



June 23, 2017

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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'¹ monthly report for May 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".

SERVICE LIST
(Docket No. 2011-0206)

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SERVICE LIST
(Docket No. 2011-0206)

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

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

The following provides information with respect to items 1a) through 1b) – (all statements are current as of the month ending May 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 May 31, 2017):

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:

Hawai'i Electric Light's under frequency load shed activations are provided in Attachment 4. Hawaiian Electric and Maui Electric did not have any under frequency load shed activations for the month of May.

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

Hawaiian Electric's demand response activations for system events are provided in Attachment 5. 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.

- (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 May 31, 2017):

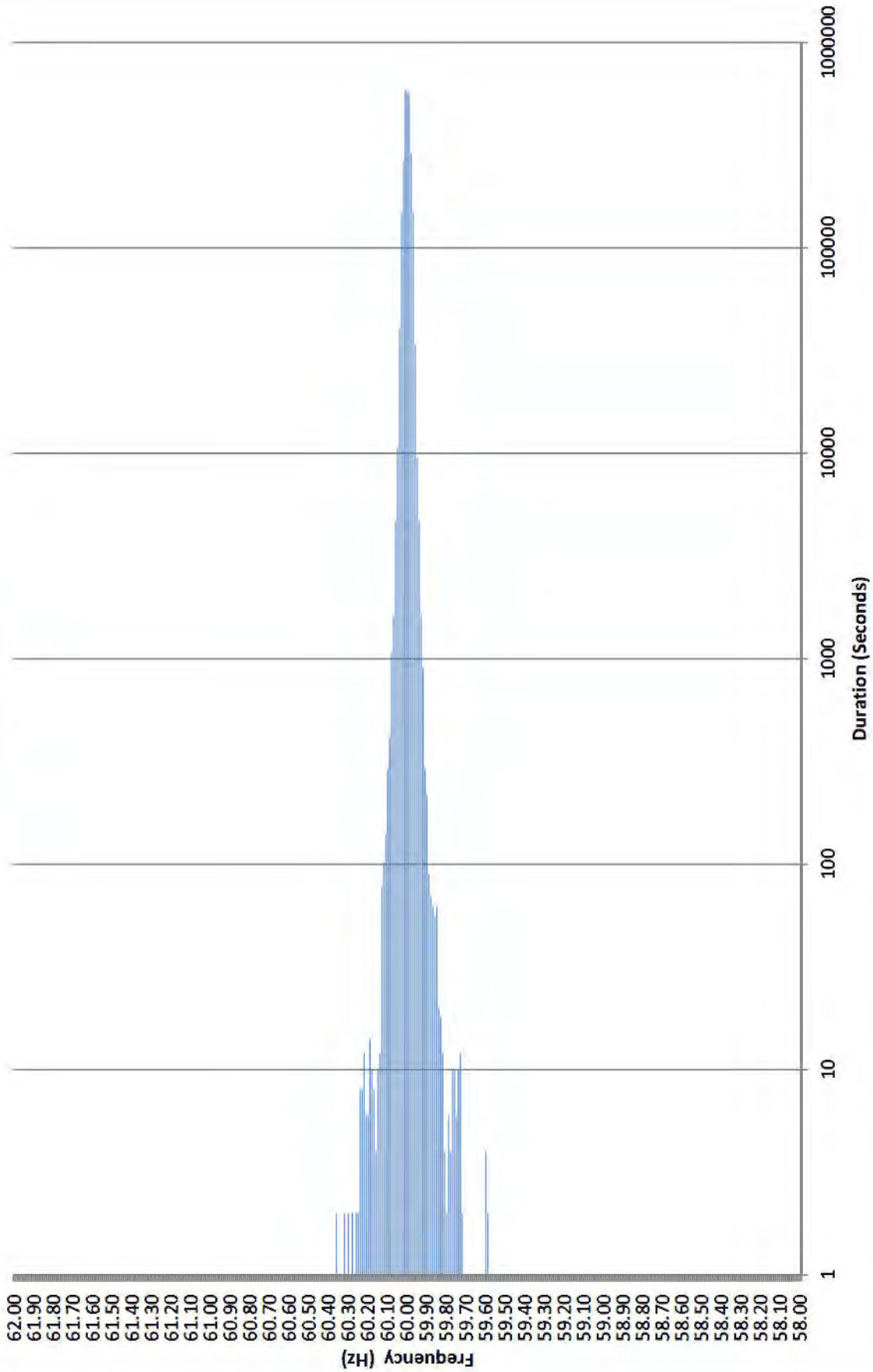
3a) Tabulation of each curtailment event for each resource including the starting date and time, duration, megawatt hours curtailed, peak MW curtailed, and reason for curtailment:

The tabulation of each curtailment event for each resource is provided in Attachment 6. Hawai'i Electric Light did not curtail any non-dispatchable renewable resource for the month of May.

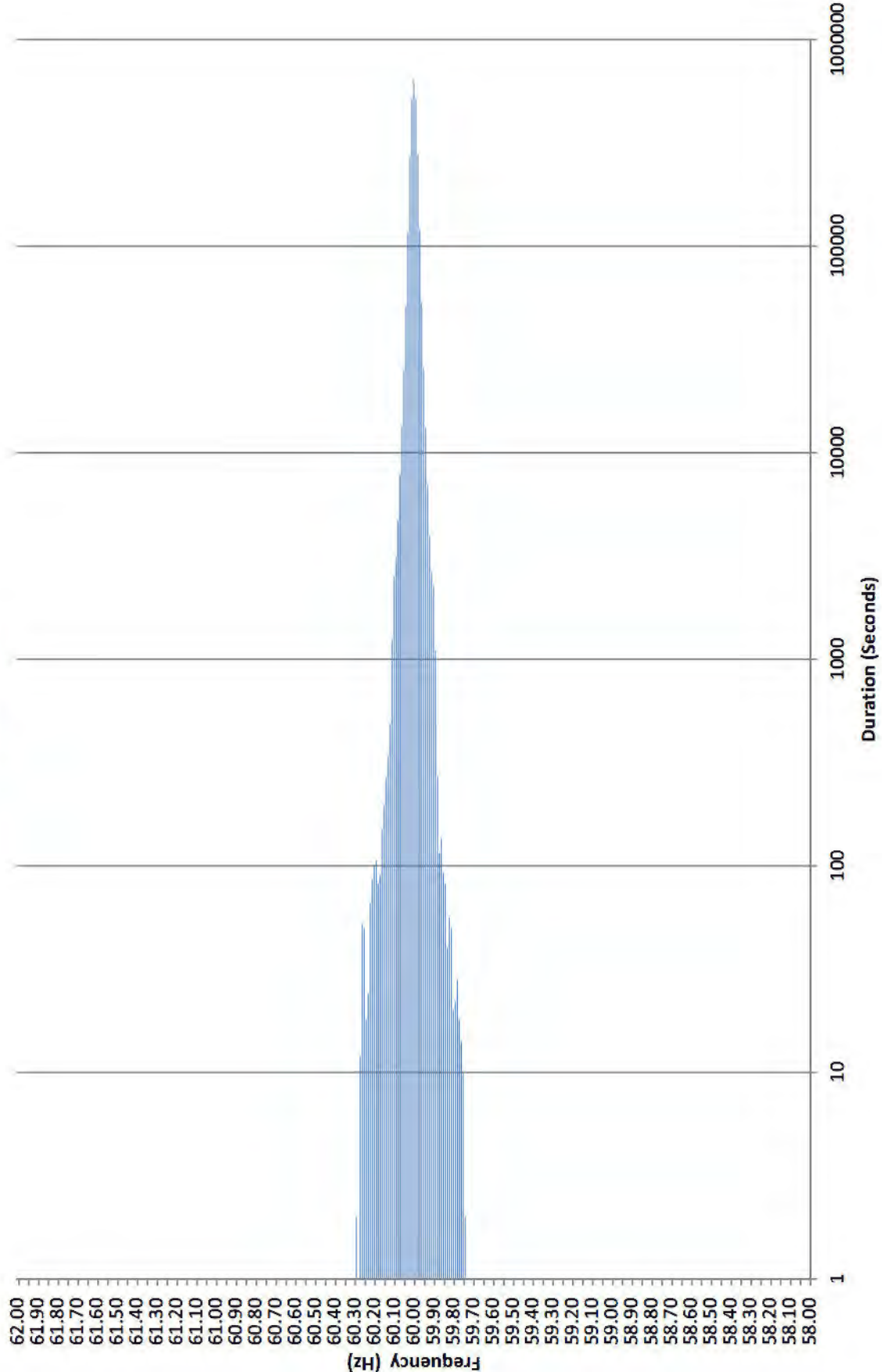
3b) Total MWh of non-dispatchable renewable resources curtailed for the month:

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.

