



December 19, 2014

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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 November 2014 on (1) system frequency control performance during month; (2) significant system events during month; and (3) curtailment of non-dispatchable renewable resources.

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

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

Sincerely,

Daniel G. Brown
Manager
Regulatory Non-Rate Proceedings

Enclosure

cc: 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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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 November 30, 2014):

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 November 30, 2014):

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 in the month of November. 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:

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

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 November. Hawai'i Electric Light currently does not have demand response program. Maui Electric has implemented the Fast Demand Response pilot program on a limited basis. Hawai'i Electric Light plans to use the findings of Maui Electric's pilot program to help in the evaluation and development of future demand response programs. Currently, Hawaiian Electric activates the demand response program for Maui Electric in conjunction with Oahu. The number of activations vary from month to month depending on Oahu's system need or for program testing. This program is not currently used in response to actual system events on Maui since the program is too small to provide meaningful system impact. 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 November 30, 2014):

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:

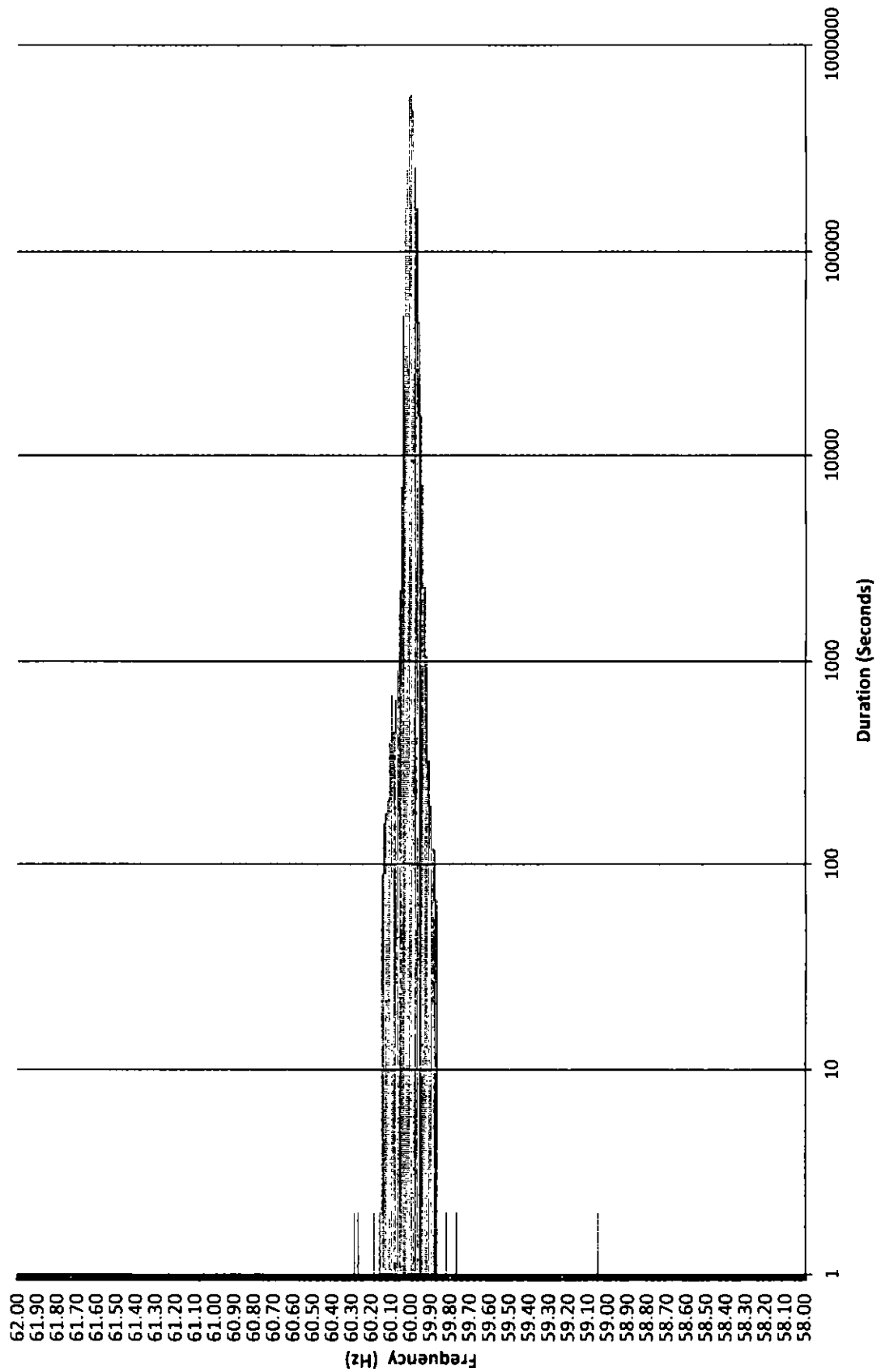
The tabulation of each curtailment event for each resource is provided in Attachment 6.

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

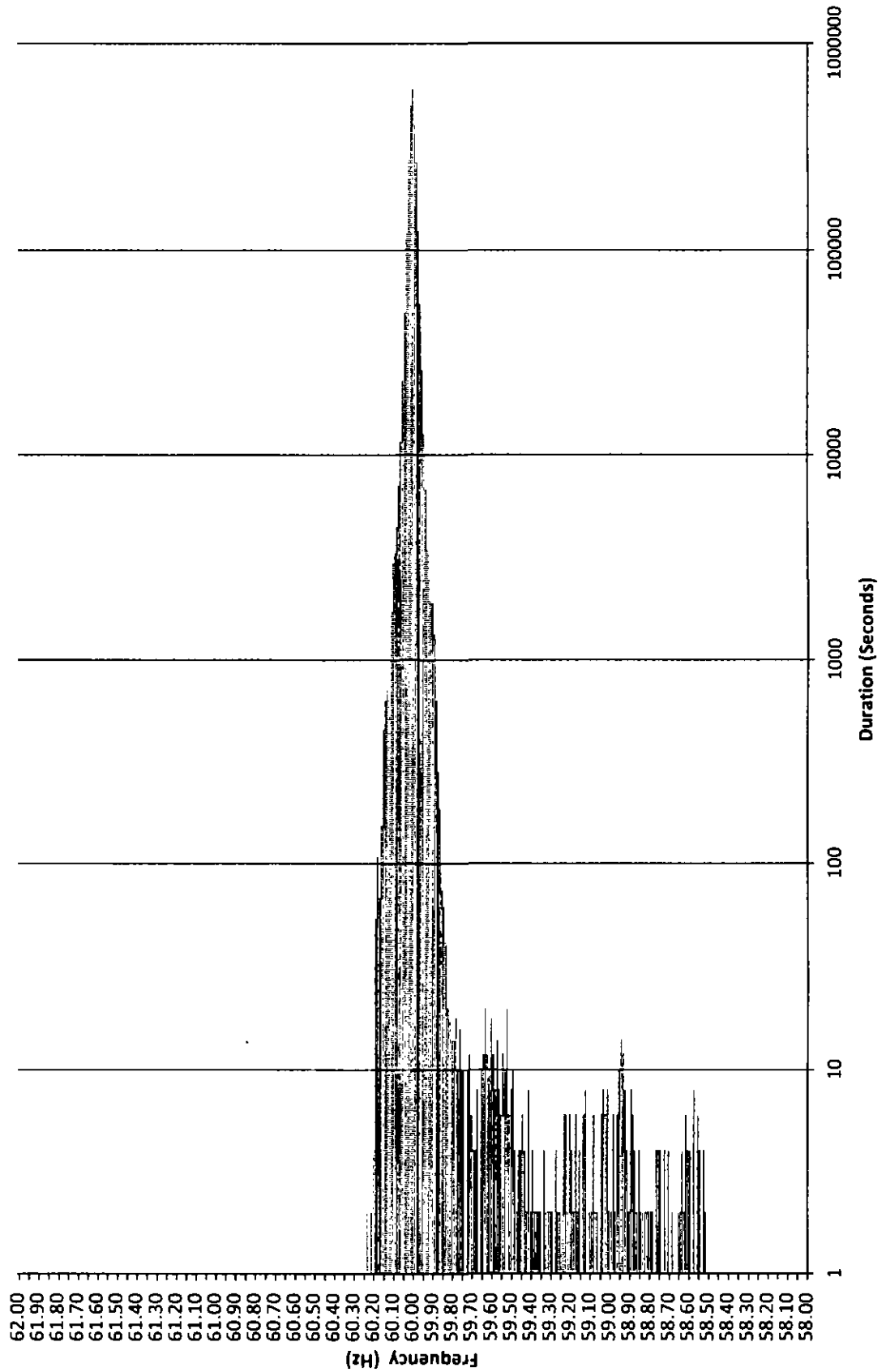
Curtailed MWh from non-dispatchable resources are difficult to determine due to the variability of the resource during curtailment periods. In some cases, the curtailed MWh estimates were provided by the IPPs under curtailment. Hawai'i Electric Light is not providing an estimate of curtailed MWh, as this information is not provided to Hawai'i Electric Light from the IPP. The

Hawaiian Electric Companies do not make any representations as to the accuracy of the curtailed MWH. The estimated MWH of non-dispatchable resources curtailed for the month are provided in Attachment 6, corresponding to each curtailment event.

