



January 29, 2016

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

PUBLIC UTILITIES  
COMMISSION

1/29/16

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C: JG, MLT, DP

Dear Commissioners:

Subject: Hawaiian Electric Company, Inc.,  
Hawai'i Electric Light Company, Inc.  
Maui Electric Company, Limited  
2015 Net Energy Metering Status Report

Hawaiian Electric Company, Inc., Hawai'i Electric Light Company, Inc., and Maui Electric Company, Limited respectfully submit their 2015 Net Energy Metering Status Report, which provides the total number of installations and the total rated generating capacity of net metered customer facilities in each of their service territories.

If you have any questions on this matter, please call Marisa Chun at 543-4723.

Sincerely,

Daniel G. Brown  
Manager  
Regulatory Non-Rate Proceedings

Attachment

cc: Division of Consumer Advocacy

## Net Energy Metering Status Report

Hawaiian Electric Company, Inc.  
Hawai'i Electric Light Company, Inc.  
Maui Electric Company, Limited

December 31, 2015

### Status

The following table provides the status of NEM in the Hawaiian Electric, Hawai'i Electric Light, and Maui Electric service territories as of December 31, 2015. In addition, a report on the estimates of the rate and revenue impact of NEM participation is shown in Appendix A.

NEM Status as of 12/31/15

	Information packets sent	No. of Installations <sup>1</sup>	Installed kW <sup>2</sup>	NEM System Cap. <sup>3</sup> kW
<b>Hawaiian Electric</b>				
2001	151	1	3.60	5,955
2002	12	1	2.06	6,020
2003	49	8	11.74	6,210
2004	15	3	7.90	6,405
2005	5	0	0	6,150
2006	23	10	74.28	6,330
2007	67	73	400.29	6,080
2008	132	220	2,361	11,860
2009	111	513	2,460	12,130
2010	*	1,327	7,267	11,620
2011	*	3,424	18,518	N/A
2012	*	8,623	52,504	N/A
2013	*	14,010	83,659	N/A
2014	*	6,830**	46,242**	N/A
2015	*	6,208	44,774	N/A
<b>Total Hawaiian Electric</b>	<b>565</b>	<b>41,251</b>	<b>258,285</b>	<b>N/A</b>

<sup>1</sup> Completed systems (i.e., NEM Agreements completed).

<sup>2</sup> Installed kW reflects rated generating capacity installed in the year noted. Includes system expansions.

<sup>3</sup> In 2011 the (3) companies NEM cap is based on individual circuit capacity and not total system capacity, therefore this metric is no longer applicable (N/A) from 2011 on. Prior system caps as follows: Hawaiian Electric - 0.5% of system peak in 2001-2007, 1.0% of system peak in 2008-2010. Hawai'i Electric Light, Maui Electric - 0.5% of system peak in 2001-2007, 3% of system peak in 2008-2009, and 4% system peak 2010. System Peak is defined as Net System Peak for Hawaiian Electric, Hawai'i Electric Light, and Maui Electric-Maui only and Gross System Peak for Maui Electric-Molokai and Maui Electric-Lanai.

## Net Energy Metering Status Report

Hawaiian Electric Company, Inc.  
Hawai'i Electric Light Company, Inc.  
Maui Electric Company, Limited

December 31, 2015

NEM Status as of 12/31/15 (cont.)

	Information packets sent	No. of Installations <sup>1</sup>	Installed kW <sup>2</sup>	NEM System Cap. <sup>3</sup> kW
<b>Hawai'i Electric Light</b>				
2001	122	2	10.20	871
2002	25	3	4.73	890
2003	13	6	28.00	934
2004	12	4	8.84	972
2005	17	10	58.27	985
2006	12	34	299.57	1,007
2007	24	35	263.15	1,017
2008	23	116	783.80	5,946
2009	30	265	2,063.58	5,838
2010	*	371	2,287.85	7,624
2011	*	804	4,522.31	N/A
2012	*	1,734	9,943	N/A
2013	*	1,952	12,442	N/A
2014	*	2,080	13,046	N/A
2015	*	2,210	14,224.4	N/A
Total Hawai'i Electric Light	278	9,626	59,986	N/A

## Net Energy Metering Status Report

Hawaiian Electric Company, Inc.  
Hawai'i Electric Light Company, Inc.  
Maui Electric Company, Limited

December 31, 2015

NEM Status as of 12/31/15 (cont.)