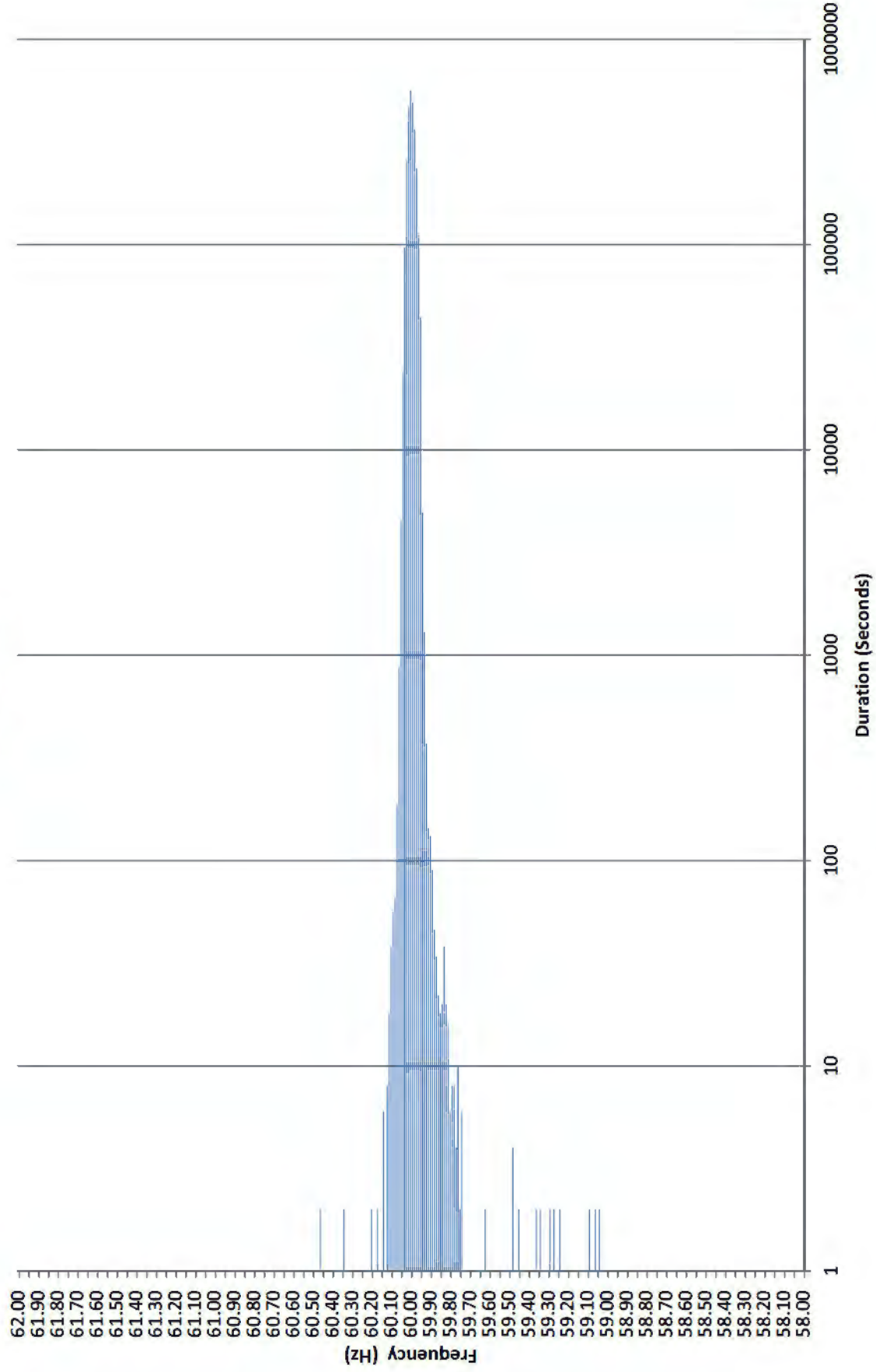
Frequency Distribution Plot - Hawaiian Electric May 2017



**Maui Electric Frequency Distribution Plot - Maui
May 2017**



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



Hawaiian Electric Frequency Excursion Statistics May 2017		
Data Rounded to the nearest	<59.95 Hz	>60.05 Hz
Number of Excursions	816	996
Maximum Duration (sec)	290	410
Maximum Deviation (Hz)	59.59	60.362
Total Duration of Excursions (sec)	11346	11924

Maui Electric Frequency Excursion Statistics May 2017		
	<59.95 Hz	>60.05 Hz
Number of Excursions	7575	6863
Maximum Duration (sec)	446	748
Maximum Deviation (Hz)	59.7412	60.2865
Total Duration of Excursions (sec)	41848	44898

Hawai'i Electric Light Frequency Excursion Statistics May 2017		
	<59.95 Hz	>60.05 Hz
Number of Excursions	5837	691
Maximum Duration (sec)	146	48
Maximum Deviation (Hz)	59.037	60.458
Total Duration of Excursions (sec)	27436	2672

Hawaiian Electric Curtailment Report May 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
05/11/17 06:10	0.0	0.00	05/11/17 06:44	0	*	Aloha	System constraints
05/11/17 11:59	0.0	2.80	05/11/17 13:10	0	*	Waianae	System constraints
05/11/17 12:00	0.0	3.10	05/11/17 13:09	0	*	Aloha	System constraints
05/13/17 13:09	0.0	15.80	05/13/17 14:12	0	*	Waianae	System constraints
05/13/17 15:56	0.0	24.30	05/13/17 16:49	0	*	Waianae	System constraints
05/15/17 07:21	0.0	19.00	05/15/17 14:24	0	*	KWF	System constraints
05/15/17 07:25	0.0	3.00	05/15/17 14:22	0	*	Makai	System constraints
05/15/17 07:25	0.0	3.00	05/15/17 08:11	0	*	Mauka	System constraints
05/15/17 07:58	0.0	4.00	05/15/17 08:57	0	*	KLS2	System constraints
05/15/17 14:08	0.0	14.70	05/15/17 14:22	0	*	Mauka	System constraints
05/15/17 17:28	0.0	3.40	05/15/17 17:50	0	*	KLS2	System constraints
05/15/17 21:23	17.9	22.40	05/15/17 21:50	0	*	KWF	Facility Requested
05/16/17 07:21	0.0	2.00	05/16/17 08:06	0	*	KLS2	System constraints
05/16/17 07:05	0.0	25.00	05/16/17 16:04	0	*	KWF	System constraints
05/16/17 07:08	0.0	9.00	05/16/17 16:03	0	*	Makai	System constraints
05/16/17 07:08	0.0	16.00	05/16/17 07:57	0	*	Mauka	System constraints
05/16/17 15:51	0.0	18.90	05/16/17 16:03	0	*	Mauka	System constraints
05/16/17 17:25	0.0	3.40	05/16/17 19:14	0	*	KLS2	System constraints
05/17/17 07:33	0.0	21.00	05/17/17 16:21	0	*	KWF	System constraints
05/17/17 07:37	0.0	7.00	05/17/17 16:19	0	*	Makai	System constraints
05/17/17 07:37	0.0	18.00	05/17/17 08:21	0	*	Mauka	System constraints
05/17/17 15:51	0.0	15.00	05/17/17 16:18	0	*	Mauka	System constraints
05/17/17 19:39	0.0	0.00	05/17/17 20:31	0	*	KLS2	System constraints
05/18/17 06:29	0.0	0.00	05/18/17 07:21	0	*	KWF	System constraints
05/18/17 06:34	0.0	0.00	05/18/17 07:23	0	*	Makai	System constraints
05/18/17 10:16	0.0	5.00	05/18/17 10:52	0	*	KWF	System constraints
05/18/17 10:19	0.0	1.00	05/18/17 10:54	0	*	Makai	System constraints
05/20/17 05:51	0.0	0.00	05/20/17 06:52	0	*	Waianae	System constraints
05/20/17 14:21	0.0	0.00	05/20/17 14:56	0	*	Aloha	System constraints
05/20/17 14:19	0.0	3.40	05/20/17 14:57	0	*	Waianae	System constraints
05/22/17 06:21	0.0	20.00	05/22/17 15:53	0	*	KWF	System constraints
05/22/17 06:41	0.0	3.00	05/22/17 15:27	0	*	Makai	System constraints
05/22/17 06:40	0.0	18.00	05/22/17 08:09	0	*	Mauka	System constraints
05/22/17 14:31	0.0	22.00	05/22/17 15:27	0	*	Mauka	System constraints
05/28/17 07:19	0.0	0.00	05/28/17 09:18	0	*	Aloha	System constraints
05/28/17 07:22	0.0	7.30	05/28/17 09:20	0	*	Waianae	System constraints
05/28/17 12:31	0.0	21.30	05/28/17 13:01	0	*	Waianae	System constraints
05/28/17 12:33	0.0	1.60	05/28/17 12:59	0	*	Aloha	System constraints
05/31/17 06:05	0.0	0.00	05/31/17 06:31	0	*	Aloha	System constraints
05/31/17 06:09	0.0	0.00	05/31/17 06:34	0	*	Waianae	System constraints
05/31/17 13:38	0.0	3.00	05/31/17 14:08	0	*	Aloha	System constraints
05/31/17 13:35	0.0	22.00	05/31/17 14:10	0	*	Waianae	System constraints

Aloha = Aloha Solar PV Farm
KLS2 = Kalaeloa Solar 2 PV Farm
KREP = Kalaeloa Renewable Energy Park
KWF = Kahuku Wind Farm
Makai = Kawaiolo Makai Wind Farm
Mauka = Kawaiolo 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 Kawaiolo Wind Farm, and HECO does not make any representations as to its accuracy.

* Data has not been provided by IPP.