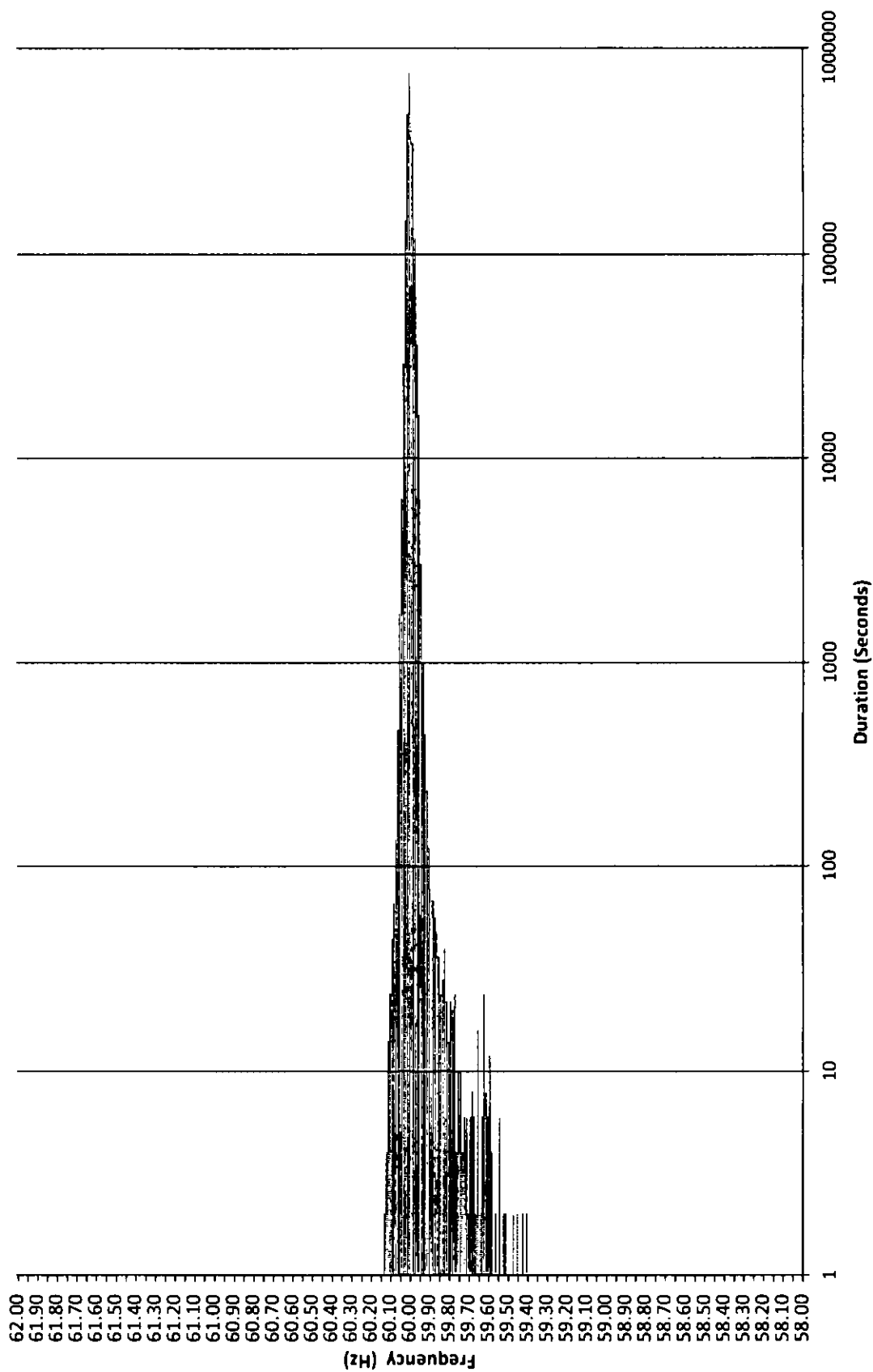
Frequency Distribution Plot - Hawaiian Electric November 2014



Maui Electric Frequency Distribution Plot - Maui November 2014



Frequency Distribution Plot - Hawai'i Electric Light November 2014



Hawaiian Electric Frequency Excursion Statistics November 2014		
Data Rounded to the nearest	<59.95 Hz	>60.05 Hz
Number of Excursions	1281	464
Maximum Duration (sec)	892	1152
Maximum Deviation (Hz)	59.049	60.293
Total Duration of Excursions (sec)	16528	7942

Maui Electric Frequency Excursion Statistics November 2014		
	<59.95 Hz	>60.05 Hz
Number of Excursions	5324	4100
Maximum Duration (sec)	1520	1450
Maximum Deviation (Hz)	58.511	60.2318
Total Duration of Excursions (sec)	41062	43366

Hawai'i Electric Light Frequency Excursion Statistics November 2014		
	<59.95 Hz	>60.05 Hz
Number of Excursions	2023	351
Maximum Duration (sec)	240	28
Maximum Deviation (Hz)	59.398	60.126
Total Duration of Excursions (sec)	13896	1378

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Hawaiian Electric Curtailment Report November 2014

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
07/17/14 14:29	48.0	41.10	Ongoing	—	—	Mauka	Flicker
11/05/14 06:27	0.0	11.10	11/05/14 07:43	0	*	KWF	Replacement work
11/05/14 06:37	0.0	7.40	11/05/14 07:44	0	*	Makai	Replacement work
11/05/14 15:21	0.0	12.00	11/05/14 16:19	0	*	KWF	Replacement work
11/05/14 15:21	0.0	4.50	11/05/14 16:19	0	*	Makai	Replacement work
11/06/14 07:44	0.0	7.70	11/06/14 08:26	0	*	KWF	Replacement work
11/06/14 07:49	0.0	0.60	11/06/14 08:30	0	*	Makai	Replacement work
11/06/14 14:45	0.0	1.80	11/06/14 15:25	0	*	KWF	Replacement work
11/06/14 14:45	0.0	1.00	11/06/14 15:26	0	*	Makai	Replacement work
11/07/14 06:49	0.0	0.00	11/07/14 07:31	0	*	KWF	Replacement work
11/07/14 06:50	0.0	0.00	11/07/14 07:32	0	*	Makai	Replacement work
11/07/14 15:39	0.0	0.00	11/07/14 15:53	0	*	KWF	Replacement work
11/07/14 15:39	0.0	1.00	11/07/14 15:53	0	*	Makai	Replacement work
11/19/14 07:21	0.0	0.00	11/19/14 07:32	0	*	KREP	Maintenance work
11/19/14 14:28	0.0	3.20	11/19/14 15:01	0	*	KREP	Maintenance work
11/22/14 19:06	22.0	1.10	11/24/14 13:40	2.5	*	KWF	Partial DVAR outage
11/21/14 06:46	0.0	0.00	11/21/14 07:55	0	*	KREP	Maintenance work
11/22/14 16:07	0.0	1.20	11/22/14 16:17	0	*	KREP	Maintenance work
11/23/14 06:31	0.0	0.00	11/23/14 07:33	0	*	KREP	Maintenance work
11/23/14 16:07	0.0	0.30	11/23/14 16:15	0	*	KREP	Maintenance work
11/24/14 06:48	0.0	0.00	11/24/14 07:15	0	*	KREP	Maintenance work

KLS2 = Kalaheo Solar 2 PV Farm
KREP = Kalaheo Renewable Energy Park
KWF = Kahuku Wind Farm
Makai = Kawaihoa Makai Wind Farm
Mauka = Kawaihoa Mauka Wind Farm

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

* Data has not been provided by IPP.