	Information packets sent	No. of Installations <sup>1</sup>	Installed kW <sup>2</sup>	NEM System Cap, <sup>3</sup> kW
<b>Maui Electric</b>				
2001	49	2	8.20	993
2002	19	5	8.80	1,006
2003	24	3	13.00	1,047
2004	29	8	21.60	1,091
2005	22	16	92.15	1,068
2006	49	50	233.47	1,091
2007	13	64	359.81	1,081
2008	15	135	947	6,171
2009	0	298	2,336	6,317
2010	*	342	1919	8,397
2011	*	1,039	6,624.22	N/A
2012	*	1,677	10,981	N/A
2013	*	1,566	11,202	N/A
2014	*	1,901**	12,832**	N/A
2015	*	2159	16,723	N/A
Total Maui Electric	220	9,265	64,301	N/A
<b>TOTAL</b>	*	<b>60,142</b>	<b>382,572</b>	

\* NEM information and forms are made available on the web and therefore, not tracked for the respective Companies.

\*\* The Number of Installations and the Installed kW are annually adjusted to reflect updates such as modifications to system capacity ratings, agreement execution dates, number of installations, additions to existing systems, changes in rate schedules, and subsequent accounting reconciliations. All accounting reconciliations are trued up in the preceding year (2014) totals only to reflect accurate annual and cumulative numbers in the filing year.

## APPENDIX A

Per the Commission's request, the attached pages are included to provide illustrative estimates of lost contributions to fixed cost in 2016 and the associated estimated value per kWh, based on estimated annualized kWh production of NEM installations in place as of year-end 2015. The value shown in these illustrations represents the estimated amount from all installations since the inception of the NEM program. For the calculation of lost contribution to fixed costs, the Base Energy Rates and Production Energy Rates for Hawaiian Electric, Hawai'i Electric Light, Maui, Lana'i, and Moloka'i are unchanged from last year's report. For all Companies, the effective Purchased Power Adjustment Clause rates reflect the January 2016 values. The calculation for lost contribution to fixed cost includes the impact of surcharges for the residential and commercial demand-side management programs, for the renewable energy infrastructure programs, and for the recovery of the Rate Adjustment Mechanism Provision portion of the Revenue Balancing Account Rate Adjustment. Lost contributions to fixed cost related to the Purchased Power Adjustment Clause, to the demand-side management surcharges, to the renewable infrastructure surcharge, and to the Rate Adjustment Mechanism Provision portion of the Revenue Balancing Account Rate Adjustment are reflected in subsequent reconciliations of these surcharges and are eventually borne by customers who incur per kWh charges. Some of the lost contribution amount related to base energy rates may already be reflected in rates through past utility rate cases or through current decoupling rate adjustments. Any remaining lost contributions to fixed cost for base energy rates have no bill impact unless and until the utilities propose and receive Commission approval to adjust rates. At that point, any rate adjustment would apply to all customers, including customers with NEM installations.

Hawaiian Electric Company

Estimated Lost Contribution to Fixed Costs and Surcharges, based on NEM installations as-of December 31, 2015