Maui Curtailment Report

May 2017

Start Date and Time	Duration	IPP Curtailed	Estimated Curtailed MWH	Peak MW Curtailed	Reasons for Curtailment
5/1/2017 16:02	0:05	KWP/II	0.047	8.791	System constraint
5/1/2017 16:43	0:01	AWE	0.000	0.010	System constraint
5/2/2017 22:38	0:11	KWP/II	0.337	16.754	System constraint
5/2/2017 22:52	0:24	KWP/II	0.654	18.836	System constraint
5/3/2017 11:26	0:21	KWP/II	1.389	14.256	Oversupply
5/3/2017 12:04	0:03	KWP/II	0.139	12.095	Oversupply
5/3/2017 12:14	0:17	KWP/II	0.558	12.701	System constraint
5/3/2017 22:25	0:26	KWP/II	1.050	20.708	System constraint
5/3/2017 23:44	6:08	KWP/II	58.433	20.708	Oversupply
5/4/2017 8:00	0:06	KWP/II	0.137	20.708	System constraint
5/4/2017 8:30	0:51	KWP/II	4.603	20.708	Oversupply
5/4/2017 7:27	6:08	KWP/II	94.821	20.708	Oversupply
5/4/2017 9:38	0:28	AWE	0.725	20.680	System constraint
5/4/2017 11:26	0:07	AWE	0.185	19.483	System constraint
5/4/2017 11:37	0:02	AWE	0.002	18.687	System constraint
5/4/2017 14:01	0:26	KWP/II	2.506	19.421	Oversupply
5/4/2017 14:32	0:10	KWP/II	0.419	20.647	Oversupply
5/4/2017 14:43	0:31	KWP/II	1.113	20.696	System constraint
5/4/2017 22:02	0:18	KWP/II	0.608	20.683	System constraint
5/4/2017 23:02	5:32	KWP/II	83.368	20.708	Oversupply
5/5/2017 2:29	0:05	AWE	0.078	19.870	System constraint
5/5/2017 2:40	0:01	AWE	0.001	18.040	System constraint
5/5/2017 2:42	0:34	AWE	0.627	20.190	System constraint
5/5/2017 3:18	0:06	AWE	0.073	19.130	System constraint
5/5/2017 3:42	0:46	AWE	0.866	19.863	System constraint
5/5/2017 10:55	0:28	AWE	1.056	20.590	System constraint
5/5/2017 10:56	0:36	KWP/II	0.984	3.619	System constraint
5/5/2017 19:51	0:09	KWP/II	0.645	16.521	Oversupply
5/8/2017 17:39	0:02	KWP	0.023	2.722	System constraint
5/8/2017 17:56	0:01	KWP	0.005	2.156	System constraint
5/8/2017 18:16	0:04	KWP	0.120	4.816	System constraint
5/8/2017 23:16	0:42	KWP	1.457	19.782	System constraint
5/7/2017 0:01	0:06	KWP	0.094	16.091	System constraint
5/7/2017 0:18	0:22	KWP	0.647	17.433	System constraint
5/7/2017 0:48	0:21	KWP	0.484	18.514	System constraint
5/7/2017 1:07	0:40	KWP/II	2.644	18.594	Oversupply
5/7/2017 1:48	0:31	KWP/II	3.520	15.895	Oversupply
5/7/2017 11:06	0:41	AWE	0.705	20.587	System constraint
5/7/2017 11:07	0:14	KWP/II	0.070	0.528	System constraint
5/7/2017 11:23	0:25	KWP/II	0.345	1.473	System constraint
5/8/2017 17:06	0:01	KWP	0.000	0.001	System constraint
5/9/2017 23:27	2:34	KWP/II	36.066	20.686	Oversupply
5/10/2017 2:02	0:54	KWP/II	0.54	15.876	Oversupply
5/10/2017 2:57	3:13	KWP/II	24.668	20.604	Oversupply
5/10/2017 6:42	0:13	BS250	Data is not available	Data is not available	System constraint
5/10/2017 6:42	0:13	KWP/II	0.530	20.640	System constraint
5/10/2017 7:38	0:01	BS250	Data is not available	Data is not available	Oversupply
5/10/2017 7:48	1:36	BS250	Data is not available	Data is not available	Oversupply
5/10/2017 7:47	1:35	KWP/II	23.234	20.708	Oversupply
5/10/2017 8:48	0:01	AWE	0.026	17.753	System constraint
5/10/2017 8:55	0:01	AWE	0.012	16.813	System constraint
5/10/2017 8:59	0:06	AWE	0.188	18.993	System constraint
5/10/2017 9:09	0:02	AWE	0.016	18.840	System constraint
5/10/2017 9:13	0:01	AWE	0.003	20.503	System constraint
5/10/2017 9:24	2:06	BS250	Data is not available	Data is not available	Oversupply
5/10/2017 9:24	2:06	KWP/II	35.668	20.684	Oversupply
5/10/2017 10:01	0:03	AWE	0.058	18.040	System constraint
5/10/2017 10:06	0:15	AWE	0.606	19.033	System constraint
5/10/2017 10:27	0:01	AWE	0.022	16.820	System constraint
5/10/2017 10:42	0:01	AWE	0.007	17.043	System constraint
5/10/2017 10:47	0:10	AWE	0.584	20.567	Oversupply
5/10/2017 11:01	0:13	AWE	0.846	19.933	Oversupply
5/10/2017 11:15	0:01	AWE	0.011	18.820	System constraint
5/10/2017 11:18	0:04	AWE	0.033	20.880	System constraint
5/10/2017 11:32	1:52	BS250	Data is not available	Data is not available	Oversupply
5/10/2017 11:32	5:21	KWP/II	60.585	20.611	Oversupply
5/10/2017 12:30	0:03	AWE	0.100	15.047	System constraint
5/10/2017 12:40	0:05	AWE	0.069	18.517	System constraint
5/10/2017 12:47	1:14	AWE	4.581	20.060	Oversupply
5/10/2017 14:03	0:05	AWE	0.056	19.267	System constraint
5/10/2017 17:43	0:10	KWP/II	0.354	16.406	System constraint
5/10/2017 20:58	0:18	KWP/II	0.677	18.401	Oversupply
5/10/2017 22:46	0:53	KWP/II	5.481	20.701	Oversupply
5/10/2017 23:40	0:01	KWP/II	0.002	19.695	System constraint
5/10/2017 23:48	1:02	KWP/II	9.903	20.641	Oversupply
5/11/2017 0:51	2:42	KWP/II	45.149	20.613	Oversupply
5/11/2017 1:37	0:10	AWE	0.254	16.307	System constraint
5/11/2017 1:50	0:06	AWE	0.150	14.077	System constraint
5/11/2017 2:08	0:03	AWE	0.067	17.160	System constraint
5/11/2017 2:17	0:02	AWE	0.050	17.567	System constraint
5/11/2017 2:21	0:03	AWE	0.064	16.563	System constraint
5/11/2017 2:26	0:07	AWE	0.341	18.927	Oversupply
5/11/2017 2:34	0:44	AWE	2.755	16.277	Oversupply
5/11/2017 3:20	0:09	AWE	0.429	16.967	Oversupply
5/11/2017 3:35	0:48	KWP/II	13.260	20.341	Oversupply
5/11/2017 3:49	0:27	AWE	1.135	17.427	Oversupply
5/11/2017 4:26	0:50	KWP/II	13.358	16.726	Oversupply
5/11/2017 5:04	0:05	AWE	0.114	19.233	System constraint
5/11/2017 5:10	0:01	AWE	0.005	18.987	System constraint
5/11/2017 5:14	0:01	AWE	0.006	19.627	System constraint
5/11/2017 5:27	0:37	KWP/II	6.261	20.596	Oversupply
5/11/2017 5:44	0:21	BS250	Data is not available	Data is not available	Oversupply
5/11/2017 6:09	0:13	BS250	Data is not available	Data is not available	System constraint
5/11/2017 6:09	0:12	KWP/II	0.252	19.956	System constraint
5/11/2017 6:24	0:01	BS250	Data is not available	Data is not available	System constraint
5/11/2017 6:25	0:01	KWP/II	0.001	19.954	System constraint
5/11/2017 6:40	0:06	BS250	Data is not available	Data is not available	System constraint
5/11/2017 6:40	0:06	KWP/II	0.181	19.180	System constraint
5/11/2017 6:47	0:30	BS250	Data is not available	Data is not available	Oversupply
5/11/2017 6:47	0:43	KWP/II	2.210	19.899	Oversupply
5/11/2017 7:18	0:13	BS250	Data is not available	Data is not available	Oversupply
5/11/2017 7:43	1:13	BS250	Data is not available	Data is not available	Oversupply
5/11/2017 7:44	1:12	KWP/II	12.716	17.770	Oversupply
5/11/2017 7:54	0:01	AWE	0.001	20.253	System constraint
5/11/2017 7:56	0:01	AWE	0.003	18.010	System constraint
5/11/2017 7:58	0:11	AWE	0.199	20.250	System constraint
5/11/2017 8:10	0:45	AWE	3.365	20.787	Oversupply



