversupply
7/12/2017 6:53	0:01	BS250	Data is not available	Data is not available	Oversupply
7/12/2017 12:28	0:05	BS250	Data is not available	Data is not available	Oversupply
7/12/2017 12:29	0:04	KWPPI	0.115	18.565	Oversupply
7/13/2017 0:00	0:19	KWPPI	0.605	20.621	Oversupply
7/13/2017 1:22	0:02	KWPPI	0.072	16.028	Oversupply
7/13/2017 1:33	0:01	KWPPI	0.066	18.252	Oversupply
7/13/2017 1:44	0:01	KWPPI	0.044	19.093	Oversupply
7/13/2017 1:47	0:09	KWPPI	0.494	19.068	Oversupply
7/13/2017 7:10	0:01	KWPPI	0.001	0.071	Oversupply
7/13/2017 23:43	0:07	KWPPI	0.143	20.648	Oversupply
7/13/2017 23:57	0:13	KWPPI	0.224	20.599	Oversupply
7/14/2017 0:28	0:17	KWPPI	0.772	20.678	Oversupply
7/14/2017 1:17	0:29	KWPPI	1.012	20.438	Oversupply
7/14/2017 1:49	0:10	KWPPI	0.338	20.578	Oversupply
7/14/2017 2:07	0:39	KWPPI	2.806	18.680	Oversupply
7/14/2017 3:12	0:01	KWPPI	0.030	18.822	Oversupply
7/14/2017 3:23	0:13	KWPPI	0.611	19.005	Oversupply
7/14/2017 8:23	0:01	KWPPI	0.000	20.634	Oversupply
7/14/2017 8:24	0:02	BS250	Data is not available	Data is not available	Oversupply
7/14/2017 8:25	0:01	KWPPI	0.002	20.663	Oversupply
7/14/2017 10:46	0:04	BS250	Data is not available	Data is not available	Oversupply
7/14/2017 10:47	0:03	KWPPI	0.017	20.388	Oversupply
7/14/2017 11:26	0:01	KWPPI	0.003	20.357	Oversupply
7/14/2017 11:45	0:47	BS250	Data is not available	Data is not available	Oversupply
7/14/2017 11:46	0:10	KWPPI	0.234	20.656	Oversupply
7/14/2017 11:57	0:55	KWPPI	1.592	20.706	Oversupply
7/14/2017 12:33	0:19	BS250	Data is not available	Data is not available	Oversupply
7/14/2017 12:58	0:11	BS250	Data is not available	Data is not available	Oversupply
7/14/2017 12:59	0:10	KWPPI	0.209	20.699	Oversupply
7/14/2017 13:12	0:10	BS250	Data is not available	Data is not available	Oversupply
7/14/2017 13:12	0:01	KWPPI	0.013	20.655	Oversupply
7/14/2017 13:14	0:10	KWPPI	0.349	20.654	Oversupply
7/14/2017 13:45	0:01	BS250	Data is not available	Data is not available	Oversupply
7/14/2017 13:51	0:02	BS250	Data is not available	Data is not available	Oversupply
7/14/2017 13:51	0:03	KWPPI	0.050	20.554	Oversupply
7/14/2017 13:57	0:11	BS250	Data is not available	Data is not available	Oversupply
7/14/2017 13:58	0:10	KWPPI	0.155	20.585	Oversupply
7/14/2017 14:09	0:01	KWPPI	0.005	20.611	Oversupply
7/14/2017 14:13	0:05	BS250	Data is not available	Data is not available	Oversupply
7/14/2017 14:13	0:05	KWPPI	0.089	20.296	Oversupply
7/14/2017 14:21	0:01	BS250	Data is not available	Data is not available	Oversupply
7/14/2017 14:22	0:01	KWPPI	0.001	20.257	Oversupply
7/14/2017 23:16	0:05	KWPPI	0.064	20.695	Oversupply
7/15/2017 0:00	0:05	KWPPI	0.037	20.629	Oversupply
7/15/2017 0:27	0:02	KWPPI	0.008	20.705	Oversupply
7/15/2017 2:29	2:37	KWPPI	10.816	20.703	Oversupply
7/15/2017 7:03	0:01	AWE	0.002	0.100	Oversupply