Rate	Total Lost kWh/yr <sup>1</sup>	Base Energy Rate <sup>2</sup> , cents/kWh	Eff. PPAC <sup>3</sup> , cents/kWh	REIP & DSM <sup>4</sup> , cents/kWh	RAM <sup>4</sup> , cents/kWh	Eff. Base Energy Rate cents/kWh	Production Energy Rate <sup>5</sup> , cents/kWh	Lost Contribution to Fixed Cost, cents/kWh	Total Lost Contribution to Fixed Cost, \$/Yr
	A	B	C	D	E	F = sum(B:E)	G	H = F - G	J = A * H / 100
R	357,515,893	22.4707	2.8642	0.0552	1.1582	26.5483	15.3950	11.1533	\$39,874,820
G	10,364,307	21.3317	2.7658	0.0739	1.1582	25.3296	15.4450	9.8846	\$1,024,470
J	56,669,061	16.6734	2.6687	0.0739	1.1582	20.8742	15.4560	5.4182	\$3,070,443
P	926,350	14.9013	2.0305	0.0739	1.1582	18.1639	15.3860	2.7779	\$25,769
Total	425,477,612								\$43,995,522

Rate	Total Lost Contribution to Fixed Cost, \$/Yr	Forecast 2016 Sales <sup>6</sup> , kWh/Yr	Estimated Impact on Rates, \$/kWh
	K = J	L	M = (K/L) * 100
R	\$39,874,820		
G	\$1,024,470		
J	\$3,070,443		
P	\$25,769		
Total	\$43,995,522		
Total Company		6,554,700,000	0.67

Notes:

- 1 See Appendix A, page 3, column H
- 2 Source: Base Energy Rates from Docket 2010-0080 (HECO 2011 Test Year)
  - ched R: Docket 2010-0080 (HECO 2011 Test Year); Final revised tariffs, Exhibit B, Attachment 1, page 5, filed 07/24/2012.
  - ched G: Docket 2010-0080 (HECO 2011 Test Year); Final revised tariffs, Exhibit B, Attachment 1, page 13, filed 07/24/2012.
  - ched J: Docket 2010-0080 (HECO 2011 Test Year); Final revised tariffs, Exhibit B, Attachment 1, page 24, filed 07/24/2012.
  - ched P: Docket 2010-0080 (HECO 2011 Test Year); Final revised tariffs, Exhibit B, Attachment 1, page 126, filed 07/24/2012.
- 3 PPAC Rates Effective January 2016
- 4 REIP and DSM rate from effective rate summaries for January 2016, RAM based on Transmittal 15-03, Decoupling Calculation workbook, Schedule A (with settlement revised 06/03/15), page 1
- 5 Source: Cost-of-service calculation, from Docket 2010-0080 (HECO 2011 Test Year); Final revised tariffs, exhibit C, page 80, filed 07/24/2012.
- 6 Source: Hawaiian Electric Sales Forecast, May 2015

**Hawaiian Electric Company**  
 Estimated kW and kWh by technology and rate schedule

Rate	NEM kW Installed by Technology				NEM kWh Installed by Technology			
	PV kW NEM installed (Cumulative Dec 31, 2015) NEM <sup>A</sup>	Wind kW NEM installed (Cumulative Dec 31, 2015) NEM <sup>E</sup>	Hydro kW NEM installed (Cumulative Dec 31, 2015) NEM <sup>F</sup>	Total kW	PV kWh generated in one year from NEM installed (Cumulative Dec 31, 2015) NEM <sup>A,B,D</sup>	Wind kWh generated in one year from NEM installed (Cumulative Dec 31, 2015) NEM <sup>F</sup>	Hydro kWh generated in one year from NEM installed (Cumulative Dec 31, 2015) NEM <sup>F</sup>	Total kWh
	A	B	C	D= sum(A:C)	E	F	G	H= sum(E:G)
R	216,769	1	0	216,770	357,513,346	2,547	0	357,515,893
G	6,456	4	0	6,460	10,354,118	10,189	0	10,364,307
J	34,482	20	0	34,502	56,618,114	50,947	0	56,669,061
P	553	0	0	553	928,350	0	0	928,350
<b>Total</b>	<b>258,260</b>	<b>25</b>	<b>0</b>	<b>258,285</b>	<b>425,413,928</b>	<b>63,684</b>	<b>0</b>	<b>425,477,612</b>

Source: Grid Technologies Department.

<sup>A</sup> NEM PV/wind/hydro kW data from respective 2015 utility detailed year end spreadsheets. HECO 2014 cumulative data used to breakout PTC/inverter kW counting method.