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May 2017

Start Date and Time	Duration	IPP Curtailed	Estimated Curtailed MWH	Peak MW Curtailed	Reasons for Curtailment
5/11/2017 8:57	0:01	BS250	Data is not available	Data is not available	System constraint
5/11/2017 8:57	0:01	KWPPI		0.022	2,575 System constraint
5/11/2017 8:59	0:02	BS250	Data is not available	Data is not available	System constraint
5/11/2017 8:59	0:02	KWPPI		0.059	2,333 System constraint
5/11/2017 9:03	0:01	BS250	Data is not available	Data is not available	System constraint
5/11/2017 9:09	0:01	BS250	Data is not available	Data is not available	System constraint
5/11/2017 9:24	0:10	BS250	Data is not available	Data is not available	System constraint
5/11/2017 9:24	0:10	KWPPI		0.746	8,425 System constraint
5/11/2017 9:50	0:04	BS250	Data is not available	Data is not available	System constraint
5/11/2017 10:11	0:03	BS250	Data is not available	Data is not available	System constraint
5/11/2017 10:12	0:01	KWPPI		0.004	2,580 System constraint
5/11/2017 10:16	0:02	BS250	Data is not available	Data is not available	System constraint
5/11/2017 10:31	0:15	BS250	Data is not available	Data is not available	System constraint
5/11/2017 10:32	0:14	KWPPI		0.407	6,345 System constraint
5/11/2017 10:37	0:03	AWE		0.017	19,440 System constraint
5/11/2017 10:42	0:02	AWE		0.012	20,630 System constraint
5/11/2017 10:46	0:01	AWE		0.013	18,953 System constraint
5/11/2017 10:47	0:40	BS250	Data is not available	Data is not available	Oversupply
5/11/2017 10:47	0:48	KWPPI		2.343	5,038 Oversupply
5/11/2017 10:51	0:41	AWE		1.586	20,133 System constraint
5/11/2017 11:33	0:01	AWE		0.006	20,273 System constraint
5/11/2017 11:38	0:02	BS250	Data is not available	Data is not available	System constraint
5/11/2017 11:39	0:01	KWPPI		0.011	0,996 System constraint
5/11/2017 12:09	0:01	KWP		0.000	0,002 System constraint
5/11/2017 13:42	0:18	BS250	Data is not available	Data is not available	System constraint
5/11/2017 13:42	0:18	AWE		0.459	19,607 System constraint
5/11/2017 14:02	0:28	AWE		1.335	19,950 Oversupply
5/11/2017 14:04	0:28	BS250	Data is not available	Data is not available	System constraint
5/11/2017 14:11	0:10	KWPPI		0.038	0,381 System constraint
5/11/2017 14:24	0:01	KWPPI		0.000	0,018 System constraint
5/11/2017 14:36	0:02	BS250	Data is not available	Data is not available	System constraint
5/11/2017 14:37	0:01	AWE		0.003	19,800 System constraint
5/11/2017 14:41	0:03	BS250	Data is not available	Data is not available	System constraint
5/11/2017 14:45	0:01	BS250	Data is not available	Data is not available	System constraint
5/11/2017 14:45	0:01	KWPPI		0.002	0,320 System constraint
5/11/2017 22:04	0:02	KWPPI		0.124	11,070 Oversupply
5/11/2017 22:16	0:26	KWPPI		3.040	18,968 Oversupply
5/12/2017 0:37	0:12	KWPPI		0.513	5,519 Oversupply
5/12/2017 1:07	0:27	KWPPI		1.626	9,010 Oversupply
5/12/2017 1:37	0:02	KWPPI		0.013	4,843 System constraint
5/12/2017 1:46	0:25	KWPPI		3.401	11,038 Oversupply
5/12/2017 1:50	0:04	AWE		0.034	20,570 System constraint
5/12/2017 1:56	0:03	AWE		0.061	20,133 System constraint
5/12/2017 1:59	0:02	AWE		0.026	19,517 System constraint
5/12/2017 2:02	0:01	AWE		0.004	19,660 System constraint
5/12/2017 2:04	0:02	AWE		0.008	20,743 System constraint
5/12/2017 2:14	0:03	KWPPI		0.087	7,664 System constraint
5/12/2017 3:50	0:19	KWPPI		0.962	5,319 Oversupply
5/12/2017 3:56	0:03	AWE		0.016	19,713 System constraint
5/12/2017 4:00	0:02	AWE		0.017	18,737 System constraint
5/12/2017 4:06	0:01	AWE		0.011	19,677 System constraint
5/12/2017 4:20	0:03	KWPPI		0.095	6,744 System constraint
5/12/2017 5:36	0:28	AWE		1.685	20,243 Oversupply
5/12/2017 5:44	0:25	BS250	Data is not available	Data is not available	Oversupply
5/12/2017 5:48	0:21	KWPPI		1.030	5,409 Oversupply
5/12/2017 6:10	0:01	BS250	Data is not available	Data is not available	System constraint
5/12/2017 6:13	0:05	BS250	Data is not available	Data is not available	System constraint
5/12/2017 6:14	0:03	KWPPI		0.053	1,685 System constraint
5/12/2017 6:18	0:01	AWE		0.004	20,543 System constraint
5/12/2017 6:19	0:02	BS250	Data is not available	Data is not available	System constraint
5/12/2017 6:19	0:01	KWPPI		0.016	2,702 System constraint
5/12/2017 7:27	0:06	BS250	Data is not available	Data is not available	System constraint
5/12/2017 7:27	0:07	AWE		0.144	20,380 System constraint
5/12/2017 7:27	0:07	KWPPI		0.020	0,403 System constraint
5/12/2017 7:36	0:02	AWE		0.005	20,070 System constraint
5/12/2017 7:37	0:01	BS250	Data is not available	Data is not available	System constraint
5/12/2017 7:40	0:01	BS250	Data is not available	Data is not available	System constraint
5/12/2017 7:43	0:30	BS250	Data is not available	Data is not available	Oversupply
5/12/2017 7:46	0:37	KWPPI		5.712	15,608 Oversupply
5/12/2017 7:59	0:01	AWE		0.003	20,603 System constraint
5/12/2017 8:01	0:05	AWE		0.023	20,733 System constraint
5/12/2017 8:07	0:01	AWE		0.000	20,500 System constraint
5/12/2017 8:06	0:04	AWE		0.033	20,653 System constraint
5/12/2017 8:14	0:01	AWE		0.001	20,773 System constraint
5/12/2017 8:16	0:01	AWE		0.002	20,747 System constraint
5/12/2017 8:25	0:01	BS250	Data is not available	Data is not available	System constraint
5/12/2017 8:26	0:01	KWPPI		0.026	8,119 System constraint
5/12/2017 8:27	0:06	BS250	Data is not available	Data is not available	System constraint
5/12/2017 8:30	0:01	KWPPI		0.020	6,794 System constraint
5/12/2017 8:34	0:01	BS250	Data is not available	Data is not available	System constraint
5/12/2017 8:36	0:30	BS250	Data is not available	Data is not available	System constraint
5/12/2017 9:39	0:24	AWE		0.717	20,433 System constraint
5/12/2017 9:53	0:14	KWPPI		0.382	2,116 System constraint
5/12/2017 10:04	0:01	AWE		0.002	20,437 System constraint
5/12/2017 10:06	0:01	AWE		0.005	20,820 System constraint
5/12/2017 10:13	0:02	BS250	Data is not available	Data is not available	System constraint
5/12/2017 10:13	0:02	AWE		0.020	19,983 System constraint
5/12/2017 10:21	0:02	BS250	Data is not available	Data is not available	System constraint
5/12/2017 10:33	0:22	BS250	Data is not available	Data is not available	System constraint
5/12/2017 10:33	0:01	AWE		0.007	20,300 System constraint
5/12/2017 10:36	0:01	AWE		0.003	20,630 System constraint
5/12/2017 10:36	0:01	KWPPI		0.018	1,298 System constraint
5/12/2017 10:38	0:00	AWE		0.285	20,280 System constraint
5/12/2017 10:38	0:11	KWPPI		0.299	2,659 System constraint
5/12/2017 10:50	0:03	KWPPI		0.050	1,829 System constraint
5/12/2017 10:56	0:28	BS250	Data is not available	Data is not available	System constraint
5/12/2017 10:56	0:20	AWE		0.611	20,860 System constraint
5/12/2017 10:59	0:25	KWPPI		0.790	4,035 System constraint
5/12/2017 11:19	0:01	AWE		0.008	19,423 System constraint
5/12/2017 11:21	0:01	AWE		0.001	20,147 System constraint
5/12/2017 11:28	0:02	BS250	Data is not available	Data is not available	System constraint
5/12/2017 11:37	0:01	BS250	Data is not available	Data is not available	System constraint
5/12/2017 11:39	0:23	BS250	Data is not available	Data is not available	System constraint
5/12/2017 11:39	0:01	AWE		0.002	20,373 System constraint
5/12/2017 11:39	0:05	KWPPI		0.016	0,286 System constraint
5/12/2017 11:41	0:03	AWE		0.032	19,803 System constraint
5/12/2017 11:46	0:17	AWE		0.235	20,647 System constraint