RSWG Maui Curtailment Report November 2014



Start Date and Time	Duration	IPP Curtailed	Estimated Curtailed MWh	Peak MW Curtailed	Reasons for Curtailment
11/1/2014 0 00	7 27	KWPII	126 535	20 708	AGC MAVG - calculated AGC MAVG - entered AGC MAVG - entered - Maintaining Regulating Reserves AGC MAVG - calculated
11/1/2014 1 15	0 23	AWE	0 665	20 400	AGC MAVG - entered AGC MAVG - entered - Maintaining Regulating Reserves and AGC MAVG - calculated
11/1/2014 1 39	3 35	AWE	18 037	20 400	AGC MAVG - calculated AGC MAVG - entered AGC MAVG - entered - Maintaining Regulating Reserves and AGC MAVG - calculated
11/1/2014 5 15	0 02	AWE	0 012	20 300	AGC MAVG - calculated
11/1/2014 5 21	0 01	AWE	0 003	20 800	AGC MAVG - calculated
11/1/2014 5 31	0 01	AWE	0 004	20 000	AGC MAVG - calculated
11/1/2014 7 26	0 02	KWPII	0 002	20 708	AGC MAVG - calculated
11/1/2014 7 33	0 01	KWPII	0 007	20 666	AGC MAVG - calculated
11/1/2014 7 37	0 01	KWPII	0 006	20 708	AGC MAVG - calculated
11/1/2014 7 40	0 06	KWPII	0 007	20 708	AGC MAVG - calculated
11/1/2014 7 53	0 01	KWPII	0 002	20 707	AGC MAVG - calculated
11/1/2014 7 55	0 02	KWPII	0 010	20 708	AGC MAVG - calculated
11/2/2014 0 32	0 01	KWPII	0 006	0 653	AGC MAVG - calculated
11/2/2014 0 36	0 01	KWPII	0 002	2 891	AGC MAVG - calculated
11/2/2014 0 38	0 01	KWPII	0 002	3 718	AGC MAVG - calculated
11/2/2014 2 04	1 21	KWPII	16 027	18 782	AGC MAVG - calculated AGC MAVG - entered AGC MAVG - entered - Maintaining Regulating Reserves AGC MAVG - calculated
11/2/2014 2 27	0 01	AWE	0 004	21 000	AGC MAVG - calculated
11/2/2014 3 19	0 01	AWE	0 000	20 500	AGC MAVG - calculated
11/2/2014 2 56	0 13	AWE	0 822	20 480	AGC MAVG - entered - Maintaining Regulating Reserves and AGC MAVG - calculated
11/2/2014 3 27	0 33	KWPII	5 811	14 637	AGC MAVG - entered - Maintaining Regulating Reserves
11/2/2014 3 36	0 17	AWE	0 580	20 600	AGC MAVG - entered - Maintaining Regulating Reserves
11/2/2014 3 54	0 01	AWE	0 005	20 300	AGC MAVG - calculated
11/2/2014 4 13	0 01	KWPII	0 007	2 855	AGC MAVG - calculated
11/2/2014 4 13	0 01	AWE	0 002	21 000	AGC MAVG - calculated
11/2/2014 5 37	0 01	KWPII	0 018	4 020	AGC MAVG - calculated
11/2/2014 5 42	0 01	KWPII	0 011	4 185	AGC MAVG - calculated
11/2/2014 5 56	0 05	KWPII	0 126	12 848	AGC MAVG - calculated
11/2/2014 6 07	0 15	KWPII	0 775	18 765	AGC MAVG - calculated
11/2/2014 6 27	0 28	KWPII	1 368	19 152	AGC MAVG - calculated
11/2/2014 6 52	0 02	KWPII	0 011	18 171	AGC MAVG - calculated
11/2/2014 6 19	0 01	KWPII	0 000	18 211	AGC MAVG - calculated and Testing
11/2/2014 6 37	0 01	KWPII	0 348	16 211	AGC MAVG - calculated and Testing
11/2/2014 6 48	0 01	KWPII	0 035	16 211	AGC MAVG - calculated and Testing
11/2/2014 6 48	1 00	KWPII	6 750	18 211	AGC MAVG - calculated and Testing
11/2/2014 11 28	0 02	KWPII	0 017	20 682	AGC MAVG - calculated
11/2/2014 12 06	0 01	KWPII	0 002	20 684	AGC MAVG - calculated
11/2/2014 12 17	0 01	KWPII	0 001	20 703	AGC MAVG - calculated
11/2/2014 12 25	0 12	KWPII	0 313	20 648	AGC MAVG - calculated
11/2/2014 12 38	0 08	KWPII	0 238	20 696	AGC MAVG - calculated
11/2/2014 12 47	0 09	KWPII	0 210	20 681	AGC MAVG - calculated
11/2/2014 12 57	0 01	KWPII	0 010	20 688	AGC MAVG - calculated
11/2/2014 12 59	0 03	KWPII	0 049	20 572	AGC MAVG - calculated
11/2/2014 13 21	0 11	KWPII	0 423	20 684	AGC MAVG - calculated
11/2/2014 13 33	0 05	KWPII	0 175	20 870	AGC MAVG - calculated
11/2/2014 20 55	0 01	KWPII	0 014	16 574	AGC MAVG - calculated
11/2/2014 20 57	0 01	KWPII	0 007	17 586	AGC MAVG - calculated
11/2/2014 20 58	0 03	KWPII	0 093	17 324	AGC MAVG - calculated
11/2/2014 21 03	0 04	KWPII	0 074	16 770	AGC MAVG - calculated
11/2/2014 3 55	0 01	KWP	0 004	0 256	AGC MAVG - calculated
11/2/2014 4 10	0 21	AWE	0 883	20 700	AGC MAVG - calculated
11/2/2014 4 11	0 02	KWPII	0 001	0 039	AGC MAVG - calculated
11/2/2014 4 14	1 19	KWPII	9 076	17 200	AGC MAVG - calculated
11/2/2014 4 22	0 10	AWE	0 576	20 400	AGC MAVG - calculated
11/2/2014 4 49	0 04	AWE	0 028	20 400	AGC MAVG - calculated
11/2/2014 4 54	0 01	AWE	0 008	20 400	AGC MAVG - calculated
11/2/2014 7 48	0 01	KWPII	0 001	0 076	AGC MAVG - calculated
11/2/2014 13 26	0 01	KWPII	0 001	0 045	AGC MAVG - calculated and Testing
11/2/2014 13 30	0 01	KWPII	0 001	0 034	AGC MAVG - calculated and Testing
11/2/2014 18 09	0 01	KWP	0 002	0 112	AGC MAVG - calculated and Testing
11/2/2014 18 14	0 01	KWP	0 001	0 032	AGC MAVG - calculated and Testing
11/4/2014 6 05	0 01	KWP	0 001	0 032	AGC MAVG - calculated
11/4/2014 6 11	0 01	KWP	0 000	0 016	AGC MAVG - calculated
11/4/2014 6 22	0 01	KWP	0 001	0 048	AGC MAVG - calculated and Testing
11/4/2014 6 53	0 01	KWP	0 001	0 060	AGC MAVG - calculated and Testing
11/4/2014 14 37	0 01	KWP	0 002	0 066	AGC MAVG - calculated and Testing
11/4/2014 17 06	0 01	KWP	0 001	0 064	AGC MAVG - calculated
11/4/2014 17 17	0 01	KWP	0 001	0 080	AGC MAVG - calculated
11/4/2014 17 36	0 01	KWP	0 000	0 016	AGC MAVG - calculated
11/4/2014 18 25	0 01	KWP	0 001	0 080	AGC MAVG - calculated
11/4/2014 20 54	0 01	KWPII	0 002	0 143	AGC MAVG - calculated
11/4/2014 23 11	0 01	KWPII	0 002	0 118	AGC MAVG - calculated
11/5/2014 1 48	0 01	KWP	0 001	0 064	AGC MAVG - calculated
11/5/2014 3 36	0 14	AWE	0 330	15 500	AGC MAVG - calculated
11/5/2014 3 36	0 10	KWPII	1 363	8 231	AGC MAVG - calculated
11/5/2014 3 51	0 01	AWE	0 020	14 800	AGC MAVG - calculated
11/5/2014 3 55	0 09	KWPII	1 286	9 479	AGC MAVG - calculated
11/5/2014 3 55	0 09	AWE	0 284	14 800	AGC MAVG - calculated
11/5/2014 4 08	0 01	KWPII	0 148	8 888	AGC MAVG - calculated
11/5/2014 4 08	0 03	AWE	0 132	12 903	AGC MAVG - calculated
11/5/2014 4 08	0 02	KWPII	0 312	9 780	AGC MAVG - calculated
11/5/2014 4 08	0 02	AWE	0 072	13 200	AGC MAVG - calculated
11/5/2014 4 13	0 10	AWE	0 285	15 400	AGC MAVG - calculated and AGC MAVG - entered
11/5/2014 4 13	0 12	KWPII	1 738	9 400	AGC MAVG - calculated AGC MAVG - entered and AGC MAVG - calculated
11/5/2014 4 24	0 01	AWE	0 008	17 000	AGC MAVG - calculated
11/5/2014 4 36	0 02	AWE	0 053	15 900	AGC MAVG - calculated
11/5/2014 4 36	0 09	KWPII	0 705	7 105	AGC MAVG - calculated and AGC MAVG - entered
11/5/2014 4 39	0 03	AWE	0 039	13 400	AGC MAVG - calculated
11/5/2014 4 43	0 02	AWE	0 041	13 400	AGC MAVG - calculated and AGC MAVG - entered - Maintaining Regulating Reserves
11/5/2014 4 48	0 34	KWPII	4 849	12 680	AGC MAVG - entered - Maintaining Regulating Reserves and AGC MAVG - calculated
11/5/2014 4 48	0 22	AWE	1 229	14 300	AGC MAVG - entered - Maintaining Regulating Reserves and AGC MAVG - calculated
11/5/2014 5 18	0 01	AWE	0 003	12 200	AGC MAVG - calculated
11/5/2014 5 18	0 01	AWE	0 018	11 900	AGC MAVG - calculated
11/5/2014 5 21	0 02	KWPII	0 404	14 317	AGC MAVG - calculated
11/5/2014 5 26	0 01	KWPII	0 038	6 354	AGC MAVG - calculated
11/5/2014 5 26	0 25	KWPII	1 085	17 000	AGC MAVG - calculated
11/5/2014 5 55	0 02	KWPII	0 048	16 870	AGC MAVG - calculated
11/5/2014 6 11	0 01	KWPII	0 002	20 553	AGC MAVG - calculated and Testing
11/5/2014 6 14	0 01	KWPII	0 002	20 528	AGC MAVG - calculated and Testing
11/5/2014 6 23	0 17	KWPII	0 750	20 684	AGC MAVG - calculated and Testing
11/5/2014 6 41	0 01	KWPII	0 022	20 468	AGC MAVG - calculated and Testing
11/5/2014 6 45	0 01	KWPII	0 005	20 641	AGC MAVG - calculated and Testing
11/5/2014 6 48	0 01	KWPII	0 001	20 662	AGC MAVG - calculated and Testing
11/5/2014 10 33	0 07	KWPII	0 135	20 872	AGC MAVG - calculated
11/5/2014 10 41	0 01	KWPII	0 006	20 877	AGC MAVG - calculated
11/5/2014 10 43	0 03	KWPII	0 037	20 840	AGC MAVG - calculated
11/5/2014 10 49	0 01	KWPII	0 000	20 588	AGC MAVG - calculated
11/5/2014 10 51	0 03	KWPII	0 080	20 658	AGC MAVG - calculated
11/5/2014 10 56	0 02	KWPII	0 014	20 802	AGC MAVG - calculated
11/5/2014 10 58	0 31	KWPII	1 848	20 708	AGC MAVG - calculated
11/5/2014 11 31	0 28	KWPII	2 238	20 676	AGC MAVG - calculated and Testing
11/5/2014 12 00	0 07	KWPII	0 172	20 680	AGC MAVG - calculated and Testing
11/5/2014 15 18	0 01	KWPII	0 010	16 131	AGC MAVG - calculated and Testing
11/5/2014 15 18	0 07	KWPII	0 260	16 771	AGC MAVG - calculated and Testing
11/5/2014 22 14	0 01	KWPII	0 025	11 717	AGC MAVG - calculated