Maui Curtailment Report

Start Date and Time	Duration	IPP Curtailed	Estimated Curtailed MWH	Peak MW Curtailed	Reasons for Curtailment
7/15/2017 9:19	0:07	BS250	Data is not available	Data is not available	Oversupply
7/15/2017 9:19	0:07	KWPPI	0.281	20.078	Oversupply
7/15/2017 9:30	5:22	BS250	Data is not available	Data is not available	Oversupply
7/15/2017 9:30	5:23	KWPPI	84.544	20.689	Oversupply
7/15/2017 10:19	0:01	AWE	0.007	12.300	Oversupply
7/15/2017 10:25	0:02	AWE	0.014	14.400	Oversupply
7/15/2017 10:41	0:17	AWE	1.039	18.900	Oversupply
7/15/2017 10:59	1:51	AWE	12.880	19.700	Oversupply
7/15/2017 14:53	0:03	BS250	Data is not available	Data is not available	Oversupply
7/15/2017 14:54	0:13	KWPPI	0.247	20.702	Oversupply
7/15/2017 14:57	0:09	BS250	Data is not available	Data is not available	Oversupply
7/16/2017 1:37	0:06	KWPPI	0.057	20.670	Oversupply
7/16/2017 1:46	0:01	KWPPI	0.000	20.694	Oversupply
7/16/2017 1:50	0:21	KWPPI	0.382	20.682	Oversupply
7/16/2017 2:29	0:01	AWE	0.003	0.200	Oversupply
7/16/2017 2:36	0:01	KWPPI	0.000	20.700	Oversupply
7/16/2017 3:32	0:15	KWPPI	0.452	20.683	Oversupply
7/16/2017 5:59	0:01	AWE	0.003	0.200	Oversupply
7/16/2017 8:15	0:01	BS250	Data is not available	Data is not available	Oversupply
7/16/2017 8:20	4:25	BS250	Data is not available	Data is not available	Oversupply
7/16/2017 8:22	3:12	KWPPI	39.064	20.708	Oversupply
7/16/2017 11:16	0:08	AWE	0.145	17.400	Oversupply
7/16/2017 11:28	0:01	AWE	0.011	17.600	Oversupply
7/16/2017 11:36	1:10	KWPPI	12.963	20.705	Oversupply
7/16/2017 11:38	0:02	AWE	0.015	17.100	Oversupply
7/16/2017 13:28	1:19	BS250	Data is not available	Data is not available	Oversupply
7/16/2017 13:28	1:19	KWPPI	18.550	20.708	Oversupply
7/16/2017 14:15	0:01	AWE	0.001	19.000	Oversupply
7/16/2017 14:17	0:01	AWE	0.006	19.800	Oversupply
7/16/2017 14:19	0:01	AWE	0.004	20.000	Oversupply
7/16/2017 14:28	0:04	AWE	0.075	19.200	Oversupply
7/16/2017 14:37	0:01	AWE	0.002	18.500	Oversupply
7/16/2017 14:40	0:01	AWE	0.005	19.000	Oversupply
7/16/2017 14:48	0:51	BS250	Data is not available	Data is not available	Oversupply
7/16/2017 14:49	0:50	KWPPI	6.080	20.708	Oversupply
7/17/2017 0:31	0:01	AWE	0.002	0.100	Oversupply
7/17/2017 6:15	0:07	BS250	Data is not available	Data is not available	Oversupply
7/17/2017 6:15	0:08	KWPPI	0.235	20.705	Oversupply
7/17/2017 7:12	0:02	BS250	Data is not available	Data is not available	Oversupply
7/17/2017 10:17	0:01	BS250	Data is not available	Data is not available	Oversupply
7/17/2017 10:17	0:02	KWPPI	0.011	20.270	Oversupply
7/17/2017 10:30	0:02	BS250	Data is not available	Data is not available	Oversupply
7/17/2017 12:36	0:01	BS250	Data is not available	Data is not available	Oversupply
7/17/2017 12:57	0:01	BS250	Data is not available	Data is not available	Oversupply
7/17/2017 12:57	0:02	KWPPI	0.006	19.920	Oversupply
7/17/2017 13:01	0:01	BS250	Data is not available	Data is not available	Oversupply
7/17/2017 13:01	0:02	KWPPI	0.015	19.534	Oversupply
7/17/2017 13:04	0:03	BS250	Data is not available	Data is not available	Oversupply
7/17/2017 13:05	0:02	KWPPI	0.025	18.389	Oversupply
7/17/2017 13:08	0:03	BS250	Data is not available	Data is not available	Oversupply
7/17/2017 13:08	0:04	KWPPI	0.069	19.572	Oversupply
7/17/2017 13:15	0:04	BS250	Data is not available	Data is not available	Oversupply
7/17/2017 13:15	0:05	KWPPI	0.103	19.624	Oversupply
7/17/2017 14:52	0:01	BS250	Data is not available	Data is not available	Oversupply
7/17/2017 14:53	0:01	KWPPI	0.008	20.114	Oversupply
7/17/2017 15:02	0:01	BS250	Data is not available	Data is not available	Oversupply
7/17/2017 15:02	0:02	KWPPI	0.015	20.407	Oversupply
7/17/2017 16:22	0:02	BS250	Data is not available	Data is not available	Oversupply
7/17/2017 16:22	0:02	KWPPI	0.004	20.684	Oversupply
7/17/2017 19:07	0:01	KWPPI	0.000	20.708	Oversupply
7/17/2017 23:03	0:03	KWPPI	0.054	20.708	Oversupply
7/17/2017 23:52	0:24	KWPPI	0.829	20.708	Oversupply
7/18/2017 0:36	5:01	KWPPI	40.510	20.708	Oversupply
7/18/2017 5:58	0:12	BS250	Data is not available	Data is not available	Oversupply
7/18/2017 5:59	0:11	KWPPI	0.316	20.708	Oversupply
7/18/2017 7:40	0:02	BS250	Data is not available	Data is not available	Oversupply
7/18/2017 7:43	3:00	BS250	Data is not available	Data is not available	Oversupply
7/18/2017 7:44	2:59	KWPPI	35.707	20.708	Oversupply
7/18/2017 10:12	0:01	AWE	0.003	20.400	Oversupply
7/18/2017 10:22	0:01	AWE	0.009	20.300	Oversupply
7/18/2017 10:24	0:04	AWE	0.035	20.400	Oversupply
7/18/2017 10:32	0:02	AWE	0.004	20.700	Oversupply
7/18/2017 10:35	0:01	AWE	0.006	20.600	Oversupply
7/18/2017 10:45	2:09	BS250	Data is not available	Data is not available	Oversupply
7/18/2017 10:45	2:09	KWPPI	23.000	20.525	Oversupply
7/18/2017 12:59	0:43	BS250	Data is not available	Data is not available	Oversupply
7/18/2017 12:59	0:43	KWPPI	1.693	20.112	Oversupply
7/18/2017 13:48	0:19	BS250	Data is not available	Data is not available	Oversupply
7/18/2017 13:48	0:20	KWPPI	0.517	20.323	Oversupply