<sup>B</sup> Adjustment made to account for PV conversion from PTC (PVUSA Test Conditions) to STC (Standard Test Conditions) by dividing by a factor of 0.89.

PTC to STC conversion factor of 0.89 is an average calculated from GoSolarCalifornia.org web site.

(For HECO prior to 2015, PV NEM capacity (kW) is PTC or inverter rating whichever is lower. For 2015 and beyond PV kW is STC or inverter rating whichever is lower), Multiply by hours in year (leap year 8784)

<sup>D</sup> PV capacity factor of 17% ( Based on PV benchmarking developed by E3 for FIT pricing (Docket No 2008-0273, page 20).

<sup>E</sup> Wind capacity factor 29% .

## Hawai'i Electric Light

Estimated Lost Contribution to Fixed Costs and Surcharges based on NEM installations as-of December 31, 2015

Rate	Total Lost kWh/yr <sup>1</sup>	Base Energy Rate <sup>2</sup> , cents/kWh	Eff. PPAC <sup>3</sup> , cents/kWh	REIP & DSM <sup>4</sup> , cents/kWh	RAM <sup>4</sup> , cents/kWh	Eff. Base Energy Rate cents/kWh	Production Energy Rate <sup>5</sup> , cents/kWh	Lost Contribution to Fixed Cost, cents/kWh	Total Lost Contribution to Fixed Cost, \$/Yr
	A	B	C	D	E	F = sum(B:E)	G	H = F - G	J = A * H / 100
R	67,456,644	29.2689	2.3260	0.0000	0.6019	32.1968	19.0760	13.1208	\$8,850,851
G	6,008,484	31.5858	2.1342	0.0000	0.6019	34.3219	19.1990	15.1229	\$908,657
J	15,951,184	24.8033	1.6012	0.0000	0.6019	27.2064	19.1130	8.0934	\$1,290,994
P	645,810	21.8184	1.6115	0.0000	0.6019	24.0318	18.7610	5.2708	\$34,039
Total	90,062,132								\$11,084,541

Rate	Total Lost Contribution to Fixed Cost, \$/Yr	Forecast 2016 Sales <sup>6</sup> , kWh/Yr	Estimated Impact on Rates, ¢/kWh
	K = J	L	M = (K / L) * 100
R	\$8,850,851		
G	\$908,657		
J	\$1,290,994		
P	\$34,039		
Total	\$11,084,541		
Total Company		1,019,059,300	1.09

Notes:

- See Appendix A, page 5, column H
- Source: Base Energy Rates, from Docket 2009-0164 (HELCO 2010 Test Year)  
 Sched R: Docket 2009-0164 (HELCO 2010 Test Year), Exhibit 2C, Attach 1, page 9, Filed 02/21/2012 for base energy rate;  
 Sched G: Docket 2009-0164 (HELCO 2010 Test Year), Exhibit 2C, Attach 1, page 10, Filed 02/21/2012.  
 Sched J: Docket 2009-0164 (HELCO 2010 Test Year), Exhibit 2C, Attach 1, page 17, Filed 02/21/2012.  
 Sched P: Docket 2009-0164 (HELCO 2010 Test Year), Exhibit 2C, Attach 1, page 143, Filed 02/21/2012.
- PPAC Rates Effective January 2016
- REIP and DSM rate from effective rate summaries for January 2016, RAM based on Transmittal 15-03, Decoupling Calculation workbook, Schedule A (with settlement revised 06/03/15), page 1
- Source: Most-recently approved cost-of-service calculation, from Docket 2009-0164 (HELCO 2010 Test Year), Exhibit 2E, page 65, Filed 02/21/2012.
- Source: Hawai'i Electric Light Sales Forecast, May 2015