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Start Date and Time	Duration	IPP Curtained	Estimated Curtained MWh	Peak MW Curtained	Reasons for Curtailment
11/5/2014 22:18	0:02	KWPII	0:065	12:755	AGC MAVG - calculated
11/5/2014 1:18	2:05	KWPII	25:387	18:670	AGC MAVG - calculated, AGC MAVG - entered, Operating Conditions on Company's System, AGC MAVG - entered - Excess Energy, AGC MAVG - calculated, AGC MAVG - entered, AGC MAVG - entered - Excess Energy, AGC MAVG - calculated, AGC MAVG - entered - Excess Energy, AGC MAVG - calculated
11/5/2014 1:28	0:52	AWE	7:301	20:400	AGC MAVG - entered - Excess Energy, and AGC MAVG - calculated
11/5/2014 2:22	0:21	AWE	2:249	18:000	AGC MAVG - entered and AGC MAVG - entered - Excess Energy, AGC MAVG - calculated, Operating Conditions on Company's System, AGC MAVG - entered
11/5/2014 2:45	0:05	AWE	0:304	15:300	AGC MAVG - entered - Excess Energy, Operating Conditions on Company's System, and AGC MAVG - calculated
11/5/2014 2:58	0:04	AWE	0:048	13:300	AGC MAVG - calculated
11/5/2014 3:04	0:07	AWE	0:225	18:300	AGC MAVG - calculated
11/5/2014 3:13	0:02	AWE	0:036	18:900	AGC MAVG - calculated
11/5/2014 3:19	0:01	AWE	0:016	19:900	AGC MAVG - calculated
11/5/2014 3:26	0:05	KWPII	0:483	8:439	AGC MAVG - calculated
11/5/2014 3:34	0:07	KWPII	0:212	9:443	AGC MAVG - calculated
11/5/2014 3:45	0:03	KWPII	0:022	11:005	AGC MAVG - calculated
11/5/2014 4:05	0:01	KWPII	0:008	9:148	AGC MAVG - calculated
11/5/2014 5:24	0:04	KWPII	0:080	7:524	AGC MAVG - calculated
11/5/2014 5:30	0:06	KWPII	0:104	10:540	AGC MAVG - calculated
11/5/2014 5:44	0:08	KWPII	0:228	16:133	AGC MAVG - calculated
11/5/2014 5:51	0:01	KWPII	0:000	16:564	AGC MAVG - calculated
11/5/2014 6:05	0:02	KWPII	0:025	11:957	AGC MAVG - calculated
11/5/2014 6:14	0:01	KWPII	0:011	6:398	AGC MAVG - calculated
11/5/2014 6:10	0:02	KWPII	0:037	5:839	AGC MAVG - calculated
11/5/2014 6:17	0:01	AWE	0:097	19:800	AGC MAVG - calculated
11/5/2014 6:19	0:02	AWE	0:026	20:400	AGC MAVG - calculated
11/5/2014 6:19	0:16	KWPII	0:868	9:587	AGC MAVG - calculated and Testing
11/5/2014 6:22	0:01	AWE	0:008	20:200	AGC MAVG - calculated and Testing
11/5/2014 6:24	0:03	AWE	0:025	18:400	AGC MAVG - calculated and Testing
11/5/2014 6:37	0:01	KWPII	0:007	7:788	AGC MAVG - calculated and Testing
11/5/2014 6:48	0:01	KWPII	0:001	8:182	AGC MAVG - calculated and Testing
11/5/2014 6:58	0:01	KWPII	0:008	0:029	AGC MAVG - calculated and Testing
11/5/2014 11:23	0:01	KWPII	0:001	0:032	AGC MAVG - calculated and Testing
11/7/2014 8:06	0:01	KWPII	0:001	0:048	AGC MAVG - calculated
11/7/2014 11:35	0:01	KWPII	0:000	0:016	AGC MAVG - calculated and Testing
11/7/2014 12:21	0:01	KWPII	0:001	0:046	AGC MAVG - calculated
11/7/2014 18:57	0:01	KWPII	0:001	0:048	AGC MAVG - calculated and Testing
11/8/2014 6:52	0:01	AWE	0:005	0:300	AGC MAVG - calculated and Testing
11/8/2014 11:30	0:01	AWE	0:002	0:100	AGC MAVG - calculated and Testing
11/8/2014 12:05	0:01	KWPII	0:018	20:308	AGC MAVG - calculated and Testing
11/8/2014 12:07	0:25	KWPII	1:875	20:637	AGC MAVG - calculated and Testing
11/8/2014 12:33	0:01	KWPII	0:012	20:560	AGC MAVG - calculated and Testing
11/8/2014 13:04	0:06	KWPII	0:077	20:800	AGC MAVG - calculated and Testing
11/8/2014 13:12	0:01	KWPII	0:008	20:454	AGC MAVG - calculated and Testing
11/8/2014 13:15	0:02	KWPII	0:023	20:633	AGC MAVG - calculated and Testing
11/8/2014 13:20	0:01	KWPII	0:001	20:528	AGC MAVG - calculated and Testing
11/8/2014 14:32	0:01	AWE	0:002	0:100	AGC MAVG - calculated and Testing
11/8/2014 16:43	0:01	AWE	0:003	0:200	AGC MAVG - calculated and Testing
11/8/2014 1:35	0:01	KWPII	0:001	0:060	AGC MAVG - calculated
11/9/2014 8:38	0:01	AWE	0:002	0:100	AGC MAVG - calculated
11/9/2014 10:25	0:02	AWE	0:007	0:300	AGC MAVG - calculated
11/9/2014 11:23	0:01	AWE	0:003	0:200	AGC MAVG - calculated
11/9/2014 21:45	0:01	AWE	0:340	20:400	AGC MAVG - calculated
11/10/2014 6:20	0:01	KWPII	0:001	0:035	AGC MAVG - calculated and Testing
11/10/2014 7:08	0:01	AWE	0:003	0:200	AGC MAVG - calculated and Testing
11/10/2014 10:25	0:01	KWPII	0:000	0:018	AGC MAVG - calculated and Testing
11/10/2014 11:14	0:01	KWPII	0:000	0:018	AGC MAVG - calculated
11/10/2014 11:17	0:01	KWPII	0:000	0:018	AGC MAVG - calculated
11/10/2014 11:28	0:01	AWE	0:002	0:100	AGC MAVG - calculated
11/10/2014 14:40	0:01	AWE	0:002	0:100	AGC MAVG - calculated and Testing
11/10/2014 14:53	0:01	AWE	0:002	0:100	AGC MAVG - calculated and Testing
11/10/2014 15:23	0:01	AWE	0:002	0:100	AGC MAVG - calculated and Testing
11/10/2014 15:29	0:01	AWE	0:002	0:100	AGC MAVG - calculated and Testing
11/11/2014 8:10	0:01	KWPII	0:001	0:032	AGC MAVG - calculated and Testing
11/11/2014 8:22	0:01	AWE	0:002	0:100	AGC MAVG - calculated and Testing
11/11/2014 10:37	0:02	KWPII	0:013	3:423	AGC MAVG - calculated and Testing
11/11/2014 10:44	0:01	KWPII	0:002	0:066	AGC MAVG - calculated and Testing
11/11/2014 10:48	0:01	KWPII	0:002	3:195	AGC MAVG - calculated and Testing
11/11/2014 11:10	0:07	KWPII	0:068	5:417	AGC MAVG - calculated and Testing
11/11/2014 12:07	0:01	AWE	0:003	0:200	AGC MAVG - calculated and Testing
11/11/2014 12:39	0:01	AWE	0:002	0:100	AGC MAVG - calculated and Testing
11/11/2014 13:58	0:01	AWE	0:002	0:100	AGC MAVG - calculated and Testing
11/11/2014 16:37	0:01	AWE	0:002	0:100	AGC MAVG - calculated and Testing
11/11/2014 20:15	0:01	KWPII	0:001	0:060	AGC MAVG - calculated
11/12/2014 14:17	0:01	KWPII	0:000	0:016	AGC MAVG - calculated and Testing
11/12/2014 16:48	0:01	AWE	0:003	0:200	AGC MAVG - calculated and Testing
11/13/2014 2:13	0:01	AWE	0:005	0:300	AGC MAVG - calculated
11/13/2014 10:34	0:01	AWE	0:003	0:200	AGC MAVG - calculated and Testing
11/13/2014 11:03	0:01	AWE	0:003	0:200	AGC MAVG - calculated and Testing
11/13/2014 12:41	0:01	KWPII	0:001	0:032	AGC MAVG - calculated
11/13/2014 13:40	0:01	AWE	0:340	20:400	AGC MAVG - calculated
11/13/2014 14:50	0:01	AWE	0:002	0:100	AGC MAVG - calculated
11/13/2014 15:20	0:01	AWE	0:003	0:200	AGC MAVG - calculated
11/13/2014 15:22	0:01	AWE	0:002	0:100	AGC MAVG - calculated
11/13/2014 21:13	0:01	AWE	0:002	0:100	AGC MAVG - calculated
11/13/2014 22:37	0:10	KWPII	0:444	9:778	AGC MAVG - calculated
11/13/2014 22:49	0:01	KWPII	0:005	9:587	AGC MAVG - calculated
11/13/2014 22:51	0:04	KWPII	0:120	9:538	AGC MAVG - calculated
11/13/2014 22:58	0:02	KWPII	0:018	8:774	AGC MAVG - calculated
11/13/2014 22:59	0:14	KWPII	0:434	13:917	AGC MAVG - calculated
11/13/2014 23:17	0:02	KWPII	0:042	13:392	AGC MAVG - calculated
11/13/2014 23:22	0:02	KWPII	0:093	14:269	AGC MAVG - calculated
11/14/2014 0:06	0:01	KWPII	0:004	12:033	AGC MAVG - calculated
11/14/2014 0:10	0:01	KWPII	0:004	11:418	AGC MAVG - calculated
11/14/2014 0:12	0:03	KWPII	0:065	13:028	AGC MAVG - calculated
11/14/2014 0:17	0:01	KWPII	0:013	11:823	AGC MAVG - calculated
11/14/2014 0:28	0:01	KWPII	0:030	10:389	AGC MAVG - calculated
11/14/2014 0:33	0:14	KWPII	0:605	17:042	AGC MAVG - calculated
11/14/2014 0:47	0:04	KWPII	0:141	12:787	AGC MAVG - calculated
11/14/2014 0:52	0:01	KWPII	0:031	12:981	AGC MAVG - calculated
11/14/2014 0:54	0:07	KWPII	0:419	13:956	AGC MAVG - calculated
11/14/2014 1:02	3:09	KWPII	30:148	17:979	AGC MAVG - calculated
11/14/2014 3:47	0:01	AWE	0:024	8:700	AGC MAVG - calculated
11/14/2014 3:56	0:02	AWE	0:015	10:300	AGC MAVG - calculated
11/14/2014 3:59	0:04	AWE	0:070	12:300	AGC MAVG - calculated
11/14/2014 4:05	0:02	AWE	0:025	11:500	AGC MAVG - calculated
11/14/2014 4:13	1:13	KWPII	12:533	17:551	AGC MAVG - calculated
11/14/2014 4:14	0:01	AWE	0:004	11:800	AGC MAVG - calculated
11/14/2014 4:19	0:03	AWE	0:025	12:800	AGC MAVG - calculated
11/14/2014 4:25	0:01	AWE	0:023	13:700	AGC MAVG - calculated
11/14/2014 4:29	0:01	KWPII	0:025	14:913	AGC MAVG - calculated
11/14/2014 4:29	0:01	KWPII	0:014	8:072	AGC MAVG - calculated and Testing
11/14/2014 4:33	0:01	KWPII	0:023	7:347	AGC MAVG - calculated and Testing
11/14/2014 4:37	0:02	KWPII	0:018	9:787	AGC MAVG - calculated
11/15/2014 3:21	0:03	KWPII	0:029	3:448	AGC MAVG - calculated
11/15/2014 3:25	0:12	KWPII	0:850	8:905	AGC MAVG - calculated
11/15/2014 3:29	0:01	KWPII	0:021	18:484	AGC MAVG - calculated
11/15/2014 3:33	0:01	KWPII	0:018	16:850	AGC MAVG - calculated