Maui Curtailment Report

Start Date and Time	Duration	IPP Curtailed	Estimated Curtailed MWH	Peak MW Curtailed	Reasons for Curtailment
7/18/2017 14:10	0:01	BS250	Data is not available	Data is not available	Oversupply
7/18/2017 14:10	0:01	KWPPI	0.009	18.484	Oversupply
7/18/2017 14:15	0:02	BS250	Data is not available	Data is not available	Oversupply
7/18/2017 14:16	0:02	KWPPI	0.018	18.677	Oversupply
7/18/2017 14:24	0:01	BS250	Data is not available	Data is not available	Oversupply
7/18/2017 14:24	0:02	KWPPI	0.020	19.968	Oversupply
7/18/2017 16:27	0:02	BS250	Data is not available	Data is not available	Oversupply
7/18/2017 16:28	0:02	KWPPI	0.049	19.557	Oversupply
7/19/2017 0:13	0:04	KWPPI	0.097	15.449	Oversupply
7/19/2017 0:59	0:05	KWPPI	0.040	11.932	Oversupply
7/19/2017 3:06	0:26	KWPPI	1.129	16.945	Oversupply
7/19/2017 4:21	0:22	KWPPI	0.683	19.232	Oversupply
7/19/2017 5:35	0:01	KWPPI	0.011	19.602	Oversupply
7/19/2017 5:54	0:01	KWPPI	0.036	20.333	Oversupply
7/19/2017 5:57	0:01	KWPPI	0.026	20.423	Oversupply
7/19/2017 6:47	0:01	BS250	Data is not available	Data is not available	Oversupply
7/19/2017 7:41	0:16	BS250	Data is not available	Data is not available	Oversupply
7/19/2017 7:43	0:14	KWPPI	0.763	20.705	Oversupply
7/19/2017 11:36	0:01	BS250	Data is not available	Data is not available	Oversupply
7/19/2017 11:40	0:01	BS250	Data is not available	Data is not available	Oversupply
7/19/2017 11:41	0:01	KWPPI	0.008	19.975	Oversupply
7/19/2017 15:00	0:01	BS250	Data is not available	Data is not available	Oversupply
7/19/2017 22:31	0:08	KWPPI	0.176	15.662	Oversupply
7/19/2017 22:46	0:24	KWPPI	1.373	18.780	Oversupply
7/19/2017 23:23	1:30	KWPPI	10.988	20.698	Oversupply
7/20/2017 1:00	0:02	KWPPI	0.024	17.400	Oversupply
7/20/2017 1:08	4:21	KWPPI	36.563	20.708	Oversupply
7/20/2017 5:30	0:03	KWPPI	0.074	20.708	Oversupply
7/20/2017 5:34	0:29	KWPPI	0.438	20.708	Oversupply
7/20/2017 5:49	0:18	BS250	Data is not available	Data is not available	Oversupply
7/20/2017 6:02	0:03	BS250	Data is not available	Data is not available	Oversupply
7/20/2017 6:04	0:01	KWPPI	0.005	20.652	Oversupply
7/20/2017 6:11	0:02	BS250	Data is not available	Data is not available	Oversupply
7/20/2017 6:12	0:01	KWPPI	0.000	20.658	Oversupply
7/20/2017 6:19	0:01	BS250	Data is not available	Data is not available	Oversupply
7/20/2017 6:21	0:03	BS250	Data is not available	Data is not available	Oversupply
7/20/2017 6:24	0:01	KWPPI	0.002	20.662	Oversupply
7/20/2017 8:49	0:04	BS250	Data is not available	Data is not available	Oversupply
7/20/2017 8:50	0:05	KWPPI	0.053	20.686	Oversupply
7/20/2017 8:54	5:11	BS250	Data is not available	Data is not available	Oversupply
7/20/2017 8:56	5:13	KWPPI	48.397	20.708	Oversupply
7/20/2017 14:06	0:03	BS250	Data is not available	Data is not available	Oversupply
7/20/2017 14:10	0:01	BS250	Data is not available	Data is not available	Oversupply
7/20/2017 14:10	0:01	KWPPI	0.004	20.654	Oversupply
7/20/2017 14:28	0:13	BS250	Data is not available	Data is not available	Oversupply
7/20/2017 14:30	0:10	KWPPI	0.297	20.708	Oversupply
7/20/2017 14:42	0:03	BS250	Data is not available	Data is not available	Oversupply
7/20/2017 14:43	0:02	KWPPI	0.018	20.617	Oversupply
7/20/2017 22:30	0:05	KWPPI	0.127	20.708	Oversupply
7/21/2017 2:35	0:12	KWPPI	0.472	20.708	Oversupply
7/21/2017 2:59	0:04	KWPPI	0.040	20.708	Oversupply
7/21/2017 3:05	1:10	KWPPI	7.074	20.708	Oversupply
7/21/2017 4:27	0:10	KWPPI	0.379	20.696	Oversupply
7/21/2017 4:43	0:01	KWPPI	0.008	20.686	Oversupply
7/21/2017 4:55	0:52	KWPPI	5.618	20.708	Oversupply
7/21/2017 7:07	0:11	BS250	Data is not available	Data is not available	Oversupply
7/21/2017 7:08	0:11	KWPPI	0.392	20.708	Oversupply
7/21/2017 8:16	0:01	BS250	Data is not available	Data is not available	Oversupply
7/21/2017 8:19	0:24	BS250	Data is not available	Data is not available	Oversupply
7/21/2017 8:20	0:23	KWPPI	2.254	20.708	Oversupply
7/21/2017 9:17	0:01	BS250	Data is not available	Data is not available	Oversupply
7/21/2017 9:20	0:02	BS250	Data is not available	Data is not available	Oversupply
7/21/2017 9:23	0:35	BS250	Data is not available	Data is not available	Oversupply
7/21/2017 9:24	0:35	KWPPI	1.975	20.708	Oversupply
7/21/2017 10:02	0:36	BS250	Data is not available	Data is not available	Oversupply
7/21/2017 10:03	0:36	KWPPI	2.702	20.708	Oversupply
7/21/2017 12:15	1:14	BS250	Data is not available	Data is not available	Oversupply
7/21/2017 12:15	1:15	KWPPI	7.461	20.708	Oversupply
7/21/2017 13:35	0:03	BS250	Data is not available	Data is not available	Oversupply
7/21/2017 13:37	0:01	KWPPI	0.018	20.707	Oversupply
7/21/2017 13:39	0:04	BS250	Data is not available	Data is not available	Oversupply
7/21/2017 13:41	0:02	KWPPI	0.015	20.706	Oversupply
7/22/2017 0:06	0:42	KWPPI	3.247	20.708	Oversupply
7/22/2017 1:08	0:01	KWPPI	0.000	20.708	Oversupply
7/22/2017 1:23	3:59	KWPPI	21.503	20.708	Oversupply
7/22/2017 5:27	0:01	KWPPI	0.003	19.241	Oversupply
7/22/2017 5:32	0:03	KWPPI	0.023	19.920	Oversupply
7/22/2017 5:36	0:08	KWPPI	0.273	20.428	Oversupply
7/22/2017 5:51	0:01	BS250	Data is not available	Data is not available	Oversupply