**Hawai'i Electric Light**

Estimated kW and kWh by technology and rate schedule

Rate	NEM kW installed by Technology				NEM kWh installed by Technology			
	PV kW NEM installed (Cumulative Dec 31, 2015) NEM <sup>A</sup>	Wind kW NEM installed (Cumulative Dec 31, 2015) NEM <sup>E</sup>	Hydro kW NEM installed (Cumulative Dec 31, 2015) NEM <sup>F</sup>	Total kW	PV kWh generated in one year from NEM installed (Cumulative Dec 31, 2015) NEM <sup>A,B</sup>	Wind kWh generated in one year from NEM installed (Cumulative Dec 31, 2015) NEM <sup>E</sup>	Hydro kWh generated in one year from NEM installed (Cumulative Dec 31, 2015) NEM <sup>F</sup>	Total kWh
	A	B	C	D = sum(A:C)	E	F	G	H = sum(E:G)
R	45,077	57	0	45,134	67,312,463	144,181	0	67,456,644
G	4,024	0	0	4,024	6,008,484	0	0	6,008,484
J	10,322	170	0	10,492	15,413,684	537,511	0	15,951,194
P	288	0	49	337	430,602	0	215,208	645,810
<b>Total</b>	<b>59,711</b>	<b>228</b>	<b>49</b>	<b>59,988</b>	<b>89,165,233</b>	<b>681,691</b>	<b>215,208</b>	<b>90,062,132</b>

Source: Grid Technologies Department.

<sup>A</sup> NEM PV/wind/hydro kW data from respective 2015 utility detailed year end spreadsheets.

<sup>B</sup> PV capacity factor of 1.7% (Based on PV benchmarking developed by E3 for FIT pricing (Docket No 2008-0273, page 20), Multiply by hours in year (leap year 8784)

<sup>E</sup> Wind capacity factor range of 29% to 39%.

<sup>F</sup> Hydro capacity factor of 50%.

**Maui Electric Company - Maui Division**

Estimated Lost Contribution to Fixed Costs and Surcharges based on NEM installations as-of December 31, 2015

Rate	Total Lost kWh/yr <sup>1</sup>	Base Energy Rate <sup>2</sup> , cents/kWh	Eff. PPAC <sup>3</sup> , cents/kWh	REIP & DSM <sup>4</sup> , cents/kWh	RAM <sup>4</sup> , cents/kWh	Eff. Base Energy Rate cents/kWh	Production Energy Rate <sup>5</sup> , cents/kWh	Lost Contribution to Fixed Cost, cents/kWh	Total Lost Contribution to Fixed Cost, \$/Yr
	A	B	C	D	E	F = sum(B:E)	G	H = F - G	J = A * H / 100
R	67,806,977	33.5605	-0.1055	0.0103	0.9489	34.4142	24.6820	9.7322	\$6,599,111
G	8,179,146	34.5890	-0.1247	0.0026	0.9489	35.4158	24.8630	10.5528	\$863,129
J	15,690,716	30.4163	-0.0990	0.0026	0.9489	31.2688	25.0050	6.2638	\$982,835
P	700,700	27.7504	-0.0940	0.0026	0.9489	28.6079	24.8200	3.7879	\$26,542
Total	92,377,538								\$8,471,617

Rate	Total Lost Contribution to Fixed Cost, \$/Yr	Forecast 2016 Sales <sup>6</sup> kWh/yr	Estimated impact on Rates, ¢/kWh
	K = J	L	M = (K / L) * 100
R	\$6,599,111		
G	\$863,129		
J	\$982,835		
P	\$26,542		
Total	\$8,471,617		
Total Company		1,064,908,000	0.80

Notes:

- 1 See Appendix A, page 7, column H
- 2 Source: Base Energy Rates, from Docket 2011-0092 (MECO 2012 Test Year)- Maui Division  
Sched R: Docket 2011-0092 (MECO 2012 Test Year), Maui Division, Exhibit 4, Attachment 1, page 8, filed 06/17/2013.  
Sched G: Docket 2011-0092 (MECO 2012 Test Year), Maui Division, Exhibit 4, Attachment 1, page 9, filed 06/17/2013.  
Sched J: Docket 2011-0092 (MECO 2012 Test Year), Maui Division, Exhibit 4, Attachment 1, page 33, filed 06/17/2013.  
Sched P: Docket 2011-0092 (MECO 2012 Test Year), Maui Division, Exhibit 4, Attachment 1, page 40, filed 06/17/2013.
- 3 PPAC Rates Effective January 2016
- 4 REIP and DSM rate from effective rate summaries for January 2016, RAM based on Transmittal 15-03, Decoupling Calculation workbook, Schedule A (with settlement revised 06/03/15), page 1
- 5 Docket 2011-0092 (MECO 2012 Test Year), Maui Division, Exhibit 5, page 66, filed 06/17/2013.
- 6 Source: Maui Electric Sales Forecast, May 2015

**Maui Electric Company - Maui Division**

Estimated kW and kWh by technology and rate schedule

Rate	NEM KW Installed by Technology				NEM kWh Installed by Technology			
	PV kW NEM installed (Cumulative Dec 31, 2015) NEM <sup>A</sup>	Wind kW NEM installed (Cumulative Dec 31, 2015) NEM <sup>E</sup>	Hydro kW NEM installed (Cumulative Dec 31, 2015) NEM <sup>F</sup>	Total kW	PV kWh generated in one year from NEM installed (Cumulative Dec 31, 2015) NEM <sup>A,B</sup>	Wind kWh generated in one year from NEM installed (Cumulative Dec 31, 2015) NEM <sup>E</sup>	Hydro kWh generated in one year from NEM installed (Cumulative Dec 31, 2015) NEM <sup>F</sup>	Total kWh
	A	B	C	D= sum(A:C)	E	F	G	H= sum(E:G)
R	45,382	15	0	45,397	67,768,690	38,287	0	67,806,977
G	5,476	1	0	5,477	8,177,363	1,783	0	8,179,146
J	10,462	26.7	0	10,489	15,622,701	68,016	0	15,690,716
P	459	5	0	465	685,416	15,284	0	700,700
<b>Total</b>	<b>61,780</b>	<b>48</b>	<b>0</b>	<b>61,828</b>	<b>92,254,169</b>	<b>123,368</b>	<b>0</b>	<b>92,377,538</b>

Source: Grid Technologies Department.

<sup>A</sup> NEM PV/wind/hydro kW data from respective 2015 utility detailed year end spreadsheets.

<sup>B</sup> PV capacity factor of 17% ( Based on PV benchmarking developed by E3 for FIT pricing (Docket No 2008-0273, page 20), Multiply by hours in year (leap year 8784)

<sup>E</sup> Wind capacity factor range of 29%.

**Maul Electric Company - Lanai Division**

Estimated Lost Contribution to Fixed Costs and Surcharges based on NEM installations as-of December 31, 2015

Rate	Total Lost kWh/yr <sup>1</sup>	Base Energy Rate <sup>2</sup> , cents/kWh	EM PPAC <sup>3</sup> , cents/kWh	REIP & DSM <sup>4</sup> , cents/kWh	RAM <sup>4</sup> , cents/kWh	Eff. Base Energy Rate, cents/kWh	Production Energy Rate <sup>5</sup> , cents/kWh	Lost Contribution to Fixed Cost, cents/kWh	Total Lost Contribution to Fixed Cost, \$/Yr
	A	B	C	D	E	F = sum(B:E)	G	H = F - G	J = A * H / 100
R	459,861	42.7689	0	0.0103	0.9489	43.7281	35.2000	8.5281	\$39,200
G	63,405	44.8726	0	0.0103	0.9489	45.8318	35.4360	10.3958	\$6,591
J	177,700	42.5880	0	0.0103	0.9489	43.5452	35.5590	7.9862	\$14,192
P	-	40.2141	0	0.0103	0.9489	41.1733	34.9320	6.2413	\$0
<b>Total</b>	<b>700,766</b>								<b>\$59,983</b>