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Start Date and Time	Duration	IPP Curtailed	Estimated Curtailed MWh	Peak MW Curtailed	Reasons for Curtailment
11/15/2014 3:38	0:01	KWPH	0.021	8.113	AGC MAVG - calculated
11/15/2014 3:41	0:05	KWPH	0.067	11.126	AGC MAVG - calculated
11/15/2014 3:50	0:05	KWPH	0.354	15.765	AGC MAVG - calculated
11/15/2014 11:14	0:01	KWPH	0.006	14.326	AGC MAVG - calculated
11/15/2014 11:38	0:01	KWPH	0.001	13.818	AGC MAVG - calculated
11/15/2014 18:31	0:01	KWPH	0.001	0.043	AGC MAVG - calculated and Good Engineering and Operating Practices
11/18/2014 13:25	0:01	AWE	0.002	0.100	AGC MAVG - calculated
11/18/2014 13:26	0:01	KWPH	0.006	13.715	AGC MAVG - calculated
11/18/2014 23:34	0:01	KWPH	0.000	20.703	AGC MAVG - calculated
11/18/2014 23:36	0:02	KWPH	0.022	20.704	AGC MAVG - calculated
11/18/2014 23:39	5:35	KWPH	53.928	20.707	AGC MAVG - calculated
11/17/2014 5:15	0:02	KWPH	0.006	20.694	AGC MAVG - calculated
11/17/2014 5:29	0:02	KWPH	0.028	20.645	AGC MAVG - calculated
11/17/2014 10:00	0:01	KWPH	0.014	20.706	AGC MAVG - calculated
11/17/2014 10:02	0:02	KWPH	0.068	20.700	AGC MAVG - calculated
11/17/2014 10:05	0:12	KWPH	0.544	20.708	AGC MAVG - calculated
11/17/2014 10:34	0:01	KWPH	0.006	20.708	AGC MAVG - calculated
11/17/2014 10:38	0:01	KWPH	0.005	20.708	AGC MAVG - calculated
11/17/2014 10:45	0:01	KWPH	0.002	20.708	AGC MAVG - calculated
11/17/2014 10:48	1:36	KWPH	9.563	20.708	AGC MAVG - calculated
11/17/2014 12:18	0:01	KWPH	0.003	20.708	AGC MAVG - calculated
11/17/2014 12:19	0:44	KWPH	4.297	20.708	AGC MAVG - calculated
11/17/2014 13:06	0:13	KWPH	0.754	20.708	AGC MAVG - calculated
11/17/2014 13:22	0:21	KWPH	0.790	20.708	AGC MAVG - calculated
11/17/2014 13:44	0:16	KWPH	0.363	20.708	AGC MAVG - calculated
11/17/2014 14:47	0:04	KWPH	0.113	20.708	AGC MAVG - entered and AGC MAVG - calculated
11/17/2014 23:29	5:41	KWPH	57.831	20.708	AGC MAVG - calculated, AGC MAVG - entered, Maintaining Regulating Reserves, and AGC MAVG - calculated
11/18/2014 4:19	0:06	KWPH	0.097	29.726	AGC MAVG - calculated
11/18/2014 4:35	0:11	AWE	0.495	14.600	AGC MAVG - calculated
11/18/2014 4:41	0:02	KWPH	0.000	29.726	AGC MAVG - calculated
11/18/2014 4:50	0:01	AWE	0.003	9.900	AGC MAVG - calculated
11/18/2014 4:54	0:01	AWE	0.043	11.400	AGC MAVG - calculated
11/18/2014 5:08	0:00	AWE	0.000	16.800	AGC MAVG - calculated
11/18/2014 5:11	1:10	KWPH	8.177	20.708	AGC MAVG - calculated
11/18/2014 6:31	0:03	KWPH	0.015	20.708	AGC MAVG - calculated
11/18/2014 9:50	0:01	KWPH	0.002	20.702	AGC MAVG - calculated
11/18/2014 9:57	0:01	KWPH	0.019	20.653	AGC MAVG - calculated
11/18/2014 9:59	0:06	KWPH	0.061	20.705	AGC MAVG - calculated
11/18/2014 10:06	0:01	KWPH	0.011	20.702	AGC MAVG - calculated
11/18/2014 10:06	0:01	KWPH	0.005	20.708	AGC MAVG - calculated
11/18/2014 10:11	0:08	KWPH	0.190	20.708	AGC MAVG - calculated
11/18/2014 10:20	0:57	KWPH	0.678	20.708	AGC MAVG - calculated and Testing
11/18/2014 11:18	0:52	KWPH	3.266	20.708	AGC MAVG - calculated
11/18/2014 12:13	0:01	KWPH	0.013	20.708	AGC MAVG - calculated
11/18/2014 20:22	0:01	AWE	0.003	0.200	AGC MAVG - calculated
11/18/2014 22:21	0:07	KWPH	0.344	20.708	AGC MAVG - calculated
11/18/2014 22:32	0:07	KWPH	0.082	20.708	AGC MAVG - calculated
11/18/2014 23:00	2:44	KWPH	46.752	20.708	AGC MAVG - calculated
11/19/2014 0:08	0:01	AWE	0.006	16.300	AGC MAVG - calculated
11/19/2014 0:13	0:44	AWE	1.356	20.400	AGC MAVG - calculated
11/19/2014 0:56	0:00	AWE	0.235	17.600	AGC MAVG - calculated
11/19/2014 1:10	0:17	AWE	0.511	16.900	AGC MAVG - calculated
11/19/2014 1:36	0:02	AWE	0.042	14.100	AGC MAVG - calculated
11/19/2014 1:39	0:01	AWE	0.013	13.300	AGC MAVG - calculated
11/19/2014 1:46	5:04	KWPH	71.830	20.708	AGC MAVG - calculated
11/19/2014 2:34	0:05	AWE	0.068	12.500	AGC MAVG - calculated
11/19/2014 3:23	0:21	AWE	1.433	20.200	AGC MAVG - calculated
11/19/2014 3:50	0:09	AWE	0.244	15.000	AGC MAVG - calculated
11/19/2014 4:30	0:58	AWE	1.813	20.400	AGC MAVG - calculated
11/19/2014 4:59	0:02	AWE	0.003	20.800	AGC MAVG - calculated
11/19/2014 7:06	0:04	KWPH	0.058	20.708	AGC MAVG - calculated
11/19/2014 7:15	0:02	KWPH	0.009	20.708	AGC MAVG - calculated
11/19/2014 7:20	6:02	KWPH	54.221	20.708	AGC MAVG - calculated and Testing
11/19/2014 13:28	0:06	KWPH	0.062	20.708	AGC MAVG - calculated
11/19/2014 13:37	0:01	KWPH	0.002	20.708	AGC MAVG - calculated
11/19/2014 13:38	0:11	KWPH	0.104	20.708	AGC MAVG - calculated
11/19/2014 23:15	0:02	KWPH	0.016	20.104	AGC MAVG - calculated
11/19/2014 23:19	0:01	KWPH	0.021	20.067	AGC MAVG - calculated
11/19/2014 23:29	2:21	KWPH	25.348	20.650	AGC MAVG - calculated
11/20/2014 0:53	0:02	AWE	0.003	20.400	AGC MAVG - calculated
11/20/2014 0:58	0:01	AWE	0.004	20.400	AGC MAVG - calculated
11/20/2014 1:10	0:01	AWE	0.010	20.400	AGC MAVG - calculated
11/20/2014 1:13	0:01	AWE	0.014	20.400	AGC MAVG - calculated
11/20/2014 1:18	0:01	AWE	0.001	20.400	AGC MAVG - calculated
11/20/2014 1:18	0:02	AWE	0.023	20.400	AGC MAVG - calculated
11/20/2014 1:21	0:01	AWE	0.006	20.200	AGC MAVG - calculated
11/20/2014 1:23	0:02	AWE	0.034	20.400	AGC MAVG - calculated
11/20/2014 1:53	0:43	KWPH	5.111	16.471	AGC MAVG - calculated
11/20/2014 2:41	0:04	KWPH	0.113	7.166	AGC MAVG - calculated
11/20/2014 2:55	0:01	KWPH	0.006	6.906	AGC MAVG - calculated
11/20/2014 2:57	0:01	KWPH	0.030	9.696	AGC MAVG - calculated
11/20/2014 2:59	0:11	KWPH	0.322	9.296	AGC MAVG - calculated
11/20/2014 3:11	0:01	KWPH	0.011	4.501	AGC MAVG - calculated
11/20/2014 3:18	0:04	KWPH	0.050	7.644	AGC MAVG - calculated
11/20/2014 3:24	1:27	KWPH	15.262	16.380	AGC MAVG - calculated
11/20/2014 4:08	0:01	AWE	0.008	20.000	AGC MAVG - calculated
11/20/2014 4:53	0:33	KWPH	3.809	16.623	AGC MAVG - calculated
11/20/2014 5:27	0:05	KWPH	0.117	17.376	AGC MAVG - calculated
11/20/2014 6:34	0:04	KWPH	0.033	17.266	AGC MAVG - calculated
11/20/2014 7:32	0:01	KWPH	0.007	7.121	AGC MAVG - calculated
11/20/2014 7:35	0:08	KWPH	0.309	16.801	AGC MAVG - calculated
11/20/2014 7:57	0:03	KWPH	0.019	16.000	AGC MAVG - calculated
11/20/2014 8:32	0:48	KWPH	1.620	20.705	AGC MAVG - calculated and Testing
11/20/2014 9:22	0:02	KWPH	0.017	19.556	AGC MAVG - calculated and Testing
11/20/2014 9:28	0:05	KWPH	0.095	20.283	AGC MAVG - calculated and Testing
11/20/2014 9:34	0:01	KWPH	0.008	16.176	AGC MAVG - calculated and Testing
11/20/2014 9:38	0:26	KWPH	0.148	16.538	AGC MAVG - calculated and Testing
11/20/2014 12:06	0:01	KWPH	0.002	0.066	AGC MAVG - calculated and Testing
11/20/2014 14:27	0:01	KWPH	0.000	0.016	AGC MAVG - calculated and Testing
11/20/2014 22:60	1:06	KWPH	9.892	20.413	AGC MAVG - calculated
11/21/2014 1:13	2:34	KWPH	23.817	15.796	AGC MAVG - calculated
11/21/2014 1:26	0:02	AWE	0.001	20.700	AGC MAVG - calculated
11/21/2014 1:33	2:04	AWE	6.944	20.800	AGC MAVG - calculated
11/21/2014 3:36	0:03	AWE	0.040	20.400	AGC MAVG - calculated
11/21/2014 3:49	1:20	KWPH	18.065	19.302	AGC MAVG - calculated
11/21/2014 4:07	0:02	AWE	0.006	21.000	AGC MAVG - calculated
11/21/2014 4:10	0:53	AWE	2.824	20.400	AGC MAVG - calculated
11/21/2014 5:11	0:02	KWPH	0.169	15.074	AGC MAVG - calculated
11/21/2014 5:14	0:01	KWPH	0.057	16.251	AGC MAVG - calculated
11/21/2014 6:11	0:01	KWPH	0.002	5.871	AGC MAVG - calculated
11/21/2014 6:13	0:02	KWPH	0.026	9.408	AGC MAVG - calculated
11/21/2014 7:13	0:04	KWPH	0.072	16.103	AGC MAVG - calculated
11/21/2014 7:21	0:01	KWPH	0.008	16.101	AGC MAVG - calculated
11/21/2014 7:26	0:01	KWPH	0.005	17.423	AGC MAVG - calculated
11/21/2014 8:15	0:01	KWPH	0.024	16.163	AGC MAVG - calculated
11/21/2014 8:45	0:03	KWPH	0.034	16.536	AGC MAVG - calculated
11/21/2014 8:50	0:06	KWPH	0.130	16.423	AGC MAVG - calculated