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Start Date and Time	Duration	IPP Curtailed	Estimated Curtailed MWH	Peak MW Curtailed	Reasons for Curtailment
7/22/2017 8:43	0:01	BS250	Data is not available	Data is not available	Oversupply
7/22/2017 10:50	0:01	BS250	Data is not available	Data is not available	Oversupply
7/22/2017 10:51	0:01	KWPPII	0.001	15.431	Oversupply
7/22/2017 23:43	0:02	KWPPII	0.068	14.662	Oversupply
7/22/2017 23:49	0:02	KWPPII	0.028	14.190	Oversupply
7/23/2017 1:49	0:35	KWPPII	2.345	19.626	Oversupply
7/23/2017 3:44	0:05	KWPPII	0.120	20.204	Oversupply
7/23/2017 3:52	0:04	KWPPII	0.031	20.612	Oversupply
7/23/2017 3:59	0:03	KWPPII	0.026	20.659	Oversupply
7/23/2017 4:03	0:02	KWPPII	0.021	20.194	Oversupply
7/23/2017 4:06	0:24	KWPPII	1.288	20.706	Oversupply
7/23/2017 9:07	0:01	BS250	Data is not available	Data is not available	Oversupply
7/23/2017 9:15	0:01	KWPPII	0.001	20.705	Oversupply
7/23/2017 9:18	0:01	BS250	Data is not available	Data is not available	Oversupply
7/23/2017 9:20	0:03	BS250	Data is not available	Data is not available	Oversupply
7/23/2017 9:20	0:04	KWPPII	0.035	20.697	Oversupply
7/23/2017 9:30	1:29	BS250	Data is not available	Data is not available	Oversupply
7/23/2017 9:31	1:09	KWPPII	5.038	20.708	Oversupply
7/23/2017 10:41	0:19	KWPPII	0.460	19.690	Oversupply
7/23/2017 11:03	0:01	KWPPII	0.002	18.338	Oversupply
7/23/2017 11:09	0:08	BS250	Data is not available	Data is not available	Oversupply
7/23/2017 11:10	0:06	KWPPII	0.164	20.257	Oversupply
7/23/2017 11:23	0:05	BS250	Data is not available	Data is not available	Oversupply
7/23/2017 11:23	0:05	KWPPII	0.103	19.994	Oversupply
7/24/2017 2:51	0:01	AWE	0.002	0.100	Oversupply
7/24/2017 2:53	0:01	AWE	0.002	0.100	Oversupply
7/24/2017 23:07	0:09	KWPPII	0.333	15.042	Oversupply
7/25/2017 4:43	0:09	KWPPII	0.168	12.864	Oversupply
7/25/2017 4:58	0:02	KWPPII	0.011	13.537	Oversupply
7/25/2017 6:04	0:13	BS250	Data is not available	Data is not available	Oversupply
7/25/2017 6:04	0:13	KWPPII	0.303	15.435	Oversupply
7/25/2017 8:03	0:01	KWPPII	0.000	13.243	Oversupply
7/25/2017 8:05	0:18	BS250	Data is not available	Data is not available	Oversupply
7/25/2017 8:05	0:18	KWPPII	0.568	17.768	Oversupply
7/25/2017 9:22	0:01	KWPPII	0.006	19.763	Oversupply
7/25/2017 9:26	0:39	BS250	Data is not available	Data is not available	Oversupply
7/25/2017 9:26	0:39	KWPPII	5.116	20.625	Oversupply
7/25/2017 10:35	0:36	BS250	Data is not available	Data is not available	Oversupply
7/25/2017 10:36	0:35	KWPPII	2.697	20.496	Oversupply
7/25/2017 11:20	0:02	BS250	Data is not available	Data is not available	Oversupply
7/25/2017 11:21	0:01	KWPPII	0.002	19.996	Oversupply
7/25/2017 11:39	0:44	BS250	Data is not available	Data is not available	Oversupply
7/25/2017 11:40	0:43	KWPPII	5.927	20.435	Oversupply
7/25/2017 12:24	0:01	BS250	Data is not available	Data is not available	Oversupply
7/25/2017 12:24	0:01	KWPPII	0.003	16.985	Oversupply
7/25/2017 12:28	0:02	BS250	Data is not available	Data is not available	Oversupply
7/25/2017 12:29	0:01	KWPPII	0.051	16.754	Oversupply
7/25/2017 12:31	3:20	BS250	Data is not available	Data is not available	Oversupply
7/25/2017 12:31	3:20	KWPPII	27.576	20.398	Oversupply
7/26/2017 0:14	0:10	KWPPII	0.339	19.261	Oversupply
7/26/2017 0:37	0:21	KWPPII	1.010	19.692	Oversupply
7/26/2017 1:00	0:01	KWPPII	0.014	19.404	Oversupply
7/26/2017 2:07	0:01	KWPPII	0.005	18.358	Oversupply
7/26/2017 2:19	0:20	KWPPII	1.157	16.604	Oversupply
7/26/2017 2:40	0:20	KWPPII	0.817	18.245	Oversupply
7/26/2017 3:19	0:30	KWPPII	2.082	17.526	Oversupply
7/26/2017 5:29	0:05	KWPPII	0.011	17.711	Oversupply
7/26/2017 5:38	0:02	KWPPII	0.005	17.685	Oversupply
7/26/2017 8:05	0:50	BS250	Data is not available	Data is not available	Oversupply
7/26/2017 8:07	0:50	KWPPII	2.264	19.211	Oversupply
7/26/2017 8:56	0:01	BS250	Data is not available	Data is not available	Oversupply
7/26/2017 8:58	0:05	BS250	Data is not available	Data is not available	Oversupply
7/26/2017 9:00	0:04	KWPPII	0.026	19.144	Oversupply
7/26/2017 9:05	0:48	BS250	Data is not available	Data is not available	Oversupply
7/26/2017 9:06	0:48	KWPPII	4.708	19.206	Oversupply
7/26/2017 9:54	0:02	BS250	Data is not available	Data is not available	Oversupply
7/26/2017 9:55	0:02	KWPPII	0.018	19.144	Oversupply
7/26/2017 10:02	0:04	BS250	Data is not available	Data is not available	Oversupply
7/26/2017 10:03	0:03	KWPPII	0.029	18.993	Oversupply
7/26/2017 10:11	4:37	BS250	Data is not available	Data is not available	Oversupply
7/26/2017 10:11	4:21	KWPPII	64.860	19.210	Oversupply
7/26/2017 12:00	0:14	AWE	0.755	16.300	Oversupply
7/26/2017 12:16	1:14	AWE	6.430	19.300	Oversupply
7/26/2017 13:32	0:01	AWE	0.000	18.700	System constraint
7/26/2017 13:34	0:07	AWE	0.143	18.800	System constraint
7/26/2017 13:43	0:01	AWE	0.000	19.200	System constraint
7/26/2017 14:33	0:15	KWPPII	1.538	19.176	Oversupply
7/26/2017 15:07	0:12	BS250	Data is not available	Data is not available	Oversupply
7/26/2017 15:09	0:10	KWPPII	0.272	19.199	Oversupply