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Start Date and Time	Duration	IPP Curtailed	Estimated Curtailed MWH	Peak MW Curtailed	System constraint	Reasons for Curtailment
5/12/2017 11:47	0:15	KWPII	0.404	2.630	System constraint	
5/12/2017 13:56	0:37	BS250	Data is not available	Data is not available	Oversupply	
5/12/2017 13:59	0:33	KWPII	4.034	16.606	Oversupply	
5/12/2017 14:11	0:04	AWIE	0.020	20.390	System constraint	
5/12/2017 14:21	0:01	AWIE	0.006	20.550	System constraint	
5/12/2017 14:34	0:40	BS250	Data is not available	Data is not available	Oversupply	
5/12/2017 14:36	0:38	KWPII	3.236	17.156	Oversupply	
5/12/2017 15:23	0:01	BS250	Data is not available	Data is not available	Oversupply	
5/12/2017 15:28	0:01	BS250	Data is not available	Data is not available	Oversupply	
5/12/2017 15:50	0:01	BS250	Data is not available	Data is not available	System constraint	
5/12/2017 15:52	0:01	BS250	Data is not available	Data is not available	System constraint	
5/12/2017 16:52	0:01	KWPII	0.022	16.633	System constraint	
5/12/2017 15:54	0:03	BS250	Data is not available	Data is not available	System constraint	
5/12/2017 15:58	0:07	BS250	Data is not available	Data is not available	System constraint	
5/12/2017 15:59	0:06	KWPII	0.180	17.496	System constraint	
5/12/2017 16:08	0:01	BS250	Data is not available	Data is not available	System constraint	
5/12/2017 16:13	0:01	BS250	Data is not available	Data is not available	System constraint	
5/12/2017 16:15	0:05	BS250	Data is not available	Data is not available	System constraint	
5/12/2017 16:18	0:02	KWPII	0.020	17.417	System constraint	
5/12/2017 16:21	0:05	BS250	Data is not available	Data is not available	System constraint	
5/12/2017 16:21	0:01	KWPII	0.009	17.643	System constraint	
5/12/2017 16:23	0:02	KWPII	0.015	17.678	System constraint	
5/12/2017 16:31	0:06	BS250	Data is not available	Data is not available	System constraint	
5/12/2017 16:31	0:06	KWPII	0.156	17.094	System constraint	
5/12/2017 16:38	0:02	BS250	Data is not available	Data is not available	System constraint	
5/12/2017 16:38	0:01	KWPII	0.005	16.380	System constraint	
5/12/2017 16:44	0:38	BS250	Data is not available	Data is not available	System constraint	
5/12/2017 16:49	0:33	KWPII	1.206	17.704	System constraint	
5/12/2017 17:24	0:21	BS250	Data is not available	Data is not available	System constraint	
5/12/2017 17:24	0:25	KWPII	0.641	18.757	System constraint	
5/12/2017 17:46	0:04	BS250	Data is not available	Data is not available	System constraint	
5/12/2017 17:51	0:01	BS250	Data is not available	Data is not available	System constraint	
5/12/2017 22:18	4:18	KWPII	63.821	20.702	Oversupply	
5/13/2017 0:19	0:06	AWIE	0.025	20.713	System constraint	
5/13/2017 0:26	2:02	AWIE	5.408	20.637	Oversupply	
5/13/2017 2:37	2:02	KWPII	26.264	18.514	Oversupply	
5/13/2017 2:50	0:15	AWIE	0.396	17.673	System constraint	
5/13/2017 3:46	0:26	AWIE	0.852	17.600	System constraint	
5/13/2017 4:13	0:07	AWIE	0.107	17.467	System constraint	
5/13/2017 5:21	0:06	KWPII	0.275	15.771	Oversupply	
5/13/2017 5:30	0:29	KWPII	2.627	18.380	Oversupply	
5/13/2017 5:44	0:17	BS250	Data is not available	Data is not available	Oversupply	
5/13/2017 6:02	0:04	BS250	Data is not available	Data is not available	System constraint	
5/13/2017 6:03	0:03	KWPII	0.083	19.079	System constraint	
5/13/2017 6:06	0:07	BS250	Data is not available	Data is not available	System constraint	
5/13/2017 6:09	0:06	KWPII	0.236	19.185	System constraint	
5/13/2017 6:18	0:01	BS250	Data is not available	Data is not available	System constraint	
5/13/2017 6:20	0:45	BS250	Data is not available	Data is not available	System constraint	
5/13/2017 6:20	0:44	KWPII	2.908	19.984	Oversupply	
5/13/2017 7:20	0:03	BS250	Data is not available	Data is not available	System constraint	
5/13/2017 7:20	0:02	KWPII	0.081	14.391	System constraint	
5/13/2017 7:27	0:12	BS250	Data is not available	Data is not available	System constraint	
5/13/2017 7:28	0:01	KWPII	0.009	16.330	System constraint	
5/13/2017 7:31	0:08	KWPII	0.461	19.448	Oversupply	
5/13/2017 8:13	0:02	BS250	Data is not available	Data is not available	Oversupply	
5/13/2017 8:17	6:50	BS250	Data is not available	Data is not available	Oversupply	
5/13/2017 8:18	6:54	KWPII	99.032	20.708	Oversupply	
5/13/2017 9:28	0:01	AWIE	0.011	20.853	System constraint	
5/13/2017 10:55	0:02	AWIE	0.027	20.427	System constraint	
5/13/2017 10:58	0:04	AWIE	0.068	20.480	System constraint	
5/13/2017 11:03	0:07	AWIE	0.045	20.057	System constraint	
5/13/2017 11:11	0:04	AWIE	0.085	20.723	System constraint	
5/13/2017 11:18	0:24	AWIE	1.132	20.520	Oversupply	
5/13/2017 11:43	1:46	AWIE	11.540	21.000	Oversupply	
5/13/2017 13:30	0:07	AWIE	0.096	20.840	System constraint	
5/13/2017 13:38	0:01	AWIE	0.000	20.793	System constraint	
5/13/2017 13:41	0:04	AWIE	0.034	20.770	System constraint	
5/13/2017 15:08	0:04	BS250	Data is not available	Data is not available	System constraint	
5/13/2017 15:16	0:01	BS250	Data is not available	Data is not available	System constraint	
5/13/2017 15:16	0:01	KWPII	0.002	20.696	System constraint	
5/13/2017 15:29	0:03	BS250	Data is not available	Data is not available	System constraint	
5/13/2017 15:29	0:01	KWPII	0.002	19.800	System constraint	
5/13/2017 15:36	0:01	BS250	Data is not available	Data is not available	System constraint	
5/13/2017 15:37	0:01	KWPII	0.005	19.997	System constraint	
5/13/2017 15:38	0:22	BS250	Data is not available	Data is not available	System constraint	
5/13/2017 16:40	0:25	KWPII	0.893	20.701	System constraint	
5/13/2017 16:01	0:04	BS250	Data is not available	Data is not available	System constraint	
5/13/2017 23:13	0:01	KWPII	0.008	20.708	System constraint	
5/13/2017 23:20	5:51	KWPII	102.655	20.708	Oversupply	
5/14/2017 1:18	0:01	AWIE	0.000	18.870	System constraint	
5/14/2017 1:37	2:55	AWIE	11.558	20.283	Oversupply	
5/14/2017 4:33	0:28	AWIE	0.897	20.323	System constraint	
5/14/2017 5:04	0:01	AWIE	0.006	20.247	System constraint	
5/14/2017 5:13	10:47	KWPII	150.760	20.708	Oversupply	
5/14/2017 5:44	6:13	BS250	Data is not available	Data is not available	Oversupply	
5/14/2017 11:19	0:03	AWIE	0.038	20.780	System constraint	
5/14/2017 11:30	1:50	AWIE	14.593	20.980	Oversupply	
5/14/2017 11:52	1:17	KWPII	8.271	29.922	Oversupply	
5/14/2017 13:27	1:07	BS250	Data is not available	Data is not available	Oversupply	
5/14/2017 13:31	0:56	AWIE	4.732	21.000	Oversupply	
5/14/2017 14:34	0:33	AWIE	0.421	21.000	System constraint	
5/14/2017 15:07	0:05	BS250	Data is not available	Data is not available	System constraint	
5/14/2017 16:12	0:05	AWIE	0.095	20.780	System constraint	
5/14/2017 15:19	0:41	BS250	Data is not available	Data is not available	System constraint	
5/14/2017 16:22	0:02	AWIE	0.017	20.743	System constraint	
5/14/2017 16:23	0:01	BS250	Data is not available	Data is not available	System constraint	
5/14/2017 16:23	0:01	KWPII	0.002	20.707	System constraint	
5/14/2017 20:51	0:02	KWPII	0.004	20.708	System constraint	
5/14/2017 20:56	0:11	KWPII	0.040	20.708	System constraint	
5/14/2017 22:38	7:57	KWPII	145.020	20.708	Oversupply	
5/14/2017 23:51	0:05	AWIE	0.053	19.977	System constraint	
5/14/2017 23:57	0:05	AWIE	0.028	18.450	System constraint	
5/15/2017 0:04	0:06	AWIE	0.080	18.343	System constraint	
5/15/2017 0:12	0:04	AWIE	0.048	17.240	System constraint	
5/15/2017 0:16	4:57	AWIE	51.848	20.697	Oversupply	
5/15/2017 2:23	0:17	KWPII	1.063	28.606	Oversupply	
5/15/2017 6:31	0:04	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
5/15/2017 8:37	2:04	BS250	Data is not available	Data is not available	Oversupply
5/15/2017 8:37	2:12	KWPII		30.246	Oversupply
5/15/2017 8:23	0:18	AWE		0.227	System constraint
5/15/2017 8:42	0:03	AWE		0.036	System constraint
5/15/2017 8:45	0:04	BS250	Data is not available	Data is not available	System constraint
5/15/2017 8:50	0:37	BS250	Data is not available	Data is not available	Oversupply
5/15/2017 8:51	4:34	KWPII		90.570	Oversupply
5/15/2017 9:19	0:08	AWE		0.105	System constraint
5/15/2017 13:21	0:04	BS250	Data is not available	Data is not available	Oversupply
5/15/2017 13:27	0:54	BS250	Data is not available	Data is not available	Oversupply
5/15/2017 13:27	1:48	KWPII		18.470	Oversupply
5/15/2017 14:21	0:03	AWE		0.029	System constraint
5/15/2017 14:23	0:52	BS250	Data is not available	Data is not available	System constraint
5/15/2017 15:18	0:01	BS250	Data is not available	Data is not available	System constraint
5/15/2017 15:22	0:03	AWE		0.042	System constraint
5/15/2017 15:38	0:06	BS250	Data is not available	Data is not available	System constraint
5/15/2017 15:38	0:06	KWPII		0.065	System constraint
5/15/2017 15:44	0:09	KWPII		0.085	System constraint
5/15/2017 15:45	0:04	BS250	Data is not available	Data is not available	System constraint
5/15/2017 15:52	0:01	BS250	Data is not available	Data is not available	System constraint
5/15/2017 22:03	8:04	KWPII		133.772	Oversupply
5/15/2017 5:44	0:23	BS250	Data is not available	Data is not available	Oversupply
5/16/2017 8:38	0:05	BS250	Data is not available	Data is not available	Oversupply
5/16/2017 8:39	3:35	KWPII		48.987	Oversupply
5/16/2017 8:45	2:06	BS250	Data is not available	Data is not available	Oversupply
5/16/2017 8:48	1:21	AWE		4.055	Oversupply
5/16/2017 10:15	4:28	KWPII		89.482	Oversupply
5/16/2017 10:47	3:26	AWE		22.182	Oversupply
5/16/2017 14:39	0:04	BS250	Data is not available	Data is not available	Oversupply
5/16/2017 14:45	0:36	BS250	Data is not available	Data is not available	Oversupply
5/16/2017 14:45	0:40	KWPII		3.625	Oversupply
5/16/2017 15:22	0:03	BS250	Data is not available	Data is not available	Oversupply
5/16/2017 15:26	0:01	BS250	Data is not available	Data is not available	Oversupply
5/16/2017 15:30	0:02	BS250	Data is not available	Data is not available	System constraint
5/16/2017 15:30	0:25	KWPII		0.502	System constraint
5/16/2017 15:33	0:22	BS250	Data is not available	Data is not available	System constraint
5/16/2017 22:24	7:46	KWPII		146.357	Oversupply
5/17/2017 6:13	4:25	KWPII		61.897	Oversupply
5/17/2017 7:55	1:14	BS250	Data is not available	Data is not available	System constraint
5/17/2017 9:07	0:01	AWE		0.011	System constraint
5/17/2017 10:36	2:28	KWPII		24.428	Oversupply
5/17/2017 11:18	1:48	BS250	Data is not available	Data is not available	System constraint
5/17/2017 13:07	0:05	BS250	Data is not available	Data is not available	System constraint
5/17/2017 13:08	0:03	KWPII		0.071	System constraint
5/17/2017 13:17	0:01	BS250	Data is not available	Data is not available	System constraint
5/17/2017 13:20	0:06	BS250	Data is not available	Data is not available	System constraint
5/17/2017 13:21	0:05	KWPII		0.107	System constraint
5/17/2017 13:33	0:01	BS250	Data is not available	Data is not available	System constraint
5/17/2017 13:42	0:32	BS250	Data is not available	Data is not available	Oversupply
5/17/2017 13:42	0:21	KWPII		1.431	Oversupply
5/17/2017 14:05	0:07	KWPII		0.313	Oversupply