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Start Date and Time	Duration	IPP Curtailed	Estimated Curtailed MWh	Peak MW Curtailed	Reasons for Curtailment
11/21/2014 8:57	0:08	KWPHI	0.327	18 010	AGC MAVG - calculated
11/21/2014 9:00	0:01	KWPHI	0.014	16 348	AGC MAVG - calculated
11/21/2014 9:40	0:01	KWPHI	0.020	18 171	AGC MAVG - calculated
11/21/2014 9:52	0:01	KWPHI	0.014	15 006	AGC MAVG - calculated
11/21/2014 9:54	0:01	KWPHI	0.034	15 656	AGC MAVG - calculated
11/21/2014 9:58	0:03	KWPHI	0.118	17 604	AGC MAVG - calculated
11/21/2014 10:00	0:37	KWPHI	3.554	20 287	AGC MAVG - calculated
11/21/2014 10:41	0:08	KWPHI	0.355	19 826	AGC MAVG - calculated
11/21/2014 10:50	0:27	KWPHI	2.550	20 477	AGC MAVG - calculated
11/21/2014 11:19	0:01	KWPHI	0.015	18 887	AGC MAVG - calculated
11/21/2014 11:21	0:01	KWPHI	0.005	18 965	AGC MAVG - calculated
11/21/2014 11:24	0:02	KWPHI	0.035	19 311	AGC MAVG - calculated
11/21/2014 11:33	0:04	KWPHI	0.080	18 334	AGC MAVG - calculated
11/21/2014 11:39	0:20	KWPHI	0.638	19 835	AGC MAVG - calculated
11/21/2014 12:01	0:01	KWPHI	0.029	14 278	AGC MAVG - calculated
11/21/2014 12:03	0:01	KWPHI	0.019	14 998	AGC MAVG - calculated
11/21/2014 12:08	0:01	KWPHI	0.009	15 991	AGC MAVG - calculated
11/21/2014 12:08	0:01	KWPHI	0.006	18 027	AGC MAVG - calculated
11/21/2014 12:11	0:04	KWPHI	0.139	16 043	AGC MAVG - calculated
11/21/2014 12:18	0:01	KWPHI	0.011	15 733	AGC MAVG - calculated
11/22/2014 0:19	0:01	KWPHI	0.000	0 018	AGC MAVG - calculated
11/22/2014 1:04	8:00	KWPHI	102.542	20 867	AGC MAVG - calculated and Good Engineering and Operating Practices
11/22/2014 1:09	0:01	AWE	0.001	18 000	AGC MAVG - calculated and Good Engineering and Operating Practices
11/22/2014 1:32	0:01	AWE	0.030	14 400	AGC MAVG - calculated and Good Engineering and Operating Practices
11/22/2014 1:35	0:01	AWE	0.018	15 700	AGC MAVG - calculated and Good Engineering and Operating Practices
11/22/2014 1:39	0:01	AWE	0.006	11 900	AGC MAVG - calculated and Good Engineering and Operating Practices
11/22/2014 1:47	0:03	AWE	0.047	12 800	AGC MAVG - calculated and Good Engineering and Operating Practices
11/22/2014 2:00	0:05	AWE	0.062	11 700	AGC MAVG - calculated and Good Engineering and Operating Practices
11/22/2014 2:08	0:07	AWE	0.027	9 500	AGC MAVG - calculated and Good Engineering and Operating Practices
11/22/2014 2:29	0:01	AWE	0.007	18 000	AGC MAVG - calculated and Good Engineering and Operating Practices
11/22/2014 2:31	0:01	AWE	0.005	9 800	AGC MAVG - calculated and Good Engineering and Operating Practices
11/22/2014 2:38	0:01	AWE	0.002	13 300	AGC MAVG - calculated and Good Engineering and Operating Practices
11/22/2014 2:40	0:01	AWE	0.006	12 000	AGC MAVG - calculated and Good Engineering and Operating Practices
11/22/2014 2:48	0:03	AWE	0.012	8 700	AGC MAVG - calculated and Good Engineering and Operating Practices
11/22/2014 2:53	0:04	AWE	0.137	10 800	AGC MAVG - calculated and Good Engineering and Operating Practices
11/22/2014 2:58	0:23	AWE	1.095	17 900	AGC MAVG - calculated and Good Engineering and Operating Practices
11/22/2014 3:24	0:08	AWE	0.078	11 800	AGC MAVG - calculated and Good Engineering and Operating Practices
11/22/2014 3:35	0:01	AWE	0.004	7 600	AGC MAVG - calculated and Good Engineering and Operating Practices
11/22/2014 3:38	0:01	AWE	0.002	8 000	AGC MAVG - calculated and Good Engineering and Operating Practices
11/22/2014 3:42	2:30	AWE	11.571	20 400	AGC MAVG - calculated and Good Engineering and Operating Practices
11/22/2014 6:13	0:04	AWE	0.068	20 400	AGC MAVG - calculated and Good Engineering and Operating Practices
11/22/2014 6:18	0:02	AWE	0.047	20 400	AGC MAVG - calculated and Good Engineering and Operating Practices
11/22/2014 6:21	0:02	AWE	0.043	20 400	AGC MAVG - calculated and Good Engineering and Operating Practices
11/22/2014 6:24	0:07	AWE	0.058	20 400	AGC MAVG - calculated and Good Engineering and Operating Practices
11/22/2014 6:27	0:01	AWE	0.009	18 900	AGC MAVG - calculated and Good Engineering and Operating Practices
11/22/2014 6:32	0:03	AWE	0.085	20 400	AGC MAVG - calculated and Good Engineering and Operating Practices
11/22/2014 6:38	0:01	AWE	0.013	19 900	AGC MAVG - calculated and Good Engineering and Operating Practices
11/22/2014 6:42	0:02	AWE	0.017	20 400	AGC MAVG - calculated and Good Engineering and Operating Practices
11/22/2014 6:47	0:05	AWE	0.031	20 800	AGC MAVG - calculated and Good Engineering and Operating Practices
11/22/2014 6:54	0:01	AWE	0.000	20 300	AGC MAVG - calculated and Good Engineering and Operating Practices
11/22/2014 6:58	0:01	AWE	0.001	20 500	AGC MAVG - calculated and Good Engineering and Operating Practices
11/22/2014 7:05	0:21	KWPHI	4.592	20 180	AGC MAVG - calculated and Good Engineering and Operating Practices
11/23/2014 1:42	0:01	AWE	0.005	19 600	AGC MAVG - calculated
11/23/2014 2:18	0:10	AWE	0.273	19 900	AGC MAVG - calculated
11/23/2014 15:41	0:01	KWPHI	0.000	0 016	AGC MAVG - calculated
11/23/2014 23:49	0:01	KWPHI	0.002	0 112	AGC MAVG - calculated
11/24/2014 2:47	0:01	AWE	0.003	0 200	AGC MAVG - calculated
11/24/2014 5:05	0:01	KWPHI	0.005	9 951	AGC MAVG - calculated
11/24/2014 7:17	0:01	KWPHI	0.008	4 784	AGC MAVG - calculated
11/24/2014 7:51	0:04	KWPHI	0.077	1 117	AGC MAVG - calculated
11/24/2014 7:56	0:04	KWPHI	0.057	5 541	AGC MAVG - calculated
11/24/2014 8:01	0:02	KWPHI	0.020	5 133	AGC MAVG - calculated
11/24/2014 8:10	0:02	KWPHI	0.025	5 811	AGC MAVG - calculated
11/24/2014 8:13	0:01	KWPHI	0.011	5 280	AGC MAVG - calculated
11/24/2014 8:15	0:01	KWPHI	0.008	4 630	AGC MAVG - calculated
11/24/2014 8:17	0:02	KWPHI	0.007	5 089	AGC MAVG - calculated
11/24/2014 8:20	0:07	KWPHI	0.054	5 931	AGC MAVG - calculated
11/24/2014 8:28	0:09	KWPHI	0.073	5 217	AGC MAVG - calculated
11/24/2014 8:38	0:01	KWPHI	0.008	4 343	AGC MAVG - calculated
11/24/2014 8:41	0:02	KWPHI	0.005	4 979	AGC MAVG - calculated
11/24/2014 8:48	0:01	KWPHI	0.001	4 973	AGC MAVG - calculated
11/24/2014 9:55	0:01	KWPHI	0.007	3 258	AGC MAVG - calculated and Good Engineering and Operating Practices
11/24/2014 10:28	0:04	KWPHI	0.041	3 289	AGC MAVG - calculated and Good Engineering and Operating Practices
11/24/2014 10:31	0:02	KWPHI	0.004	2 752	AGC MAVG - calculated and Good Engineering and Operating Practices
11/24/2014 10:36	0:07	KWPHI	0.007	3 188	AGC MAVG - calculated and Good Engineering and Operating Practices
11/24/2014 10:39	0:01	KWPHI	0.001	3 449	AGC MAVG - calculated and Good Engineering and Operating Practices
11/24/2014 10:41	0:01	KWPHI	0.000	3 282	AGC MAVG - calculated and Good Engineering and Operating Practices
11/24/2014 10:51	0:01	KWPHI	0.007	3 234	AGC MAVG - calculated
11/24/2014 11:33	0:01	KWPHI	0.011	3 875	AGC MAVG - calculated and Testing
11/24/2014 11:41	0:01	KWPHI	0.018	2 901	AGC MAVG - calculated and Testing
11/24/2014 18:45	0:01	KWPHI	0.001	0 046	AGC MAVG - calculated
11/24/2014 20:58	0:01	AWE	0.340	20 400	AGC MAVG - calculated
11/25/2014 7:31	0:01	KWPHI	0.002	18 378	AGC MAVG - calculated
11/25/2014 7:43	0:01	KWPHI	0.013	18 020	AGC MAVG - calculated and Good Engineering and Operating Practices
11/25/2014 7:47	0:01	KWPHI	0.018	18 521	AGC MAVG - calculated and Good Engineering and Operating Practices
11/25/2014 7:55	0:03	KWPHI	0.047	19 812	AGC MAVG - calculated and Good Engineering and Operating Practices
11/25/2014 8:04	0:02	KWPHI	0.011	20 214	AGC MAVG - calculated and Good Engineering and Operating Practices
11/25/2014 9:08	0:01	KWPHI	0.004	20 149	AGC MAVG - calculated and Good Engineering and Operating Practices
11/25/2014 9:09	0:01	KWPHI	0.019	18 278	AGC MAVG - calculated and Good Engineering and Operating Practices
11/25/2014 9:17	0:01	AWE	0.002	0 100	AGC MAVG - calculated and Good Engineering and Operating Practices
11/25/2014 9:20	0:01	KWPHI	0.004	18 814	AGC MAVG - calculated and Good Engineering and Operating Practices
11/25/2014 9:24	0:01	KWPHI	0.002	18 534	AGC MAVG - calculated and Good Engineering and Operating Practices
11/25/2014 9:32	0:01	KWPHI	0.003	18 917	AGC MAVG - calculated
11/25/2014 9:58	0:28	KWPHI	1.407	20 353	AGC MAVG - calculated and Good Engineering and Operating Practices
11/25/2014 10:27	0:01	KWPHI	0.010	18 555	AGC MAVG - calculated and Good Engineering and Operating Practices
11/25/2014 10:39	0:01	KWPHI	0.004	18 033	AGC MAVG - calculated and Good Engineering and Operating Practices
11/25/2014 10:53	0:03	KWPHI	0.061	18 288	AGC MAVG - calculated and Good Engineering and Operating Practices
11/25/2014 10:41	0:01	KWPHI	0.005	18 870	AGC MAVG - calculated and Good Engineering and Operating Practices
11/25/2014 11:42	0:01	AWE	0.002	0 100	AGC MAVG - calculated
11/25/2014 14:28	0:01	AWE	0.002	0 100	AGC MAVG - calculated
11/25/2014 15:03	0:01	AWE	0.002	0 100	AGC MAVG - calculated
11/25/2014 15:18	0:01	AWE	0.002	0 100	AGC MAVG - calculated and Testing
11/25/2014 15:51	0:01	KWPHI	0.002	20 847	AGC MAVG - calculated and Testing
11/25/2014 17:40	0:01	KWPHI	0.008	20 305	AGC MAVG - calculated
11/25/2014 19:08	0:01	AWE	0.002	0 100	AGC MAVG - calculated
11/25/2014 22:50	0:01	KWPHI	0.006	20 313	AGC MAVG - calculated
11/25/2014 22:53	0:18	KWPHI	0.801	20 512	AGC MAVG - calculated
11/25/2014 23:17	0:03	KWPHI	0.008	20 212	AGC MAVG - calculated
11/25/2014 23:43	0:03	KWPHI	0.018	20 887	AGC MAVG - calculated
11/25/2014 23:47	0:04	KWPHI	0.008	20 815	AGC MAVG - calculated
11/25/2014 23:50	0:04	KWPHI	0.043	20 583	AGC MAVG - calculated
11/25/2014 23:55	0:08	KWPHI	0.174	20 680	AGC MAVG - calculated
11/26/2014 0:05	4:33	KWPHI	24 024	20 649	AGC MAVG - calculated
11/26/2014 12:43	0:02	KWPHI	0.015	20 512	AGC MAVG - calculated
11/26/2014 12:51	0:01	KWPHI	0.004	20 511	AGC MAVG - calculated
11/26/2014 12:58	0:01	AWE	0.002	0 100	AGC MAVG - calculated
11/26/2014 13:25	0:01	KWPHI	0.002	20 334	AGC MAVG - calculated