Maui Curtailment Report

Start Date and Time	Duration	IPP Curtailed	Estimated Curtailed MWH	Peak MW Curtailed	Reasons for Curtailment
7/26/2017 15:20	0:02	BS250	Data is not available	Data is not available	Oversupply
7/26/2017 15:27	0:03	BS250	Data is not available	Data is not available	Oversupply
7/26/2017 15:37	0:07	BS250	Data is not available	Data is not available	Oversupply
7/26/2017 15:39	0:05	KWPPI	0.109	19.204	Oversupply
7/26/2017 15:47	0:05	BS250	Data is not available	Data is not available	Oversupply
7/26/2017 16:00	0:02	BS250	Data is not available	Data is not available	Oversupply
7/26/2017 16:03	0:06	BS250	Data is not available	Data is not available	Oversupply
7/26/2017 16:05	0:05	KWPPI	0.097	19.211	Oversupply
7/27/2017 2:13	0:12	KWPPI	0.283	19.178	Oversupply
7/27/2017 3:26	0:35	KWPPI	0.631	19.211	Oversupply
7/27/2017 4:03	0:01	KWPPI	0.000	19.206	Oversupply
7/27/2017 4:52	0:04	KWPPI	0.021	19.207	Oversupply
7/27/2017 4:57	0:03	KWPPI	0.015	19.203	Oversupply
7/27/2017 5:01	0:02	KWPPI	0.005	19.200	Oversupply
7/27/2017 5:04	0:01	KWPPI	0.003	19.198	Oversupply
7/27/2017 9:22	0:01	BS250	Data is not available	Data is not available	Oversupply
7/27/2017 9:29	0:03	BS250	Data is not available	Data is not available	Oversupply
7/27/2017 9:32	0:01	KWPPI	0.012	19.150	Oversupply
7/27/2017 9:34	0:13	KWPPI	0.736	19.133	Oversupply
7/27/2017 9:40	0:07	BS250	Data is not available	Data is not available	Oversupply
7/27/2017 9:50	0:06	BS250	Data is not available	Data is not available	Oversupply
7/27/2017 9:51	0:05	KWPPI	0.076	18.374	Oversupply
7/27/2017 10:01	0:09	BS250	Data is not available	Data is not available	Oversupply
7/27/2017 10:02	0:09	KWPPI	0.282	18.709	Oversupply
7/27/2017 10:19	0:05	BS250	Data is not available	Data is not available	Oversupply
7/27/2017 10:19	0:06	KWPPI	0.123	18.882	Oversupply
7/27/2017 10:34	0:11	BS250	Data is not available	Data is not available	Oversupply
7/27/2017 10:35	0:23	KWPPI	4.301	19.100	Oversupply
7/27/2017 10:46	0:06	AWE	0.180	20.200	Oversupply
7/27/2017 10:59	0:05	AWE	0.103	18.000	Oversupply
7/27/2017 10:59	0:23	KWPPI	6.982	18.861	Oversupply
7/27/2017 11:10	0:03	AWE	0.048	19.900	Oversupply
7/27/2017 11:25	0:13	KWPPI	2.244	19.146	Oversupply
7/27/2017 11:39	1:48	KWPPI	13.501	19.211	Oversupply
7/27/2017 12:06	1:14	BS250	Data is not available	Data is not available	Oversupply
7/27/2017 13:21	0:05	BS250	Data is not available	Data is not available	Oversupply
7/27/2017 13:29	0:05	BS250	Data is not available	Data is not available	Oversupply
7/27/2017 13:30	0:05	KWPPI	0.142	18.964	Oversupply
7/27/2017 13:42	0:02	BS250	Data is not available	Data is not available	Oversupply
7/27/2017 13:42	0:02	KWPPI	0.020	18.599	Oversupply
7/27/2017 13:53	0:01	KWPPI	0.002	18.360	Oversupply
7/27/2017 14:03	0:13	BS250	Data is not available	Data is not available	Oversupply
7/27/2017 14:03	0:05	KWPPI	0.071	17.357	Oversupply
7/27/2017 14:09	0:07	KWPPI	0.142	16.813	Oversupply
7/27/2017 21:04	0:01	AWE	0.003	0.200	Oversupply
7/28/2017 3:32	0:01	KWPPI	0.030	12.518	Oversupply
7/28/2017 4:01	0:02	KWPPI	0.016	16.328	Oversupply
7/28/2017 4:04	0:04	KWPPI	0.026	17.924	Oversupply
7/28/2017 5:41	0:01	AWE	0.005	0.300	Oversupply
7/28/2017 8:39	0:01	BS250	Data is not available	Data is not available	Oversupply
7/28/2017 9:22	0:25	BS250	Data is not available	Data is not available	Oversupply
7/28/2017 9:25	0:23	KWPPI	1.042	19.211	Oversupply
7/28/2017 10:51	0:01	KWPPI	0.001	17.690	Oversupply
7/28/2017 11:35	0:22	BS250	Data is not available	Data is not available	Oversupply
7/28/2017 11:37	0:20	KWPPI	1.221	17.714	Oversupply
7/28/2017 12:00	0:08	BS250	Data is not available	Data is not available	Oversupply
7/28/2017 12:03	0:05	KWPPI	0.114	17.700	Oversupply
7/28/2017 12:10	0:02	BS250	Data is not available	Data is not available	Oversupply
7/28/2017 12:10	0:02	KWPPI	0.024	17.543	Oversupply
7/28/2017 12:17	0:04	BS250	Data is not available	Data is not available	Oversupply
7/28/2017 12:19	0:11	KWPPI	0.197	17.615	Oversupply
7/28/2017 12:22	0:07	BS250	Data is not available	Data is not available	Oversupply
7/28/2017 12:31	0:02	BS250	Data is not available	Data is not available	Oversupply
7/28/2017 12:31	0:02	KWPPI	0.009	17.558	Oversupply
7/28/2017 12:41	0:01	BS250	Data is not available	Data is not available	Oversupply
7/28/2017 12:44	0:21	BS250	Data is not available	Data is not available	Oversupply
7/28/2017 12:44	0:12	KWPPI	0.218	17.680	Oversupply
7/28/2017 12:57	0:08	KWPPI	0.268	19.196	Oversupply
7/28/2017 13:08	0:05	BS250	Data is not available	Data is not available	Oversupply
7/28/2017 13:10	0:04	KWPPI	0.074	19.204	Oversupply
7/28/2017 13:24	0:08	BS250	Data is not available	Data is not available	Oversupply
7/28/2017 13:26	0:06	KWPPI	0.189	19.188	Oversupply
7/28/2017 13:33	0:05	KWPPI	0.065	19.180	Oversupply
7/28/2017 13:34	0:03	BS250	Data is not available	Data is not available	Oversupply
7/28/2017 14:46	0:35	BS250	Data is not available	Data is not available	System constraint
7/28/2017 14:46	0:03	KWPPI	0.056	19.940	System constraint
7/28/2017 14:50	0:32	KWPPI	2.178	20.321	System constraint
7/28/2017 22:43	0:01	KWPPI	0.017	20.604	Oversupply
7/29/2017 2:02	0:01	KWPPI	0.002	20.684	Oversupply