5/17/2017 14:13	0:01	KWPII		0.048	Oversupply
5/17/2017 14:16	0:03	BS250	Data is not available	Data is not available	System constraint
5/17/2017 14:16	0:02	KWPII		0.046	System constraint
5/17/2017 14:20	0:02	BS250	Data is not available	Data is not available	System constraint
5/17/2017 14:20	0:01	KWPII		0.026	System constraint
5/17/2017 14:23	0:34	BS250	Data is not available	Data is not available	Oversupply
5/17/2017 14:23	0:28	KWPII		1.110	Oversupply
5/17/2017 14:50	0:06	KWPII		0.136	System constraint
5/17/2017 15:49	0:01	BS250	Data is not available	Data is not available	Oversupply
5/17/2017 15:52	0:01	BS250	Data is not available	Data is not available	Oversupply
5/17/2017 15:54	0:06	BS250	Data is not available	Data is not available	Oversupply
5/17/2017 15:57	0:04	KWPII		0.196	Oversupply
5/17/2017 16:06	0:03	BS250	Data is not available	Data is not available	System constraint
5/17/2017 16:07	0:02	KWPII		0.023	System constraint
5/17/2017 16:13	0:02	BS250	Data is not available	Data is not available	System constraint
5/17/2017 16:20	0:03	BS250	Data is not available	Data is not available	System constraint
5/17/2017 16:20	0:03	KWPII		0.075	System constraint
5/17/2017 16:54	0:02	BS250	Data is not available	Data is not available	System constraint
5/17/2017 16:55	0:01	KWPII		0.005	System constraint
5/19/2017 11:39	0:01	KWP		0.000	System constraint
5/19/2017 14:28	0:02	BS250	Data is not available	Data is not available	System constraint
5/20/2017 14:24	0:01	AWE		0.004	System constraint
5/20/2017 15:42	0:01	BS250	Data is not available	Data is not available	System constraint
5/20/2017 15:44	0:12	BS250	Data is not available	Data is not available	System constraint
5/20/2017 15:47	0:04	KWPII		0.058	System constraint
5/20/2017 15:52	0:04	KWPII		0.047	System constraint
5/20/2017 15:58	0:06	BS250	Data is not available	Data is not available	System constraint
5/20/2017 16:00	0:05	KWPII		0.006	System constraint
5/20/2017 18:00	0:03	BS250	Data is not available	Data is not available	System constraint
5/20/2017 18:00	0:03	KWPII		0.062	System constraint
5/20/2017 18:14	0:01	BS250	Data is not available	Data is not available	System constraint
5/20/2017 23:42	0:13	KWPII		0.414	System constraint
5/20/2017 23:58	0:05	KWPII		0.148	System constraint
5/21/2017 2:14	0:03	KWPII		0.006	System constraint
5/21/2017 2:23	0:06	KWPII		0.258	System constraint
5/21/2017 3:27	0:35	KWPII		3.191	Oversupply
5/21/2017 4:00	0:03	KWPII		0.073	System constraint
5/21/2017 5:34	0:01	KWPII		0.016	System constraint
5/21/2017 5:39	0:02	KWPII		0.025	System constraint
5/21/2017 5:42	0:07	KWPII		0.162	System constraint
5/21/2017 5:44	0:05	BS250	Data is not available	Data is not available	System constraint
5/21/2017 6:04	0:01	BS250	Data is not available	Data is not available	Oversupply
5/21/2017 6:39	0:02	BS250	Data is not available	Data is not available	Oversupply
5/21/2017 6:39	0:46	KWPII		5.082	Oversupply
5/21/2017 6:55	0:03	BS250	Data is not available	Data is not available	Oversupply
5/21/2017 6:10	0:17	BS250	Data is not available	Data is not available	Oversupply
5/21/2017 6:26	0:01	BS250	Data is not available	Data is not available	System constraint
5/21/2017 6:31	0:07	BS250	Data is not available	Data is not available	System constraint
5/21/2017 9:32	0:06	KWPII		0.138	System constraint
5/21/2017 9:41	0:06	BS250	Data is not available	Data is not available	System constraint
5/21/2017 9:42	0:04	KWPII		0.112	System constraint
5/21/2017 10:38	0:02	BS250	Data is not available	Data is not available	System constraint
5/21/2017 10:39	0:01	KWPII		0.019	System constraint
5/21/2017 10:57	0:04	BS250	Data is not available	Data is not available	Oversupply
5/21/2017 10:57	0:10	KWPII		0.512	Oversupply
5/21/2017 11:07	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
5/21/2017 11:12	0:01	BS250	Data is not available	Data is not available	Oversupply
5/21/2017 11:15	0:19	BS250	Data is not available	Data is not available	Oversupply
5/21/2017 11:15	0:17	KWPII		18.060	Oversupply
5/21/2017 11:37	0:14	BS250	Data is not available	Data is not available	System constraint
5/21/2017 11:38	0:13	KWPII		16.790	System constraint
5/21/2017 12:12	0:01	BS250	Data is not available	Data is not available	System constraint
5/21/2017 12:54	0:08	BS250	Data is not available	Data is not available	System constraint
5/21/2017 12:55	0:07	KWPII		16.118	System constraint
5/21/2017 13:03	0:01	BS250	Data is not available	Data is not available	System constraint
5/21/2017 13:05	0:08	BS250	Data is not available	Data is not available	System constraint
5/21/2017 13:06	0:06	KWPII		15.443	System constraint
5/21/2017 13:14	0:01	BS250	Data is not available	Data is not available	System constraint
5/21/2017 13:14	0:01	KWPII		14.938	System constraint
5/21/2017 13:21	0:01	BS250	Data is not available	Data is not available	System constraint
5/21/2017 13:21	0:01	KWPII		16.455	System constraint
5/21/2017 13:36	0:03	BS250	Data is not available	Data is not available	Oversupply
5/21/2017 13:36	0:23	KWPII		17.743	Oversupply
5/21/2017 14:07	0:01	BS250	Data is not available	Data is not available	Oversupply
5/21/2017 14:12	1:12	BS250	Data is not available	Data is not available	Oversupply
5/21/2017 14:13	1:10	KWPII		20.190	Oversupply
5/21/2017 15:25	0:01	BS250	Data is not available	Data is not available	System constraint
5/21/2017 15:25	0:01	KWPII		20.178	System constraint
5/21/2017 15:40	0:01	KWPII		20.647	System constraint
5/21/2017 15:53	0:12	BS250	Data is not available	Data is not available	System constraint
5/21/2017 15:53	0:12	KWPII		20.110	System constraint
5/21/2017 16:18	0:02	BS250	Data is not available	Data is not available	System constraint
5/21/2017 16:18	0:02	KWPII		18.778	System constraint
5/22/2017 0:56	0:01	KWPII		20.706	System constraint
5/22/2017 0:58	0:01	KWPII		20.703	System constraint
5/22/2017 1:05	0:06	KWPII		20.708	System constraint
5/22/2017 1:14	0:01	KWPII		20.708	System constraint
5/22/2017 1:16	0:01	KWPII		20.708	System constraint
5/22/2017 1:26	0:02	KWPII		20.686	System constraint
5/22/2017 2:05	2:28	KWPII		11.200	Oversupply
5/22/2017 4:34	0:14	KWPII		20.682	Oversupply
5/22/2017 7:16	0:03	BS250	Data is not available	Data is not available	System constraint
5/22/2017 7:17	0:04	KWPII		20.698	System constraint
5/22/2017 7:20	0:02	BS250	Data is not available	Data is not available	System constraint
5/22/2017 7:27	0:01	BS250	Data is not available	Data is not available	System constraint
5/22/2017 7:54	0:14	BS250	Data is not available	Data is not available	Oversupply
5/22/2017 7:54	0:14	KWPII		20.708	Oversupply
5/22/2017 8:20	5:21	BS250	Data is not available	Data is not available	Oversupply
5/22/2017 8:20	4:20	KWPII		54.554	Oversupply
5/22/2017 12:18	0:03	AWIE		20.337	System constraint
5/22/2017 12:28	0:02	AWIE		20.273	System constraint
5/22/2017 12:34	0:01	AWIE		20.193	System constraint
5/22/2017 12:38	0:02	AWIE		21.000	System constraint
5/22/2017 12:50	2:04	KWPII		25.383	Oversupply
5/22/2017 13:41	0:01	AWIE		18.827	System constraint
5/22/2017 13:42	1:11	BS250	Data is not available	Data is not available	System constraint
5/22/2017 15:01	0:01	BS250	Data is not available	Data is not available	System constraint
5/22/2017 15:01	0:01	KWPII		20.708	System constraint
5/22/2017 15:12	0:01	BS250	Data is not available	Data is not available	System constraint
5/22/2017 15:13	0:01	AWIE		16.237	System constraint
5/22/2017 16:55	0:01	BS250	Data is not available	Data is not available	System constraint
5/22/2017 16:55	0:01	KWPII		20.700	System constraint
5/22/2017 22:15	1:21	KWPII		5.252	Oversupply
5/23/2017 0:05	2:32	KWPII		31.438	Oversupply
5/23/2017 2:16	0:05	AWIE		16.433	System constraint
5/23/2017 2:24	0:01	AWIE		17.273	System constraint
5/23/2017 2:26	0:01	AWIE		17.157	System constraint
5/23/2017 2:28	0:01	AWIE		17.283	System constraint
5/23/2017 2:36	2:17	KWPII		22.865	Oversupply
5/23/2017 5:01	0:01	KWPII		20.708	System constraint
5/23/2017 5:13	0:01	KWPII		20.708	System constraint
5/23/2017 7:34	0:31	BS250	Data is not available	Data is not available	System constraint
5/23/2017 7:35	0:30	KWPII		1.187	System constraint
5/23/2017 8:14	0:07	BS250	Data is not available	Data is not available	Oversupply
5/23/2017 8:15	4:00	KWPII		25.020	Oversupply
5/23/2017 8:22	2:06	BS250	Data is not available	Data is not available	Oversupply
5/23/2017 10:26	0:01	BS250	Data is not available	Data is not available	Oversupply
5/23/2017 10:31	0:07	BS250	Data is not available	Data is not available	Oversupply
5/23/2017 10:39	0:16	BS250	Data is not available	Data is not available	Oversupply
5/23/2017 11:08	0:34	BS250	Data is not available	Data is not available	Oversupply
5/23/2017 11:41	0:23	BS250	Data is not available	Data is not available	Oversupply
5/23/2017 12:05	0:06	BS250	Data is not available	Data is not available	Oversupply
5/23/2017 12:24	0:05	BS250	Data is not available	Data is not available	System constraint
5/23/2017 12:34	0:06	KWPII		20.708	System constraint
5/23/2017 12:47	0:06	BS250	Data is not available	Data is not available	System constraint
5/23/2017 12:47	0:06	KWPII		20.708	System constraint
5/23/2017 13:44	0:01	BS250	Data is not available	Data is not available	System constraint
5/23/2017 13:46	0:01	BS250	Data is not available	Data is not available	System constraint
5/23/2017 13:46	0:01	KWPII		20.708	System constraint
5/23/2017 13:48	0:02	BS250	Data is not available	Data is not available	System constraint
5/23/2017 13:51	0:03	BS250	Data is not available	Data is not available	System constraint
5/23/2017 13:53	0:02	KWPII		20.708	System constraint
5/23/2017 14:09	0:01	BS250	Data is not available	Data is not available	System constraint
5/23/2017 14:10	0:01	KWPII		20.708	System constraint
5/23/2017 14:40	0:04	BS250	Data is not available	Data is not available	System constraint
5/23/2017 14:40	0:04	KWPII		20.708	System constraint
5/23/2017 15:44	0:04	BS250	Data is not available	Data is not available	System constraint
5/23/2017 15:44	0:04	KWPII		20.708	System constraint
5/23/2017 15:51	0:06	BS250	Data is not available	Data is not available	System constraint
5/23/2017 15:52	0:06	KWPII		20.708	System constraint
5/23/2017 18:02	0:02	BS250	Data is not available	Data is not available	System constraint
5/23/2017 22:58	0:02	KWPII		20.708	System constraint
5/23/2017 23:08	0:06	KWPII		20.708	System constraint
5/23/2017 23:36	5:11	KWPII		31.031	Oversupply
5/24/2017 4:48	0:14	KWPII		20.708	Oversupply
5/24/2017 5:20	0:18	KWPII		0.439	Oversupply
5/24/2017 7:34	1:10	KWPII		9.128	System constraint
5/24/2017 9:50	0:00	KWPII		15.651	Oversupply
5/24/2017 11:10	0:18	BS250	Data is not available	Data is not available	System constraint
5/24/2017 11:11	0:05	KWPII		9.962	System constraint
5/24/2017 11:17	0:10	KWPII		10.672	System constraint
5/24/2017 11:26	0:04	BS250	Data is not available	Data is not available	System constraint
5/24/2017 11:26	0:01	KWPII		6.100	System constraint