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Start Date and Time	Duration	IPP Curtailed	Estimated Curtailed MWh	Peak MW Curtailed	Reasons for Curtailment
11/26/2014 13:34	0:01	KWPII	0.022	20.461	AGC MAVG - calculated
11/26/2014 13:38	0:01	KWPII	0.005	19.924	AGC MAVG - calculated
11/26/2014 13:43	0:01	KWPII	0.012	20.212	AGC MAVG - calculated
11/26/2014 14:01	0:01	KWPII	0.000	20.273	AGC MAVG - calculated
11/26/2014 14:03	0:01	KWPII	0.002	20.543	AGC MAVG - calculated
11/26/2014 14:07	0:01	KWPII	0.004	20.631	AGC MAVG - calculated
11/26/2014 14:10	0:01	KWPII	0.050	20.868	AGC MAVG - calculated
11/26/2014 14:19	0:01	KWPII	0.001	20.508	AGC MAVG - calculated
11/26/2014 14:21	0:05	KWPII	0.052	20.806	AGC MAVG - calculated
11/26/2014 14:27	0:03	KWPII	0.011	20.826	AGC MAVG - calculated
11/26/2014 14:31	0:01	KWPII	0.001	20.649	AGC MAVG - calculated
11/26/2014 14:37	0:05	KWPII	0.033	20.090	AGC MAVG - calculated
11/26/2014 14:43	0:01	KWPII	0.000	20.612	AGC MAVG - calculated
11/26/2014 14:45	0:02	KWPII	0.008	19.173	AGC MAVG - calculated
11/26/2014 14:50	0:02	KWPII	0.048	20.606	AGC MAVG - calculated
11/27/2014 0:42	0:32	KWPII	0.968	20.708	AGC MAVG - calculated
11/27/2014 1:37	3:00	KWPII	13.421	20.708	AGC MAVG - calculated
11/27/2014 2:48	0:01	AWE	0.002	0.100	AGC MAVG - calculated
11/27/2014 3:50	0:01	AWE	0.002	0.100	AGC MAVG - calculated
11/27/2014 4:40	0:06	KWPII	0.108	20.708	AGC MAVG - calculated
11/27/2014 4:49	0:21	KWPII	0.388	20.708	AGC MAVG - calculated
11/27/2014 13:24	1:58	KWPII	9.211	20.708	AGC MAVG - calculated
11/27/2014 15:23	0:02	KWPII	0.020	19.211	AGC MAVG - calculated
11/27/2014 15:26	0:01	KWPII	0.007	19.211	AGC MAVG - calculated
11/27/2014 15:28	0:03	KWPII	0.033	19.211	AGC MAVG - calculated
11/27/2014 17:24	0:01	KWPII	0.002	19.211	AGC MAVG - calculated
11/27/2014 17:28	0:02	KWPII	0.013	19.211	AGC MAVG - calculated
11/27/2014 17:31	1:24	KWPII	4.100	19.211	AGC MAVG - calculated
11/27/2014 20:07	0:04	KWPII	0.088	19.211	AGC MAVG - calculated
11/27/2014 23:40	3:49	KWPII	39.834	19.211	AGC MAVG - calculated
11/28/2014 2:52	0:29	AWE	2.232	20.400	AGC MAVG - calculated
11/28/2014 3:30	0:12	KWPII	3.242	19.211	AGC MAVG - calculated
11/28/2014 3:44	0:32	KWPII	8.487	19.211	AGC MAVG - calculated
11/28/2014 3:56	0:04	AWE	0.100	19.000	AGC MAVG - calculated
11/28/2014 4:18	0:21	KWPII	5.880	19.211	AGC MAVG - calculated
11/28/2014 4:19	0:01	AWE	0.020	17.700	AGC MAVG - calculated
11/28/2014 4:41	0:49	KWPII	5.933	19.211	AGC MAVG - calculated
11/28/2014 6:12	0:01	KWPII	0.002	19.211	AGC MAVG - calculated
11/28/2014 6:14	0:01	KWPII	0.013	19.211	AGC MAVG - calculated
11/28/2014 6:18	0:01	KWPII	0.001	19.211	AGC MAVG - calculated
11/28/2014 8:42	0:01	AWE	0.002	0.100	AGC MAVG - calculated and Good Engineering and Operating Practices
11/28/2014 9:42	0:08	KWPII	0.201	19.211	AGC MAVG - calculated and Good Engineering and Operating Practices
11/28/2014 23:21	0:01	KWPII	0.018	19.211	AGC MAVG - calculated
11/28/2014 23:23	0:07	KWPII	0.062	19.211	AGC MAVG - calculated
11/28/2014 23:36	0:12	KWPII	0.283	19.211	AGC MAVG - calculated
11/28/2014 23:52	0:01	KWPII	0.002	19.210	AGC MAVG - calculated
11/29/2014 0:32	0:17	KWPII	0.428	19.211	AGC MAVG - calculated
11/29/2014 0:54	0:01	KWPII	0.008	19.211	AGC MAVG - calculated
11/29/2014 0:58	3:17	KWPII	21.805	19.211	AGC MAVG - calculated
11/29/2014 4:10	0:03	KWPII	0.015	19.211	AGC MAVG - calculated
11/29/2014 4:20	0:21	KWPII	0.178	19.211	AGC MAVG - calculated
11/29/2014 4:42	0:02	KWPII	0.000	19.211	AGC MAVG - calculated
11/29/2014 8:09	0:26	KWPII	1.402	20.708	AGC MAVG - calculated
11/29/2014 9:00	0:01	KWPII	0.001	20.708	AGC MAVG - calculated
11/29/2014 10:22	0:05	KWPII	0.051	20.708	AGC MAVG - calculated
11/29/2014 13:18	0:01	KWPII	0.003	20.863	AGC MAVG - calculated
11/29/2014 13:34	0:03	KWPII	0.034	20.703	AGC MAVG - calculated
11/29/2014 13:48	0:14	KWPII	0.264	20.708	AGC MAVG - calculated
11/29/2014 14:04	0:01	KWPII	0.002	19.211	AGC MAVG - calculated
11/29/2014 14:07	0:01	KWPII	0.003	19.211	AGC MAVG - calculated
11/29/2014 14:09	0:10	KWPII	0.250	20.708	AGC MAVG - calculated
11/29/2014 14:20	0:01	KWPII	0.001	20.708	AGC MAVG - calculated
11/29/2014 14:24	0:01	KWPII	0.005	20.708	AGC MAVG - calculated
11/29/2014 22:43	0:01	KWPII	0.005	20.708	AGC MAVG - calculated
11/29/2014 22:45	0:16	KWPII	0.588	20.708	AGC MAVG - calculated
11/29/2014 23:04	4:59	KWPII	89.341	20.708	AGC MAVG - calculated
11/30/2014 0:20	3:20	AWE	18.765	20.400	AGC MAVG - calculated and AGC MAVG - entered - Excess Energy
11/30/2014 3:42	0:09	AWE	0.451	18.300	AGC MAVG - entered - Excess Energy
11/30/2014 4:06	1:29	KWPII	10.091	20.708	AGC MAVG - calculated
11/30/2014 5:25	0:18	KWPII	1.183	20.708	AGC MAVG - calculated
11/30/2014 5:54	0:01	KWPII	0.010	19.207	AGC MAVG - calculated
11/30/2014 8:11	0:26	KWPII	1.400	20.708	AGC MAVG - calculated
11/30/2014 8:06	0:01	KWPII	0.001	20.708	AGC MAVG - calculated
11/30/2014 8:12	0:01	KWPII	0.000	20.707	AGC MAVG - calculated
11/30/2014 8:19	0:03	KWPII	0.007	20.708	AGC MAVG - calculated
11/30/2014 8:34	0:06	KWPII	0.149	20.708	AGC MAVG - calculated
11/30/2014 8:49	0:01	KWPII	0.015	20.708	AGC MAVG - calculated
11/30/2014 10:18	0:04	KWPII	0.026	20.708	AGC MAVG - calculated
11/30/2014 11:29	0:02	KWPII	0.025	20.708	AGC MAVG - calculated
11/30/2014 11:32	0:02	KWPII	0.023	20.708	AGC MAVG - calculated
11/30/2014 11:35	0:01	KWPII	0.010	20.708	AGC MAVG - calculated
11/30/2014 11:38	0:01	KWPII	0.008	20.708	AGC MAVG - calculated
11/30/2014 11:40	0:01	KWPII	0.008	20.708	AGC MAVG - calculated
11/30/2014 11:46	0:01	KWPII	0.019	20.708	AGC MAVG - calculated
11/30/2014 11:49	0:25	KWPII	0.850	20.708	AGC MAVG - calculated
11/30/2014 12:15	0:05	KWPII	0.280	20.708	AGC MAVG - calculated
11/30/2014 12:21	0:01	KWPII	0.012	20.708	AGC MAVG - calculated
11/30/2014 12:28	0:04	KWPII	0.040	20.708	AGC MAVG - calculated
11/30/2014 12:48	0:10	KWPII	0.323	20.708	AGC MAVG - calculated
11/30/2014 13:00	0:01	KWPII	0.015	20.708	AGC MAVG - calculated
11/30/2014 13:12	0:01	KWPII	0.006	20.708	AGC MAVG - calculated
11/30/2014 13:17	0:03	KWPII	0.048	20.708	AGC MAVG - calculated
11/30/2014 13:26	0:01	KWPII	0.001	20.708	AGC MAVG - calculated
11/30/2014 18:35	0:01	AWE	0.802	0.100	AGC MAVG - calculated
11/30/2014 19:41	0:01	AWE	0.002	0.200	AGC MAVG - calculated