Maui Curtailment Report

Start Date and Time	Duration	IPP Curtailed	Estimated Curtailed MWH	Peak MW Curtailed	Reasons for Curtailment
7/29/2017 2:15	0:14	KWP/II	0.286	20.678	Oversupply
7/29/2017 2:30	0:02	KWP/II	0.006	20.571	Oversupply
7/29/2017 2:33	0:03	KWP/II	0.017	20.652	Oversupply
7/29/2017 2:40	0:03	KWP/II	0.031	20.642	Oversupply
7/29/2017 2:50	0:16	KWP/II	0.754	20.655	Oversupply
7/29/2017 3:48	0:11	KWP/II	0.271	20.708	Oversupply
7/29/2017 9:02	0:01	KWP/II	0.002	19.726	Oversupply
7/29/2017 9:05	0:13	KWP/II	0.202	20.133	Oversupply
7/29/2017 11:57	0:02	KWP/II	0.011	18.910	Oversupply
7/30/2017 0:36	0:01	KWP/II	0.004	19.006	Oversupply
7/30/2017 0:38	0:11	KWP/II	0.296	19.162	Oversupply
7/30/2017 2:49	0:02	KWP/II	0.024	16.944	Oversupply
7/30/2017 3:04	0:44	KWP/II	2.040	19.158	Oversupply
7/30/2017 3:52	0:01	KWP/II	0.003	18.910	Oversupply
7/30/2017 4:07	0:08	KWP/II	0.046	18.670	Oversupply
7/30/2017 4:16	0:14	KWP/II	0.207	18.542	Oversupply
7/30/2017 4:31	0:01	KWP/II	0.009	17.805	Oversupply
7/30/2017 4:33	0:02	KWP/II	0.024	17.713	Oversupply
7/30/2017 4:39	0:02	KWP/II	0.005	17.920	Oversupply
7/30/2017 4:43	0:12	KWP/II	0.489	18.672	Oversupply
7/30/2017 5:14	0:04	KWP/II	0.029	19.073	Oversupply
7/30/2017 5:19	0:01	KWP/II	0.001	18.824	Oversupply
7/30/2017 6:00	0:01	KWP/II	0.007	18.909	Oversupply
7/30/2017 6:04	0:01	KWP/II	0.010	18.545	Oversupply
7/30/2017 9:43	1:37	KWP/II	5.914	19.147	Oversupply
7/30/2017 11:21	0:15	KWP/II	0.440	18.424	Oversupply
7/30/2017 11:37	0:40	KWP/II	2.563	19.205	Oversupply
7/30/2017 12:18	0:03	KWP/II	0.032	17.681	Oversupply
7/30/2017 12:23	0:31	KWP/II	1.700	19.845	Oversupply
7/30/2017 12:55	0:03	KWP/II	0.041	16.707	Oversupply
7/30/2017 13:03	0:05	KWP/II	0.056	20.080	Oversupply
7/30/2017 13:24	0:15	KWP/II	0.651	18.972	Oversupply
7/30/2017 13:40	0:01	KWP/II	0.002	17.100	Oversupply
7/30/2017 13:48	0:04	KWP/II	0.202	17.519	Oversupply
7/30/2017 13:53	0:05	KWP/II	0.122	18.734	Oversupply
7/30/2017 14:01	0:01	KWP/II	0.002	17.089	Oversupply
7/30/2017 14:03	0:02	KWP/II	0.023	17.843	Oversupply
7/30/2017 14:13	0:06	KWP/II	0.184	17.568	System constraint
7/30/2017 14:21	0:02	KWP/II	0.017	17.791	System constraint
7/31/2017 1:20	0:02	KWP/II	0.003	20.708	Oversupply
7/31/2017 1:24	0:04	KWP/II	0.010	20.708	Oversupply
7/31/2017 2:49	0:27	KWP/II	1.643	20.074	Oversupply
7/31/2017 3:32	0:01	KWP/II	0.009	18.825	Oversupply
7/31/2017 5:41	0:01	KWP/II	0.001	20.701	Oversupply
7/31/2017 8:09	0:01	KWP/II	0.007	20.204	Oversupply
7/31/2017 8:11	0:01	KWP/II	0.011	20.566	Oversupply
7/31/2017 8:13	0:24	KWP/II	1.436	20.494	Oversupply
7/31/2017 11:24	0:01	KWP/II	0.005	17.348	Oversupply
7/31/2017 11:31	0:47	KWP/II	2.443	18.503	Oversupply
7/31/2017 12:21	0:02	KWP/II	0.023	15.665	Oversupply
7/31/2017 12:26	0:03	KWP/II	0.020	15.042	Oversupply
7/31/2017 12:36	0:20	KWP/II	1.061	19.377	Oversupply
7/31/2017 12:57	0:14	KWP/II	0.475	20.017	Oversupply
7/31/2017 13:15	0:08	KWP/II	0.216	20.296	Oversupply
7/31/2017 13:36	0:01	KWP/II	0.029	20.348	Oversupply
7/31/2017 14:29	0:02	KWP/II	0.015	19.658	Oversupply
7/31/2017 14:33	0:01	KWP/II	0.009	19.347	Oversupply
7/31/2017 14:35	0:12	KWP/II	0.629	20.130	Oversupply
7/31/2017 14:52	0:03	KWP/II	0.130	19.965	Oversupply
7/31/2017 15:00	0:07	KWP/II	0.187	19.431	System constraint
7/31/2017 15:16	0:04	KWP/II	0.086	19.518	System constraint
7/31/2017 15:23	0:01	KWP/II	0.014	19.503	System constraint

Notes:

- Curtailment for Kaheawa Wind Power ("KWP"), Makila Hydroelectric ("MH"), AAAAA Rent-A-Space Maui LTD ("5A"), Bioreal Solar, LLC ("BS"), Auwahi Wind Energy ("AWE"), Kaheawa Wind Power II ("KWPII") 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 KWPII. 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 5A, BS, BS 250 or MH.

- Curtailment signals sent to 5A, 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.