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Start Date and Time	Duration	IPP Curtailed	Estimated Curtailed MWH	Peak MW Curtailed	System constraint	Reasons for Curtailment
5/24/2017 11:38	0:01	BS250	Data is not available	Data is not available		
5/24/2017 11:52	0:03	BS250	Data is not available	Data is not available		
5/24/2017 11:53	0:02	KWPII		0.046	8.787	System constraint
5/24/2017 14:16	0:18	BS250	Data is not available	Data is not available		
5/24/2017 14:18	0:01	KWPII		0.023	9.386	System constraint
5/24/2017 14:22	0:03	KWPII		0.106	12.386	System constraint
5/24/2017 14:26	0:05	KWPII		0.123	15.647	System constraint
5/24/2017 14:34	0:01	BS250	Data is not available	Data is not available		
5/24/2017 14:34	0:01	KWPII		0.012	15.640	System constraint
5/24/2017 14:38	0:05	BS250	Data is not available	Data is not available		
5/24/2017 14:36	0:04	KWPII		0.151	17.683	System constraint
5/24/2017 14:42	0:15	BS250	Data is not available	Data is not available		
5/24/2017 14:42	0:13	KWPII		0.487	17.360	System constraint
5/24/2017 14:58	0:01	KWPII		0.021	15.731	System constraint
5/24/2017 14:59	0:01	BS250	Data is not available	Data is not available		
5/24/2017 14:59	0:01	KWPII		0.013	18.101	System constraint
5/24/2017 15:02	0:11	BS250	Data is not available	Data is not available		
5/24/2017 15:02	0:10	KWPII		0.208	19.070	System constraint
5/24/2017 15:15	0:01	BS250	Data is not available	Data is not available		
5/24/2017 22:58	0:35	KWPII		1.239	19.028	System constraint
5/24/2017 23:47	0:05	KWPII		0.071	18.789	System constraint
5/25/2017 0:35	0:03	KWPII		0.041	17.806	System constraint
5/25/2017 0:39	0:10	KWPII		0.271	18.539	System constraint
5/25/2017 0:50	0:23	KWPII		0.887	18.957	System constraint
5/25/2017 1:14	0:05	KWPII		0.077	18.050	System constraint
5/25/2017 4:16	0:01	KWPII		0.044	12.528	Oversupply
5/25/2017 4:18	0:14	KWPII		0.740	16.805	Oversupply
5/25/2017 4:34	0:01	KWPII		0.018	16.203	System constraint
5/25/2017 7:49	0:02	BS250	Data is not available	Data is not available		
5/25/2017 7:49	0:20	KWPII		1.047	19.182	System constraint
5/25/2017 8:38	0:04	KWPII		0.183	18.383	Oversupply
5/25/2017 8:50	0:03	KWPII		0.128	17.707	Oversupply
5/25/2017 10:46	0:08	KWPII		0.296	7.056	System constraint
5/25/2017 16:12	0:01	BS250	Data is not available	Data is not available		
5/25/2017 16:12	0:01	KWPII		0.002	18.418	System constraint
5/25/2017 16:15	0:02	BS250	Data is not available	Data is not available		
5/25/2017 22:41	0:01	AWE		0.000	0.010	System constraint
5/25/2017 23:18	0:02	KWPII		0.030	16.618	System constraint
5/25/2017 23:21	0:08	KWPII		0.117	16.023	System constraint
5/28/2017 7:28	0:01	KWP		0.000	0.001	System constraint
5/28/2017 7:55	0:01	KWP		0.000	0.001	System constraint
5/28/2017 8:07	0:01	KWP		0.000	0.001	System constraint
5/27/2017 5:05	0:01	AWE		0.000	0.007	System constraint
5/28/2017 22:54	0:01	AWE		0.000	0.010	System constraint
5/30/2017 21:41	0:06	KWPII		0.258	18.356	System constraint
5/30/2017 23:44	0:03	KWPII		0.066	19.098	System constraint
5/30/2017 23:51	0:03	KWPII		0.043	18.418	System constraint
5/31/2017 0:13	0:10	KWPII		0.596	17.967	Oversupply
5/31/2017 0:36	1:44	KWPII		12.380	19.211	Oversupply
5/31/2017 2:22	0:21	KWPII		1.188	18.895	Oversupply
5/31/2017 2:52	0:14	KWPII		0.468	18.801	System constraint
5/31/2017 3:31	0:30	KWPII		2.800	18.959	Oversupply
5/31/2017 4:40	0:03	KWPII		0.057	17.945	System constraint
5/31/2017 4:44	0:03	KWPII		0.039	18.035	System constraint
5/31/2017 4:49	0:02	KWPII		0.036	17.788	System constraint
5/31/2017 8:33	0:02	BS250	Data is not available	Data is not available		
5/31/2017 8:34	0:01	KWPII		0.006	18.527	System constraint
5/31/2017 8:38	0:01	BS250	Data is not available	Data is not available		
5/31/2017 8:36	0:01	KWPII		0.002	18.531	System constraint
5/31/2017 8:38	0:05	BS250	Data is not available	Data is not available		
5/31/2017 8:38	0:05	KWPII		0.103	18.988	System constraint
5/31/2017 8:49	0:03	BS250	Data is not available	Data is not available		
5/31/2017 8:49	0:03	KWPII		0.116	17.832	System constraint
5/31/2017 8:53	0:06	BS250	Data is not available	Data is not available		
5/31/2017 8:53	0:08	KWPII		0.384	18.418	Oversupply
5/31/2017 9:04	0:06	BS250	Data is not available	Data is not available		
5/31/2017 9:04	0:01	KWPII		0.024	17.842	System constraint
5/31/2017 9:06	0:04	KWPII		0.105	18.251	System constraint
5/31/2017 10:21	0:02	BS250	Data is not available	Data is not available		
5/31/2017 10:21	0:01	KWPII		0.012	18.098	System constraint
5/31/2017 10:24	0:06	BS250	Data is not available	Data is not available		
5/31/2017 10:24	0:07	KWPII		0.152	18.705	System constraint
5/31/2017 10:38	0:03	BS250	Data is not available	Data is not available		
5/31/2017 10:38	0:03	KWPII		0.027	18.746	System constraint
5/31/2017 10:42	0:02	BS250	Data is not available	Data is not available		
5/31/2017 10:45	0:01	BS250	Data is not available	Data is not available		
5/31/2017 10:47	0:01	BS250	Data is not available	Data is not available		
5/31/2017 10:47	0:01	BS250	Data is not available	Data is not available		
5/31/2017 11:58	0:01	BS250	Data is not available	Data is not available		
5/31/2017 12:01	0:12	BS250	Data is not available	Data is not available		
5/31/2017 12:01	0:46	KWPII		2.675	20.088	Oversupply
5/31/2017 12:14	0:33	BS250	Data is not available	Data is not available		
5/31/2017 12:50	0:02	BS250	Data is not available	Data is not available		
5/31/2017 13:44	0:03	BS250	Data is not available	Data is not available		
5/31/2017 13:44	0:02	KWPII		0.059	19.508	System constraint
5/31/2017 14:36	0:02	BS250	Data is not available	Data is not available		
5/31/2017 14:38	0:01	KWPII		0.010	19.098	System constraint
5/31/2017 14:39	0:02	BS250	Data is not available	Data is not available		
5/31/2017 14:39	0:01	KWPII		0.018	18.877	System constraint
5/31/2017 14:48	0:01	BS250	Data is not available	Data is not available		
5/31/2017 14:53	0:01	BS250	Data is not available	Data is not available		
5/31/2017 14:59	0:11	BS250	Data is not available	Data is not available		
5/31/2017 14:59	0:11	KWPII		0.513	19.080	Oversupply
5/31/2017 15:12	0:02	BS250	Data is not available	Data is not available		
5/31/2017 15:16	0:02	BS250	Data is not available	Data is not available		
5/31/2017 17:10	0:02	BS250	Data is not available	Data is not available		
5/31/2017 17:10	0:01	KWPII		0.017	19.141	System constraint
5/31/2017 22:12	0:01	KWPII		0.007	18.481	System constraint