Notes
 Curtailment for Kahaewa Wind Power ("KWPP"), Makalei Hydroelectric ("MH"): AAAAA Rem-A-Spec Maui LTD ("SA"), Boreal Solar, LLC ("BS"), Auwahi Wind Energy ("AWE") and Kahaewa Wind Power II ("KWPII") 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 ("AVG"), regulating reserve down requirement ("RRDR") and available regulating reserve down ("ARRD"). Thus, the AGC MAVG - calculated is equal to AVG 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 curtailment logic.
 The Estimated Curtailed MWh and Peak MW Curtailed are calculated with information provided by AWE, KWPP, 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, or MH.
 Curtailment signals sent to SA or BS during nighttime hours are not recorded as curtailment events because no energy generation is possible during that time.



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Start Date/Time	Stop Date/Time	Duration (h:mm)	IPP Curtailed	Estimated MWH Curtailed	Peak MW Curtailed	Reasons for Curtailment
11/30/2014 9:26	11/30/2014 10:02	0:37	LSR	Data is not available	Data is not available	Good Engineering and Operating Practices
11/30/2014 10:12	11/30/2014 10:12	0:01	LSR	Data is not available	Data is not available	Good Engineering and Operating Practices
11/30/2014 10:18	11/30/2014 10:20	0:03	LSR	Data is not available	Data is not available	Good Engineering and Operating Practices
11/30/2014 10:22	11/30/2014 10:37	0:16	LSR	Data is not available	Data is not available	Good Engineering and Operating Practices
11/30/2014 10:45	11/30/2014 10:46	0:02	LSR	Data is not available	Data is not available	Good Engineering and Operating Practices
11/30/2014 10:48	11/30/2014 17:11	6:24	LSR	Data is not available	Data is not available	Good Engineering and Operating Practices

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 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

Hawai'i Electric Light Company Curtailment Report November 2014

Start Date/Time	MW output prior to start of curtailment	End Date/Time	MW output after curtailment released	Reason for Curtailment
11/01/14 14:31	19.1 MW	11/02/14 09:38	9.0 MW	Tawhiri request self-curtail to 9 MW due to fiber optic loss at their site.
11/22/14 07:58	16.8 MW	11/22/14 15:06	16.9 MW	Tawhiri request self-curtail to 9 MW to repair fiber optic communications at their site.
11/28/14 07:51	18.5 MW	11/28/14 08:21	15.0 MW	Tawhiri curtailed - switching at Kealia station.
11/28/14 12:22	19.5 MW	11/28/14 12:46	13.0 MW	Tawhiri curtailed - switching at Kealia station.

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.