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Start Date and Time	Duration	IPP Curtailed	Estimated MWh Curtailed	Peak MW Curtailed	Reasons for Curtailment
7/13/2017 9:37	0:01	LSR	Data is not available	Data is not available	Oversupply
7/13/2017 9:39	0:07	LSR	Data is not available	Data is not available	Oversupply
7/13/2017 9:48	0:03	LSR	Data is not available	Data is not available	Oversupply
7/13/2017 9:55	0:02	LSR	Data is not available	Data is not available	Oversupply
7/13/2017 10:09	0:08	LSR	Data is not available	Data is not available	Oversupply
7/13/2017 10:21	0:02	LSR	Data is not available	Data is not available	Oversupply
7/13/2017 10:33	0:03	LSR	Data is not available	Data is not available	Oversupply
7/13/2017 10:40	0:02	LSR	Data is not available	Data is not available	Oversupply
7/13/2017 10:44	0:03	LSR	Data is not available	Data is not available	Oversupply
7/13/2017 10:48	0:02	LSR	Data is not available	Data is not available	Oversupply
7/13/2017 10:54	0:01	LSR	Data is not available	Data is not available	Oversupply
7/13/2017 10:56	0:04	LSR	Data is not available	Data is not available	Oversupply
7/13/2017 11:01	0:05	LSR	Data is not available	Data is not available	Oversupply
7/13/2017 11:21	0:10	LSR	Data is not available	Data is not available	Oversupply
7/13/2017 11:34	0:03	LSR	Data is not available	Data is not available	Oversupply
7/13/2017 11:39	0:01	LSR	Data is not available	Data is not available	Oversupply
7/13/2017 11:41	0:01	LSR	Data is not available	Data is not available	Oversupply
7/13/2017 11:46	0:03	LSR	Data is not available	Data is not available	Oversupply
7/13/2017 11:50	0:01	LSR	Data is not available	Data is not available	Oversupply
7/13/2017 11:52	0:02	LSR	Data is not available	Data is not available	Oversupply
7/13/2017 11:56	0:01	LSR	Data is not available	Data is not available	Oversupply
7/13/2017 11:58	2:36	LSR	Data is not available	Data is not available	Oversupply
7/13/2017 14:35	0:17	LSR	Data is not available	Data is not available	Oversupply
7/13/2017 14:58	0:01	LSR	Data is not available	Data is not available	Oversupply
7/13/2017 15:56	2:56	LSR	Data is not available	Data is not available	Oversupply
7/14/2017 6:59	0:04	LSR	Data is not available	Data is not available	Oversupply
7/14/2017 7:05	0:09	LSR	Data is not available	Data is not available	Oversupply
7/14/2017 7:15	0:25	LSR	Data is not available	Data is not available	Oversupply
7/14/2017 7:47	4:39	LSR	Data is not available	Data is not available	Oversupply
7/14/2017 12:35	0:46	LSR	Data is not available	Data is not available	Oversupply
7/14/2017 13:23	0:42	LSR	Data is not available	Data is not available	Oversupply
7/14/2017 14:12	0:05	LSR	Data is not available	Data is not available	Oversupply
7/14/2017 15:20	0:12	LSR	Data is not available	Data is not available	Oversupply
7/17/2017 15:07	2:33	LSR	Data is not available	Data is not available	Oversupply
7/17/2017 17:52	0:01	LSR	Data is not available	Data is not available	Oversupply
7/17/2017 17:54	0:18	LSR	Data is not available	Data is not available	Oversupply
7/17/2017 18:18	0:02	LSR	Data is not available	Data is not available	Oversupply
7/17/2017 18:30	0:05	LSR	Data is not available	Data is not available	Oversupply
7/18/2017 7:28	0:10	LSR	Data is not available	Data is not available	Oversupply
7/18/2017 7:40	0:06	LSR	Data is not available	Data is not available	Oversupply
7/18/2017 7:53	0:03	LSR	Data is not available	Data is not available	Oversupply
7/18/2017 8:31	0:01	LSR	Data is not available	Data is not available	Oversupply
7/18/2017 8:39	0:01	LSR	Data is not available	Data is not available	Oversupply