Rate	Total Lost Contribution to Fixed Cost, \$/Yr	Forecast 2016 Sales <sup>6</sup> , kWh/Yr	Estimated Impact on Rates, \$/kWh
	K = J	L	M = (K / L) * 100
R	\$39,200		
G	\$6,591		
J	\$14,192		
P	\$0		
<b>Total</b>	<b>\$59,983</b>		
<b>Total Company</b>		<b>26,680,700</b>	<b>0.22</b>

Notes:

- 1 See Appendix A, page 9, column H
- 2 Source: Base Energy Rates, from Docket 2011-0092 (MECO 2012 Test Year)- Lanai Division  
 Sched R: Docket 2011-0092 (MECO 2012 Test Year), Lanai Division, Exhibit 4, Attachment 1, page 83, filed 06/17/2013.  
 Sched G: Docket 2011-0092 (MECO 2012 Test Year), Lanai Division, Exhibit 4, Attachment 1, page 84, filed 06/17/2013.  
 Sched J: Docket 2011-0092 (MECO 2012 Test Year), Lanai Division, Exhibit 4, Attachment 1, page 92, filed 06/17/2013.  
 Sched P: Docket 2011-0092 (MECO 2012 Test Year), Lanai Division, Exhibit 4, Attachment 1, page 101, filed 06/17/2013.
- 3 PPAC Rates Effective January 2016
- 4 REIP and DSM rate from effective rate summaries for January 2016, RAM based on Transmittal 15-03, Decoupling Calculation workbook, Schedule A (with settlement revised 06/03/15), page 1
- 5 Docket 2011-0092 (MECO 2012 Test Year), Lanai Division, Exhibit 5, page 143, filed 06/17/2013.
- 6 Source: Maui Electric Sales Forecast, May 2015

**Maui Electric Company - Lanai Division**  
 Estimated kW and kWh by technology and rate schedule

Rate	NEM kW Installed by Technology				NEM kWh Installed by Technology			
	PV kW NEM installed (Cumulative Dec 31, 2015) NEM <sup>A</sup>	Wind kW NEM installed (Cumulative Dec 31, 2015) NEM <sup>E</sup>	Hydro kW NEM installed (Cumulative Dec 31, 2015) NEM <sup>F</sup>	Total kW <i>D= sum(A:C)</i>	PV kWh generated in one year from NEM installed (Cumulative Dec 31, 2015) NEM <sup>A,B</sup>	Wind kWh generated in one year from NEM installed (Cumulative Dec 31, 2015) NEM <sup>E</sup>	Hydro kWh generated in one year from NEM installed (Cumulative Dec 31, 2015) NEM <sup>F</sup>	Total kWh <i>H= sum(E:G)</i>
	A	B	C		E	F	G	
R	308	0	0	308	459,661	0	0	459,661
G	42	0	0	42	63,405	0	0	63,405
J	118	0	0	118	177,700	0	0	177,700
P	0	0	0	0	0	0	0	0
<b>Total</b>	<b>468</b>	<b>0</b>	<b>0</b>	<b>468</b>	<b>700,766</b>	<b>0</b>	<b>0</b>	<b>700,766</b>

Source: Grid Technologies Department.

<sup>A</sup> NEM PV/wind/hydro kW data from respective 2015 utility detailed year end spreadsheets.

<sup>B</sup> PV capacity factor of 17% ( Based on PV benchmarking developed by E3 for FIT pricing (Docket No 2008-0273, page 20), Multiply by hours in year (leap year 8784)

**Maul Electric Company - Molokai Division**

Estimated Lost Contribution to Fixed Costs and Surcharges based on NEM installations as-of December 31, 2015