Notes:

- Curtailment for Kaheewa Wind Power ("KWP"), Makila Hydroelectric ("MH"), AAAAA Rent-A-Space Maui LTD ("SA"), Bioreal Solar, LLC ("BS"), Auwahi Wind Energy ("AWE"), Kaheewa 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 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 HPU Docket No. 2013-0141 Decoupling for HECO companies metrics.



Lanai Curtailment Report

May 2017

Start Date and Time	Duration	IPP Curtailed	Estimated MWh Curtailed	Peak MW Curtailed	Reasons for Curtailment
5/2/2017 9:05	0:23	LSR	Data is not available	Data is not available	Oversupply
5/2/2017 9:30	0:18	LSR	Data is not available	Data is not available	Oversupply
5/2/2017 9:51	0:11	LSR	Data is not available	Data is not available	Oversupply
5/3/2017 6:54	0:26	LSR	Data is not available	Data is not available	Oversupply
5/3/2017 7:32	0:04	LSR	Data is not available	Data is not available	Oversupply
5/3/2017 7:52	0:05	LSR	Data is not available	Data is not available	Oversupply
5/3/2017 8:44	0:22	LSR	Data is not available	Data is not available	Oversupply
5/3/2017 9:40	0:06	LSR	Data is not available	Data is not available	Oversupply
5/3/2017 10:19	0:01	LSR	Data is not available	Data is not available	Oversupply
5/11/2017 12:46	0:03	LSR	Data is not available	Data is not available	Oversupply
5/11/2017 12:51	0:38	LSR	Data is not available	Data is not available	Oversupply
5/11/2017 13:34	0:05	LSR	Data is not available	Data is not available	Oversupply
5/11/2017 13:42	0:03	LSR	Data is not available	Data is not available	Oversupply
5/11/2017 13:54	0:03	LSR	Data is not available	Data is not available	Oversupply
5/11/2017 14:07	0:06	LSR	Data is not available	Data is not available	Oversupply
5/11/2017 14:15	0:04	LSR	Data is not available	Data is not available	Oversupply
5/11/2017 14:28	0:06	LSR	Data is not available	Data is not available	Oversupply
5/12/2017 17:34	0:01	LSR	Data is not available	Data is not available	Oversupply
5/14/2017 17:40	0:04	LSR	Data is not available	Data is not available	Oversupply
5/17/2017 16:32	0:01	LSR	Data is not available	Data is not available	Oversupply
5/20/2017 16:16	0:07	LSR	Data is not available	Data is not available	Oversupply
5/21/2017 9:21	0:04	LSR	Data is not available	Data is not available	Oversupply
5/21/2017 9:31	0:01	LSR	Data is not available	Data is not available	Oversupply
5/21/2017 10:02	0:01	LSR	Data is not available	Data is not available	Oversupply
5/21/2017 11:45	0:03	LSR	Data is not available	Data is not available	Oversupply
5/21/2017 14:37	0:02	LSR	Data is not available	Data is not available	Oversupply
5/21/2017 14:44	0:07	LSR	Data is not available	Data is not available	Oversupply
5/21/2017 14:54	0:01	LSR	Data is not available	Data is not available	Oversupply
5/23/2017 7:29	0:15	LSR	Data is not available	Data is not available	Oversupply
5/23/2017 7:56	0:15	LSR	Data is not available	Data is not available	Oversupply
5/23/2017 8:12	0:07	LSR	Data is not available	Data is not available	Oversupply
5/25/2017 7:06	0:14	LSR	Data is not available	Data is not available	Oversupply
5/25/2017 9:46	0:09	LSR	Data is not available	Data is not available	Oversupply
5/26/2017 7:59	0:25	LSR	Data is not available	Data is not available	Oversupply
5/26/2017 11:23	0:01	LSR	Data is not available	Data is not available	Oversupply
5/26/2017 13:14	0:02	LSR	Data is not available	Data is not available	Oversupply
5/27/2017 14:30	0:02	LSR	Data is not available	Data is not available	Oversupply
5/30/2017 7:29	0:02	LSR	Data is not available	Data is not available	Oversupply
5/30/2017 7:43	0:24	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 HECD companies metrics.