7/18/2017 8:46	0:08	LSR	Data is not available	Data is not available	Oversupply
7/18/2017 9:47	0:06	LSR	Data is not available	Data is not available	Oversupply
7/18/2017 9:56	1:20	LSR	Data is not available	Data is not available	Oversupply
7/18/2017 11:19	0:03	LSR	Data is not available	Data is not available	Oversupply
7/18/2017 11:25	0:10	LSR	Data is not available	Data is not available	Oversupply
7/18/2017 14:43	0:09	LSR	Data is not available	Data is not available	Oversupply
7/18/2017 15:00	0:02	LSR	Data is not available	Data is not available	Oversupply
7/18/2017 17:34	0:11	LSR	Data is not available	Data is not available	Oversupply
7/18/2017 17:52	0:06	LSR	Data is not available	Data is not available	Oversupply
7/18/2017 18:00	0:07	LSR	Data is not available	Data is not available	Oversupply
7/19/2017 9:00	0:01	LSR	Data is not available	Data is not available	Oversupply
7/19/2017 9:13	0:43	LSR	Data is not available	Data is not available	Oversupply
7/19/2017 10:03	0:02	LSR	Data is not available	Data is not available	Oversupply
7/19/2017 10:06	0:01	LSR	Data is not available	Data is not available	Oversupply
7/19/2017 10:09	0:10	LSR	Data is not available	Data is not available	Oversupply
7/19/2017 11:15	1:00	LSR	Data is not available	Data is not available	Oversupply
7/19/2017 12:20	0:06	LSR	Data is not available	Data is not available	Oversupply
7/19/2017 14:51	0:02	LSR	Data is not available	Data is not available	Oversupply
7/20/2017 8:31	0:02	LSR	Data is not available	Data is not available	Oversupply
7/20/2017 8:42	0:28	LSR	Data is not available	Data is not available	Oversupply
7/20/2017 9:12	0:01	LSR	Data is not available	Data is not available	Oversupply
7/20/2017 9:33	0:04	LSR	Data is not available	Data is not available	Oversupply
7/20/2017 9:40	0:07	LSR	Data is not available	Data is not available	Oversupply
7/20/2017 9:59	0:04	LSR	Data is not available	Data is not available	Oversupply
7/20/2017 10:14	0:03	LSR	Data is not available	Data is not available	Oversupply
7/20/2017 10:18	0:05	LSR	Data is not available	Data is not available	Oversupply
7/20/2017 10:27	0:04	LSR	Data is not available	Data is not available	Oversupply
7/20/2017 13:13	0:06	LSR	Data is not available	Data is not available	Oversupply
7/22/2017 8:45	0:02	LSR	Data is not available	Data is not available	Oversupply
7/22/2017 8:51	0:02	LSR	Data is not available	Data is not available	Oversupply
7/22/2017 9:00	0:01	LSR	Data is not available	Data is not available	Oversupply
7/22/2017 9:04	0:06	LSR	Data is not available	Data is not available	Oversupply
7/22/2017 9:58	0:02	LSR	Data is not available	Data is not available	Oversupply
7/27/2017 7:50	0:02	LSR	Data is not available	Data is not available	Oversupply
7/27/2017 8:17	0:05	LSR	Data is not available	Data is not available	Oversupply
7/27/2017 8:26	0:05	LSR	Data is not available	Data is not available	Oversupply
7/27/2017 8:34	0:12	LSR	Data is not available	Data is not available	Oversupply
7/27/2017 8:47	0:02	LSR	Data is not available	Data is not available	Oversupply
7/27/2017 8:53	0:02	LSR	Data is not available	Data is not available	Oversupply
7/27/2017 8:57	0:02	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.

Hawai'i Electric Light Company Curtailment Report July 2017

Start Date/Time	MW Output Prior to Start of Curtailment	End Date/Time	MW Output After Curtailment Released ¹	IPP	Reason for Curtailment
07/05/17 08:24	7.7 MW	07/06/17 13:43	6.1 MW	HRD	System constraint

¹ 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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