Rate	Total Lost kWh/yr <sup>1</sup>	Base Energy Rate <sup>2</sup> , cents/kWh	Eff. PPAC <sup>3</sup> , cents/kWh	REIP & DSM <sup>4</sup> , cents/kWh	RAM <sup>4</sup> , cents/kWh	Eff. Base Energy Rate cents/kWh	Production Energy Rate <sup>5</sup> , cents/kWh	Lost Contribution to Fixed Cost, cents/kWh	Total Lost Contribution to Fixed Cost, \$/Yr
	A	B	C	D	E	F = sum(B:E)	G	H = F - G	J = A * H / 100
R	1,977,537	39.0927	0	0.0103	0.9489	40.0519	28.8010	11.2509	\$222,491
G	526,672	44.8344	0	0.0103	0.9489	45.7936	29.3620	16.4316	\$86,541
J	337,989	36.9705	0	0.0103	0.9489	37.9297	29.2020	8.7277	\$29,499
P	149,328	29.5392	0	0.0103	0.9489	30.4964	28.5660	1.9324	\$2,686
Total	2,991,527								\$341,417

Rate	Total Lost Contribution to Fixed Cost, \$/Yr	Forecast 2016 Sales <sup>6</sup> , kWh/Yr	Estimated Impact on Rates, ¢/kWh
	K = J	L	M = (K / L) * 100
R	\$222,491		
G	\$86,541		
J	\$29,499		
P	\$2,686		
Total	\$341,417		
Total Company		27,270,800	1.25

Notes:

- 1 See Appendix A, page 11, column H
- 2 Source: Base Energy Rates, from Docket 2011-0092 (MECO 2012 Test Year)- Molokai Division  
 Sched R: Docket 2011-0092 (MECO 2012 Test Year), Molokai Division, Exhibit 4, Attachment 1, page 132, filed 06/17/2013.  
 Sched G: Docket 2011-0092 (MECO 2012 Test Year), Molokai Division, Exhibit 4, Attachment 1, page 133, filed 06/17/2013.  
 Sched J: Docket 2011-0092 (MECO 2012 Test Year), Molokai Division, Exhibit 4, Attachment 1, page 140, filed 06/17/2013.  
 Sched P: Docket 2011-0092 (MECO 2012 Test Year), Molokai Division, Exhibit 4, Attachment 1, page 146, filed 06/17/2013.
- 3 PPAC Rates Effective January 2016
- 4 REIP and DSM rate from effective rate summaries for January 2016. RAM based on Transmittal 15-03, Decoupling Calculation workbook, Schedule A (with settlement revised 06/03/15), page 1
- 5 Docket 2011-0092 (MECO 2012 Test Year). Molokai Division, Exhibit 5, page 220, filed 6/17/2013.
- 6 Source: Maui Electric Sales Forecast, May 2015

**Maui Electric Company - Molokai Division**  
 Estimated kW and kWh by technology and rate schedule

Rate	NEM kW Installed by Technology				NEM kWh Installed by Technology			
	PV kW NEM installed (Cumulative Dec 31, 2015) NEM <sup>A</sup>	Wind kW NEM installed (Cumulative Dec 31, 2015) NEM <sup>F</sup>	Hydro kW NEM installed (Cumulative Dec 31, 2015) NEM <sup>F</sup>	Total kW	PV kWh generated in one year from NEM installed (Cumulative Dec 31, 2015) NEM <sup>A,B</sup>	Wind kWh generated in one year from NEM installed (Cumulative Dec 31, 2015) NEM <sup>E</sup>	Hydro kWh generated in one year from NEM installed (Cumulative Dec 31, 2015) NEM <sup>F</sup>	Total kWh
	A	B	C	D= sum(A:C)	E	F	G	H= sum(E:G)
R	1,324	0	0	1,324	1,977,537	0	0	1,977,537
G	353	0	0	353	526,672	0	0	526,672
J	226	0	0	226	337,989	0	0	337,989
P	100	0	0	100	149,328	0	0	149,328
<b>Total</b>	<b>2,003</b>	<b>0</b>	<b>0</b>	<b>2,003</b>	<b>2,991,527</b>	<b>0</b>	<b>0</b>	<b>2,991,527</b>

Source: Grid Technologies Department.

<sup>A</sup> NEM PV/wind/hydro kW data from respective 2015 utility detailed year end spreadsheets.

<sup>B</sup> PV capacity factor of 17% ( Based on PV benchmarking developed by E3 for FIT pricing (Docket No 2008-0273, page 20), Multiply by hours in year (leap year 8784)